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Higher Education
Reflections From the Field - Volume 2

Edited by Lee Waller and Sharon Kay Waller



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- Volume 2

*Edited by Lee Waller
and Sharon Kay Waller*

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Volume 4

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Education and Human Development is an interdisciplinary research area that aims to shed light on topics related to both learning and development. This Series is intended for researchers, practitioners, and students who are interested in understanding more about these fields and their applications.

Meet the Series Editor



Katherine Stavropoulos received her BA in Psychology from Trinity College, in Connecticut, USA and her Ph.D. in Experimental Psychology from the University of California, San Diego. She completed her postdoctoral work at the Yale Child Study Center with Dr. James McPartland. Dr. Stavropoulos' doctoral dissertation explored neural correlates of reward anticipation to social versus nonsocial stimuli in children with and without autism spectrum disorders (ASD). She has been a faculty member at the University of California, Riverside in the School of Education since 2016. Her research focuses on translational studies to explore the reward system in ASD, as well as how anxiety contributes to social challenges in ASD. She also investigates how behavioral interventions affect neural activity, behavior, and school performance in children with ASD. She is also involved in the diagnosis of children with ASD and is a licensed clinical psychologist in California. She is the Assistant Director of the SEARCH Center at UCR and is a faculty member in the Graduate Program in Neuroscience.

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Preface

In the academic year 2020–2021, COVID-19 ravaged the world, causing more than six million deaths globally. This highly infectious pandemic devastated higher education and forced almost all institutions to reinvent instructional strategies and delivery methodologies. The pandemic so widely affected higher education institutions that many have come to believe that higher education has been forever transformed in ways that are yet to be fully realized. Without a doubt, digital education became the preferred delivery methodology as students and faculty sought the protections afforded by isolation. Some institutions were prepared to utilize this delivery methodology. Many were not prepared. Regardless, the pandemic forced the issue. Higher education was changed to protect both students and faculty.

The changes brought to the field of higher education have been more substantial than any other changes within the last hundred years. Not since the Spanish flu in the early 1900s has the world faced a similar epidemic. While all students have been affected, first-generation, female, and underrepresented students have borne the bulk of the burden. To better understand the ravages of the pandemic, this book examines four distinct aspects in four sections: “Perils and Promises”, “The State of Online Education”, “Goals and Challenges of Online Learning” and “Innovations in the Age of COVID”. These categories of inquiry are intended to shed light on the impact of the pandemic and the future of higher education post-COVID.

To understand the impact of the COVID pandemic more fully, one must examine higher education both pre and post-pandemic. A good perspective of higher education is fundamental to grasping the many changes brought by the COVID-19 epidemic. An understanding of the past and present more clearly illuminates the future of higher education post-COVID. The university experience for women, students of color, and the disfranchised has been particularly impacted. While many students were forced to drop out in order to financially survive during the pandemic, the real question remains as to the likelihood of their return to pursue their educational dreams. How resilient will these students prove to be? How resilient will higher education prove in recovering those whose dreams were placed on hold?

COVID wrought many changes upon the higher education system. The brick-and-mortar institutions were hit the hardest. Those institutions already deeply involved in the delivery of online learning were often the least impacted. The institution’s commitment to online learning proved to be highly correlated to the ability to successfully navigate the changes brought on by the pandemic. Those institutions only lightly engaged in distance education or not engaged in distance education found themselves thrown into a new learning paradigm. Both instruction and assessment proved difficult and involved a substantial learning curve forced upon all institutions whether prepared or not for digital education. Student psychological well-being suffered as students found themselves isolated and separated from their colleagues and faculty. Many barriers and challenges emerged requiring the best practices of higher education institutions. Where deficiencies in social justice and equal treatment already existed, these became much more pronounced as support interventions

were employed. Institutions struggling to address student needs were more likely to serve those deemed most important. Many other students simply fell to the wayside as they navigated financial and technological challenges.

Online and digital learning emerged as the answer to the isolation imposed by the pandemic. As previously mentioned, some institutions were prepared, and others were not. The transition to online learning involved so much more than just carrying face-to-face instruction into a digital environment. Many institutions discovered this truth the hard way as they floundered through the transition process. The virtual environment demanded the reinvention of curriculum and instructional methodologies. Students lacking the required digital resources were often forced to drop out. Many faculties also struggled to master the instructional competencies required in the new learning environment. The engagement of students with other students and of students with faculty replaced the standard classroom environment and proved an important strategy for enhancing learning. The real question remains as to the possibility of returning to the educational environment as it once was. What lessons have been learned? How has education forever changed?

The future of higher education is now in question. What will higher education look like in the post-COVID world? What have teachers learned about teaching during the pandemic? What are the new dynamics of professional development as faculty are prepared for the future? Faculty who lived through the pandemic have gained rich insight into addressing the global disruption of the educational process. While the future of higher education may be in question, the gifts and talents of higher education faculty remain absolute. The creative and innovative will always rise to meet and overcome the barriers and challenges. This creativity and innovativeness must be unleashed in the days ahead to ensure that the generation forced out by the pandemic is regained and allowed to complete their educational dreams. The world can ill afford the loss of this massive number of future employees.

The challenge of restoring the educational system to its previous level of accomplishment rests upon all institutions. Educators must ensure that COVID did not happen to them. Rather they must ensure that COVID happened for them. The creative, the innovative, those with a vision for the future must see beyond the difficulties to use the lessons learned to improve the educational system and to raise higher education to a new level of accomplishment. After all, the world depends on this coming generation of learners.

Special thanks go out to the many, many educators who embraced the challenges brought on by COVID and used them to improve the learning environment.

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Section 1

Perils and Promises

Chapter 1

Perspective Chapter: The Barriers in Inclusive Set-Up for Students with Visual Impairment at Higher Education Level – Pakistan Scenario

Kashif Iqbal and Samina Ashraf

Abstract

Higher education is contemplated for visually impaired students as a high standard of education towards apex professions in life. Students with visual impairment experience numerous barriers related to their social and educational life. This chapter intends to the barriers at the higher education level that visually impaired students experience in Pakistan. It also includes a brief introduction to the basic concept of inclusive education and the importance of higher education for visually impaired students. This chapter also identifies the needs and the difficulties, which visually impaired students face at the higher education level. Furthermore, the chapter reflects the status of inclusive education at the higher education level in Pakistan. The commitment of Pakistan to inclusive education has been described in this chapter. The solution to overcome the barriers has also been mentioned in this chapter. The chapter contains the future of inclusive education in Pakistan at the higher education level. The chapter recommends accessible infrastructure, training and orientation sessions for teachers, development of resource centres at all higher education institutes in Pakistan, provision of free assistive devices to visually impaired students and project-based initiative by the higher education commission of Pakistan.

Keywords: barriers, inclusive education, visually impaired, students, Pakistan

1. Introduction

Students with visual impairment experience numerous barriers in social and educational matrixes. A suitable life status can be set by obtaining higher education by reducing barriers to accessibility, social adjustment and educational endeavours. In Pakistan, a supportive atmosphere for inclusive learning allows students with visual impairments to study alongside their sighted peers, regardless of their talents and shortcomings, in order to achieve the highest standards and position in life. Proper professional expertise, adequate resources, disability friendly environment, acceptance and most importantly qualified trained staff are key factors to removing

barriers that students with visual impairment face. There is a dire need to address the barriers or challenges that students with visual impairment experience at the higher education levels in Pakistan.

Therefore, this chapter will highlight the solutions for the elimination of the barriers by making an equitable approach to education for students with visual impairment in inclusive settings.

2. Objectives

After reading this chapter, the readers will be able to:

- Apprehend inclusive education.
- Understanding the needs of students with visual impairment in higher education.
 - Comprehend the status of inclusive education at higher education level in Pakistan.
 - Identify the barriers in an inclusive setting for visually impaired students.
 - Recognise higher education support for visually impaired students in Pakistan.
 - Find out the solutions for removing the barriers in the inclusive set-up at higher education level for visually impaired students.
 - Think about the future of inclusive set-up at higher education level in Pakistan.

Inclusive education is the educational approach, which really requires in-depth and philosophical strategies. Whereas higher education is the apex level of learning towards achieving life goals. To bring harmony at both levels, it is essential to comprehend the concept of inclusive education, status of inclusive education in Pakistan, understanding the barriers & their solutions and future of inclusive education in Pakistan, especially at higher education level for students with visual impairment. This document will reveal all the above-mentioned aspects in detail below.

2.1 Understanding the inclusive education

Inclusive education is defined as all students (students with disabilities and students without disabilities) learning together in an institute that accepts and acknowledges the diverse needs of students to ensure the quality of education for all through appropriate curricula, organisation, teaching strategies and resources used to overcome barriers to the presence, participation and achievement of all students in general education [1].

According to the parent's perspectives [2], they discovered that commonly developing students educated in inclusive education programmes with students with special education needs would increase respect, awareness and acceptance of their peers' needs, develop fewer prejudices and learn to be more helpful and supportive towards people with disabilities, according to parent's perspectives. It is compatible that inclusive education plays a role in challenging disabling attitudes by changing

non-disabled students' attitudes towards disabled people; however, it contributes to the development of a more inclusive society [3].

Smogorzewska et al. [4] define the need for a greater understanding of diversity, tolerance, acceptance of others and the use of prosocial behaviour in an inclusive classroom to promote development. Other studies had looked into the effect of academic learning. However, according to some studies, the presence of special education students in regular education classrooms is associated with slightly lower performance of other students who do not have special education needs [5].

Group work in colleges or universities in the form of communities of mutual learners allows for a balance of individuality and group effectiveness, ensuring that everyone progresses according to their ability and allowing all students 'to enter the culture with awareness of what it is about and what one does to cope with it as a participant'. Interactive learning spaces, particularly those mediated by dialogue, promote collective thinking and learning, improve academic achievement, social skills and social cohesion, and are especially beneficial to vulnerable student groups [6, 7]. As a result, promoting such interactive and dialogic learning environments would help to achieve the goals of inclusive education.

The United Nations passed a convention on the rights of persons with disabilities, abbreviated as (CRPD), which states that persons with disabilities and corresponding special education needs (SEN) should be educated in the general education system alongside students who are not disabled and that disabled candidates should not be excluded from the classroom due to their disabilities. The Convention on the Rights of Persons with Disabilities (CRPD) established a human right for participation of people who are disabled and have special education needs, and it states that all people, regardless of their characteristics, must be treated equally. The Convention on the Rights of Persons with Disabilities (CRPD) provided impetus for many countries to establish an inclusive education system in which students with and without disabilities learn and think together. Previously, students with special needs were primarily taught in separate classrooms and segregated settings.

The central theme of inclusive education is based on the education of a specific group of students with special education needs (SEN) in order to control special education customs that have traditionally segregated students based on a medical model of disability [8].

A substantial amount of research has been conducted to justify that inclusion from both the educational and social perspectives, due to the proven positive effects of educational inclusion on the academic outcomes of students with disabilities, as well as its positive impact on the subsequent social inclusion of people with disabilities in terms of additional academic opportunities and qualifications, access to employment and the development of personal relationships within the community. Because inclusive education entails educating everyone, it is critical to consider all of the potential benefits of inclusion for all students. Furthermore, the fact that most research on inclusive education has focused on specific groups of students, particularly those with disabilities and other special education needs, may cause us to overlook other effects on other groups of students and may be inconsistent with a definition of inclusive education that is geared towards all learners [9].

Inclusive education relies on educators at all levels of the system being committed to and willing to implement its underlying philosophy. This means that educational systems and higher education institutions must articulate an inclusive culture in which 'some degree of consensus... exists... around values of respect for difference and a commitment to providing all pupils with access to learning opportunities' [10].

Some argue that the core concept of inclusion only applies to certain groups or categories of people, whereas others argue that inclusion applies to everyone.

Inclusion does not only refer to diversity of ability; it also refers to other differences such as gender and cultural background, as well as the methods used to institute structure and address these differences [11]. Nonetheless, the concept has political implications. The concept of inclusive education is broad and complex, but it is ambiguous.

2.2 Understanding students with visual impairment and their needs in higher education

Visual impairment is a sight problem that interferes with a student's academic goals. The official description given by the Individuals with Disabilities Education Act is 'an impairment in vision that, even with treatment, significantly impacts a child's educational achievement' (IDEA). The word covers both limited vision and blindness.

A student with a visual impairment can succeed in higher education institutions if the necessary accommodations and assistance are offered. In order to sparkle the student's ability to succeed in the classroom, it may be more significant than their legal or medical classification, educators frequently define pupils with visual impairments in terms of classroom functioning. Moderate, severe and profound visual impairments are the most prevalent levels in educational settings. These categories show the extent to which a student needs special education modifications in order to learn.

The objectives for teaching visually impaired pupils have been addressed and frequently adjusted as knowledge of the effects of the impairment on education has evolved.

3. Importance of higher education for visually impaired

In today's scenario, students with visual impairment who want to succeed in higher education institutions must be able to deal with impairment-related academic difficulties. In this regard, students need to be aware of their disabilities, develop effective coping strategies to manage them, accept the advantages and disadvantages that come with them and be aware of the policies and support that are available.

Students with visual impairment may have some special educational needs that make it harder for them to access educational materials in the same way as their peers. However, this should not be interpreted as implying that individuals with special education needs cannot find alternative means of attaining the same level of education as others, nor should it be construed as implying that disabled individuals with the same type of disability can follow the same learning strategy.

3.1 Potential needs

The needs of international students can be divided into two categories, that is, personal and educational.

3.1.1 Personal needs

When they have 'personal needs', many VI students receive assistance from their home countries' families, friends and relatives. As a result, having a personal support

worker would be unusual in many cultures because receiving this kind of assistance is considered commonplace. However, moving to a new country and taking a lot of classes at the university might mean that the VI student needs help with their personal needs. However, universities are unlikely to be able to assist with this because it does not fall under the category of educational requirements. What personal needs may include: A VI person may require assistance in several areas. This is contingent on each learner's requirements and sight level, which are as follows:

- a. In the place where you live: washing, ironing, filling out paperwork, cleaning, reading letters, cooking, and so on.
- b. Independent living and mobility: Familiarity with the most important areas surrounding the residence; assistance from a walking assistant when going to places like the supermarket, tube station, chemist, bank, post office, park, gym, etc.
- c. Mode of transport: Familiarity with the local taxi and/or public transportation systems.
- d. Medical services: Registering with a local doctor or general practitioner (GP). Accessing information about the National Health Service (NHS) and how the system works.

3.1.2 Educational needs

Universities of college must comply with the equality by treating all students equally, regardless of where they come from. Therefore, universities must make reasonable adjustments to their facilities to meet the requirements of disabled students. Human, practical and logistical categories of facilities exist, and these should be identified during the previously mentioned study needs assessment. The following should be the areas of focus for educational institutions to support the inclusion and equality of visually impaired students:

- a. Familiarity with the routes to and from the university (mobility and orientation training);
- b. Access to library resources;
- c. Access to any course study materials;
- d. Access to a computer and the internet;
- e. Walking assistance for educational-related matters;
- f. Note-taking during lectures;
- g. Assistance with the visual aspects of the study (translating or explaining graphics, charts, images, etc.);
- h. Travel to and from the place of study;

- i. Access to the educational facilities that are accessible to people with disabilities; and
- j. Access arrangements for exams and extensions of deadlines. VI students need to have certain skills to manage the demands of higher education. Some examples include Skills in ICT, time management, organisation and communication, as well as a respectable degree of independence, which are all necessary.

Higher education is necessary for visually impaired students to fully develop their abilities and minimise the effects of their disability. This stands out and challenges the scepticism that some people have about the abilities of people with visual impairments.

4. Status of inclusive education at the higher education level in Pakistan

In Pakistan, inclusive education is still in its early stages, but several institutions are beginning to offer this type of education. The government is also working on developing policies and initiatives to promote inclusive education. While there are challenges that need to be addressed to make inclusive education more widely available, the potential benefits make it worth pursuing.

4.1 Commitment of Pakistan towards inclusive education

Inclusive education (IE) has been appearing as a significant theme in global educational policy, being a central component of the Sustainable Development Goals (SDGs). As a signatory to SDGs 2030, Pakistan has committed to IE since SDG 4 is fundamentally based on inclusionary education principles: 'Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all'. This goal aligns with articles 25 (Equality of all citizens) and 25-A (Right to Education) of the Constitution of Pakistan; Article 25 secures that all citizens are equal while Article 25-A guarantees that all students between the ages of 5–16 years old are provided with their fundamental right to education. The provincial education laws/acts correspond with these constitutional standards throughout all organs of the state. The education acts for Sindh, Punjab, and Khyber Pukhtonkhah Khah (KPK), clearly state that education facilities should not be segregated or denied to any child, and they forbid the exclusion of students from 'disadvantaged' backgrounds.

Along with the Balochistan Education Sector Plan 2013–2018 and the Punjab ECE Policy 2017, inclusive education is partially specified in the draught National Education Policy 2017 (which the current administration has unrestrained and is no longer applicable).

While these documents refer to inclusive education as avoidance of discrimination based on gender, abilities, cultural/ethnic and socio-economic backgrounds, they do not provide details on what the terms 'inclusion' and/or 'inclusive education' mean.

4.1.1 Provincial education

Although inclusive education is mentioned in the provincial education sector plans of Punjab (2013–2017) and Sindh (2014–2018), it is mentioned concerning students with disabilities and a shift from 'special' to inclusive institutes. Despite using the term 'inclusive education', no clear definition has been provided for it in these

documents. Despite this lack of a formal definition, efforts have been undertaken to encourage inclusionary practices in Pakistan's educational institutions. All major political parties have incorporated reference to inclusive education (IE) for persons with disabilities in their electoral manifestos for General Elections 2018. In addition, investments have been made to support special education systems within the country.

4.2 Laws, plans, and policies

The National Education Policy 2017 also highlights the importance of inclusive education and gender equity in education among its goals. In addition to laws on education, there are also specific laws and policies at the national level for different vulnerable groups that promote inclusion.

According to Ref. [12], the Higher Education Commission ("HEC") is dedicated to the goal that no one in Pakistan should be denied access to higher education, which includes making sure that those with disabilities have equal access to and opportunities for higher education. This higher education institution's ("HEIs") policy for students with disabilities strives to:

- Develop an environment that is supportive of inclusive education in colleges and universities.
- Make it easier for students with disabilities to participate in all curricular and co-curricular activities.

5. Key challenges for inclusive education in Pakistan

The National Curriculum from 2006 is still being used in Pakistan despite the 18th Amendment's provincialization of education in that country in 2010. Since this curriculum does not address the requirements of inclusive education, it is not included in the textbooks, learning materials, assessments or monitoring systems. Additionally, untrained staff and inadequate resources are considerable barriers to inclusive education. Although there is evidence of teachers displaying positive attitudes towards inclusivity in classrooms, they still lack training in methods of inclusive pedagogy.

One major obstacle to the inclusion of persons with disabilities (PWDs) in Pakistan is the lack of consistent, reliable and comprehensive data about various vulnerable groups. The 2017 Population Census, which was carried out after 19 years rather than the required decade, provided very insufficient and hurried information on PWDs that was hotly contested.

There are many accessibility challenges for students with vision impairment on university campuses in Pakistan. Due to accessibility barriers in the physical infrastructure, they are having difficulty entering a variety of locations, including libraries, classrooms, the ground and cafeterias. They are unable to view the notice board owing to a vision issue, therefore they are unable to learn about future activities.

They are unable to read the writing on the whiteboard, thus they cannot take adequate notes during class lectures. Handouts from the class are unavailable to them because they are not in an accessible format. Due to the lack of available associated assistive technologies, they are unable to look for relevant study material online to improve their learning capacity. These obstacles and constraints eventually lead these students to restrict their studies to mainly theoretical courses in the

arts. It prevents them from entering the science and technology fields. Additionally, negative attitudes are some of the biggest barriers for visually impaired students in inclusive education at the higher education level. Many people are unprepared to communicate with visually impaired students because of their visual impairment. They believe that blind students cannot function in an inclusive environment at a higher education level because they lack the necessary skills, knowledge, acceptance and capacities.

At the higher education level, the greatest hurdle is the presence of untrained teachers in inclusive settings. Because students with visual impairment differ from other students, untrained teachers do not know how to treat them. There are also different learning styles, which makes it difficult for teachers to adapt lectures to each student's needs because unskilled teachers are unable to comprehend each student's abilities, capabilities and learning styles. However, when given support, visually challenged students may accomplish anything.

5.1 Promising commitment of Pakistan

Pakistan made extremely poor progress towards putting the true principles of inclusive education into practice until the middle of the 1980s. The government started paying close attention to the preparations for the education of the differently abled persons after the UN declared a ten-year special focus on individuals with disabilities in terms of their quality education, inclusion and rehabilitation between 1983 and 1992.

Pakistan has recognised its duty to offer its citizens an inclusive education free from all forms of discrimination as a signatory to all key human rights conventions, accords and treaties as the UNCRPD [13] and the Salamanca Declaration [14]. Despite this declaration and the commitments made in the province's special education programmes in the wake of the 18th amendment to the constitution, the inclusion of visually impaired students in mainstream institutions remains a pipe dream. These pupils are not anticipated to achieve their best in all areas of learning due to the inaccessibility of the study materials and the improper setup of the assistive technology.

6. Higher education and inclusive programme

Because of this disability, visually impaired students rely heavily on the helper's skills. If their writing assistance is slow, they will need to make their description and explanation of their responses shorter. When it comes to conducting needs evaluations for the plans for inclusive programmes for students who are blind or visually impaired, higher education institutions in Pakistan are falling behind. They also lack the strong linkages to other state institutions needed to get policies that are based on reality and implement them fully. On the other hand, there is no solid working connection between the HEC, the ministry of education, and the institutions to execute inclusion by international agreements.

In industrialised countries, the majority of study disciplines have been made accessible for visually impaired students through the use of information and communication technology and other assistive equipment, but Pakistani universities are just starting to set up these resources.

Access to course materials is made difficult for visually impaired students at Pakistani universities by a number of factors [15]. Unfortunately, Pakistani schools for visually impaired students face a number of challenges and cultural barriers [16].

6.1 Accessibility hurdles and subject choice

Hussain et al. [17] reported that 17% of them were studying political science, 8% were studying history, 7% were studying education, 5% were studying psychology, 5% were studying special education, and 5% were studying mathematics. Of those, 19% were studying Urdu literature, 19% were studying English literature, 19% were studying political science, and 8% were studying history. However, due to accessibility issues, none of them was pursuing studies in any natural discipline, including physics, chemistry, biology, computer science or mathematics.

6.2 Accessibility hurdle at campus infrastructure

The obstacles to accessibility: There are no accessible campus buildings, no accessible writing boards, no accessible reading materials, no accessible assistive technology and no accessible science subjects. Visually impaired students frequently mentioned that finding their classroom, library and cafeteria can be challenging. Their teachers usually become enraged when they arrive late for important lectures. In addition, they reported encountering numerous obstacles when searching for their classes on other upper floors. According to the visually impaired students, the university administration did not have a proper method for informing the blind students about any new construction that had begun on the campus. They had to overcome numerous obstacles to access their classrooms and move around the campus as a result of this unplanned activity. In addition, female visually impaired university students found campus accessibility to be a greater obstacle. They face numerous mobility issues on campus as a result of cultural and religious constraints. If a male visually impaired student needs to go somewhere, he can ask anyone who is passing by, but if a female visually impaired student needs to go there, she cannot ask a man for help.

6.3 Notice board accessibility hurdles

Visually impaired students frequently miss events without access to notice boards, and they are unable to take advantage of various opportunities for self-grooming by participating in various competitions like poetry competitions, writing competitions, debates, speeches and other similar events for gaining confidence. The announcements for various events that are regularly placed on the campus notice board are inaccessible to students with visual impairments.

6.4 Writing board accessibility hurdles

The majority of higher education institutions serve students with visual impairments who are unable to independently take notes during lectures in the classroom. They must ask their blind classmates to read aloud what their teacher has written on the board or whiteboard in class. It might be highly embarrassing for them when they annoy their sighted peers by interfering with their note-taking activities. Students with visual impairments feel at ease with teachers who write on the board while speaking. While the majority of visually impaired students normally hesitate, some of them are brave enough to ask their teacher to read what they wrote. Asking the teacher to read aloud what is being written on the whiteboard is necessary. Some teachers only write; sighted pupils can readily see and take notes on the whiteboard when this is the case.

Only a small number of visually challenged students have access to braille literature. Braille textbooks for higher education and screen displays are uncommon in Pakistan's higher education institutions.

6.4.1 Efforts at higher education

Higher education is a social process that involves a lot of interaction and aims to teach specific cognitive skills and provide relevant information. The learner's ability to interact with teachers, other students and higher education institutes administrators, as well as access information, is crucial to its outcome. For visually impaired students, current higher education practices are extremely detrimental on both counts.

Academic library staff struggles to use assistive technologies and tools and provide services to people with visual impairments due in large part to a lack of training. It was discovered that numerous devices have been developed but have not been tested on visually impaired users. Students with visual impairments have difficulty accessing information because it is not available in appropriate formats.

Readers and encoders services pose challenges for visually impaired students due to the reader's inability to read smoothly and clearly. In addition, visually impaired students may not always be able to correctly pronounce unfamiliar terms in readers. Students with print disabilities face major obstacles due to the arrangement of the exam environment and the examiner's inability to manage it. Because there are no public transportation options on campus, these students have trouble getting to and from classes. People with visual impairments primarily use their hands to identify their surroundings and use a cane to touch objects.

Students with visual impairments lacked support from teachers.

Teachers' primary emphasis on support was on receiving sufficient training in teaching, assisting and accommodating students with visual impairments. The classrooms in Pakistan are designed for sighted students, so students with visual impairments are not getting the specialised attention they needed to meet their visual needs.

Toilets, water, sound, ventilation, power, the library, computer rooms and the cafeteria are all very limited in their availability and accessibility. Classrooms are not attractively decorated. As a result, the institute's environmental conditions are not inclusive. Students with disabilities, like visual impairments, were not taken into account when designing the curriculum. As a result, instructional materials that were based on an inclusive curriculum were not prepared for students with visual impairments. Although the majority of teachers claimed to have modified the curriculum, no teachers from either higher education institutes were observed to have modified the curriculum to meet the curricular requirements of their students.

In addition, urban and rural institutes do not fully accommodate students with low vision in terms of social and academic accommodations, resulting in negative social and academic experiences for these students. In institutes, students with low vision are not adequately socially and academically supported, which contributed to their social and academic performance gaps.

6.5 Initiative towards inclusive education

In order to improve pre-service and in-service training, the National Plan of Action on EFA calls for developing teachers' ability for learner-centred pedagogies. Through a needs analysis to identify key development areas, such as management and administration, data collection and the information system, monitoring and

evaluation, assessment and supporting the professional development of teachers, the education for all (EFA) plan of the Government of Baluchistan aims to improve the technical capacity of provincial and district education departments in governance.

Building education departments' capacity to promote inclusive education methods at a higher level was not mentioned. The National Curriculum Framework (NCF) outlines principles for instructional approaches that can meet the various learning requirements of pupils, including those who have impairments. The national curriculum framework includes a section on effective teaching and offers recommendations for various teaching and learning strategies that can better meet the needs of all learners, including those of students with disabilities. The framework articulates nine standards that describe what is expected of instructors. By describing the knowledge, attitudes and practises of instructors supporting the learning of students from varied backgrounds, including those with visual impairment, the standards promote disability-inclusive education.

- Subject-matter expertise: This involves a dedication to 'using multiple techniques to convey knowledge to learners', having high standards for every student, and delivering lessons that are pertinent to the circumstances in which the students find themselves right now.
- Understanding the context and background of students; how students learn as it relates to their developmental stage; knowledge of students' needs regarding their 'learning styles, disabilities and special needs, cultural and socioemotional differences, special medical, physical or emotional challenges', and how to engage and support them through the teaching and learning process; inspiring higher level students to assist.

7. Solution for removing barriers in inclusive setup at higher education level for visually impaired students

For students who are visually impaired, blindness is a challenge. Without any help, they are helpless. They have always needed assistance if there are no accommodations that meet their needs. They are always reliant on someone else. They desire to live freely, yet their impairment prevents them from doing so. We must remove their obstacles in higher education so they can progress further in life. However, for this, a focus on teachers and higher education will be crucial.

If we initially acknowledge the vulnerability of visually impaired students, attitude challenges can be removed. Accept them, and instead of making fun of them, inspire them to take action on their own.

Furthermore, qualified and trained teachers are required for inclusive settings at the higher education level for visually impaired students since they are aware of their requirements and are capable of explaining the lecture to visually impaired students. Teachers with training understand their needs and pedagogy. Training gives teachers the best way to distribute materials. Alternative media, such as audiotapes, Braille prints, electronic text, tactile drawings and aural descriptions, can help students with visual impairment get over these difficulties. Audiobooks can be used by students who have visual impairments to facilitate effective text reading.

Provide visually impaired students with assistive gadgets and technology for their convenience, such as closed circuit TV, screen migration or screen reading software,

to enable them to read and write at a higher academic level than the majority of students.

- Use inclusive technology, such as camera scanners and screen readers, for students who are blind or have other vision impairments.
- Daisy Player, an app for smartphones that performs text detection, OCR and text-to-speech.

The following are some ways to lessen the barrier for blind students in settings that are inclusive at the higher education level:

- Notepads and screens for Braille
- Screen enlargement; graphics and mathematical tools; NVDA and JAWS software
- Text-to-speech devices are electronic devices for reducing obstacles at the higher education level in an inclusive environment using this text-to-speech software, which can assist those who are blind or visually impaired in reading scanned printed material.

8. Future of inclusive set-up at higher education level for visually impaired students in Pakistan

An inclusive setup for visually impaired students in Pakistan seems not to have very bright future as in the last five years there were many policies and laws formed but unfortunately, there is no implication on any of those laws or policies. This is a sensitive part for our youth and the policies made for it should be direct in practice for the future of the state and the youth. However, some institutes are trying to implement the policies in their institution.

According to the national policy document, Pakistan has improved on a number of education-related metrics in recent years. However, there are two major issues with education in Pakistan: access to educational opportunities is still limited at all levels and the quality of education is subpar both in relation to Pakistan's goals and to international benchmarks. Pakistan recognises the equal human rights of people with disabilities as an Islamic country. Islam recognises the significance of people with disabilities and acknowledges their significant role in society's economic, social and national rights. It may be assumed that aspiring instructors from Pakistan have a strong spiritual stance to meet the demands of exceptional students. They act in a more effective manner to push the inclusive education idea into higher education [18].

It is also one of the realities behind this that Pakistan is an underdeveloped country and it works day and night to reach the sky with all other aspects. The time will come when Pakistan will be working hard to improve its education system. Pakistan has initiated the step as the father of nation said 'work, work, and work and we are bound to success'.

Pakistan is using positive and innovative approaches to transition to inclusion. The state has a larger responsibility to promote inclusive education by removing barriers for students with visual impairment at higher education levels.

There are various plans that are having the ideas to build accessible infrastructure: provision free assistive technologies, provision assistive devices and their maintenance and most importantly a friendly environment for learning.

Teachers with adequate professional training and trained supporting staff in the colleges or universities of Pakistan are part of firm future planning for inclusive education at the higher education level. Such initiatives will also be supported by non-governmental organisations (NGOs), governmental organisations or semi-governmental organisations, including autonomous bodies and other departments, that will support such a marvellous system of education to encourage students with visual impairment at higher education levels.

Although policies and laws are already there, the time is to implement them properly and get the appropriate set result, which was planned already while making the legislation.

The need is only to change the mindset and increase the level of awareness about students with visual impairment to make them assets for the nation.

9. Conclusion

There are many obstacles to inclusive education policymaking in Pakistan, such as ambiguous definitions, a lack of systems thinking, a lack of official categories for vulnerable groups, limitations due to cultural and economic factors and a lack of awareness of vulnerable groups. However, many of these issues can be resolved by conducting studies, passing laws and formulating policies. In Pakistan, the conversation about inclusive education is growing, which raises the prospect of future policies that are even more inclusive. However, it is hoped that future is very bright for inclusive education in Pakistan.

10. Recommendations from the chapter

The following points are strongly recommended to improve the inclusive education system in Pakistan for students with visual impairment at higher education levels:

- The entire communication should be managed through E-resources like institutional websites, E-mail services, SMS and audio messaging so that visually impaired students do not miss any important notifications.
- The campus buildings should be made as accessible as possible while keeping in mind the universal design of infrastructure.
- Teachers should receive education and training on how to interact with both sighted and visually impaired students. They should read the entire lecture point once they have finished writing it on the whiteboard in addition to speaking while writing on it.
- A braille embosser should be purchased by each university library service or resource centre in order to close the accessibility gap for reading materials. Additionally, each library should have two braille screen displays that can display

the most characters possible in order to support quick and temporary reading. The doors to the natural sciences will be opened.

- Commonly used assistive technologies, such as reading aids and navigational aids, shall be available in every higher education institution in order to uphold the inclusiveness of visually impaired students.
- The Higher Education Commission (HEC) should step forward to support such projects.
- Institutions of higher education should advance their research in the area of comparative education and investigate the accessibility methods of teaching mathematics and natural science to visually challenged students around the world.

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Conflict of interest

The authors declare no conflict of interest.

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Perspective Chapter: University Entrants' Moral Ethics at Crossroads – Students' Behavioral Management Perspective amid Globalization

Reuben Bihu and Primus Ngeiyamu

Abstract

Students move from one stage to another in moral ethics development through experiential, academic, and planned ethics learning. Nevertheless, as they move to public HLIs, it becomes inevitable to face a dilemma for moral choice because universities operate and function under value-free education policy regardless of the discipline of study. Through the ethnographic review of the literature, the authors have discussed the implications of “moral ethics” on students’ behavior management; the relevance of students’ ethical standards to public university cultures on first-time entrance; students’ response to new public university cultures on retention overtime through “academic freedom;” African students’ appraisal of their initial “moral values” on first-time entrance in public universities; future possibilities to learning with new cultures geared by “globalization” in the African context; and observations for implementations of ethics education and training. Authors recommended that moral and civic education should be included in higher learning curricula and that the faculty be aware that facilitating an environment for students’ development in ethical decisions is part and parcel of teaching and learning. Therefore, professors need to think about how to accommodate a diversity of students’ ethical perspectives to guide the first entrant into university culture.

Keywords: moral ethics, value-free education, ethics, globalization, African context, worldview

1. Introduction

First-time entrance into a public university, particularly in the African context, is here-marked by a change in experiential learning of the university students. People grow in particular moral traditions guided by specific moral principles, beliefs, and values [1]. Such traditions take care of such society members to a given stage of development, which if fully development is realized in higher learning institutions (HLIs).

As students enter universities for the first time, they experience an abrupt change in their ways of communication. Bazerman on ethics notices the need to learn new forms of communication for the purpose of suiting the cultures of speaking to lecturers and peers, and communicating with oneself [2]. Secular education in African public universities is run under value-free HLIs, whereby students may exercise traditions, moral values, and ethical practices of their choices. However, the conflicting traditions, moral values, and ethical standards have been linked to affect students' academic success, life adaptations, and individual worldview. They particularly shape behaviors by affecting learning realized through globalization. Despite the fact that there are heterogeneous curriculum class settings, and trainings are run under common ground of value-free policy in HLIs. Disciplines, such as philosophy, sociology, anthropology, humanities, natural science, engineering, law, and education, therefore, have realized a change of mindsets of the graduates on training. Contrarily to training, learning has been confronted by founded systems of morals and ethics of the students on first-time entry, which university faculties need to handle and nurture. University settings have a role to play in mitigating malfunction in student behavior and facilitating functional individuals, both in academic settings and society at large.

This chapter presents an empirical analysis of the situation of first-time entrant students in a public university campus, their exposure, and response to new university culture, which might contradict their initial moral values and ethical standards. The contradicting values with their local traditions and religious moral foundations guided to theorize on ease of learning and short-term and long-term future impacts on their behaviors mediated through university training in the era of globalization. The chapter, therefore, contains analyses on the relevance of students' moral ethics to the public universities' cultures; students' responses to new cultures in public universities on retention overtime; appraisals of initial moral values and ethics; and future possibilities of ethical standards geared by globalization through university education.

2. Methodology

This literature research used an ethnographic review of scholarly articles published on the themes under study. Documents were retrieved from Google Scholar.¹ The Boolean logic was used to retrieve the documents using phrases containing the keywords, which guided the study. With regard to the keywords, the researchers analyzed six key issues, including (a) implications of “moral ethics” on students' behavior management; (b) relevance of students' “ethical standards” to public university cultures on first-time entrance; (c) students' response to new public university cultures on retention overtime through “academic freedom”; (d) African students' appraisal of their initial “moral values” on first time entrance in public universities; (e) future possibilities to learning with new cultures geared by “globalization” in African context; and (f) observations for implementations of ethics education and training. Document navigation was assisted by Zotero² software over a period of 2 months, and thematic coding was assisted by MAXQDA 2022³ software. Some documents were used in more than one theme. The themes analyzed were interpreted and discussed. Some recommendations emerged from the discussion.

¹ Document search engine

² A software for reference management

³ Maximum qualitative data analysis software, which is used documentary thematic coding and analysis

3. Results and discussion

Document search using Google Scholar provided documents for this analysis. The phrases were constructed based on the research questions and keywords and treated according to the Boolean logic generated number of documents as summarized in **Table 1**.

3.1 Implications of moral ethics on students' behavior management

Moral ethics is an important issue that has driven the public concern of religious, educational, social organizations, and enterprises, and offices on the question of the standards of humanity, human interactions, and work performance. The ideals of ethical and moral man have brought many debates into the academic disciplines, public offices, and society, in general. However, the essential thinking, in a nutshell, is that every human being must demonstrate moral ethics complying with the expectations of the respective place, organization, community, profession, or society at large.

Search Engine	Theme	Searched/ logic	Results	Discarded	Used
Google Scholar	Implications of "moral ethics" on students' behavior management.	Implications "moral ethics" students' behavior management pdf journal.	118,000	112,000	09
	African students' appraisal of their initial "moral values" on first-time entrance in public universities.	African students' appraisal of their initial "moral values" first-time entrance public universities pdf journal.	237,000	228,000	07
	Relevance of students' "ethical standards" to public university cultures on first-time entrance.	Relevance students' "ethical standards" public university cultures first-time entrance pdf journal.	234,000	130	04
	Students' response to new public university cultures on retention overtime through "academic freedom."	Students' response new public university cultures retention overtime through "academic freedom" pdf journal.	214,000	208,000	08
	Future possibilities to learning with new cultures geared by "globalization" in African context.	Future possibilities learning new cultures geared "globalization" in African context pdf journal.	231,000	221,000	09
	Observations for implementations of "ethics" education and training.	Observations implementations "ethics" education training pdf journal.	68,700	68,695	05

Table 1.
Number of documents retrieved and used for the review under the Boolean logic.

This ethical position poses the moral spheres as the focal point of the debate with questions about the moral itself, right, good, and duty [3]. The existence of the questions on what should apply as the universal ethical and moral principles, and given premises signifies a crucial case for discussion. According to Jacoby, such a debate has suited the analytical qualities around social and individual perspectives, moral principles, ethical reasoning, moral content and form, and moral action [3].

Ethics has a wide definition. Pinchera [4] and Rich [5], in their writing, referred to ethics as a set of principles accepted by a culture in terms of morals referring to specific beliefs and behaviors and how to manage them through practicing ethics. Morality is basically determined individually as it applies to oneself as being right or wrong through a systematic ethical analysis, then interpreted, judged, and applied to others. However, Pinchera reminds us that the individual is a subjective level of moral implications, which considers cultural values and norms, personal interpretation and logic, and an emotional state at the time of incidence [4]. When students make first-time moral encounters, they may establish logic based on the individualized reason of the recurring circumstances [5]. Contrarily, ethics can be based merely on personal opinions. There is always no clarity in ethical directives, which may make people, particularly students, to disagree about what is right and wrong. People consider something ethical only if it is of good value in their lives. Junaid and colleagues analyzed how ethical were the standards of engineering accredited programs and suggested more studies to come up with a global working definition, which encompasses a global definition, broader ethics, and its application [6]. They took the sample from the United Kingdom, Switzerland, Ireland, and France. They identified concepts, keywords, and terminologies from the textbooks used to teach ethics as they refer to ethics. They found out that researchers have used words, such as values, professionalism, charters, standard codes, limits, normative, moral choice in dilemma, right decision, ethical deliberations, whistleblowing, policies, multiethnic considerations, trustfulness, trustworthiness, reliability, and social equity, at the global level. Junaid et al. became aware that some of the concepts, such as responsibility, may be too general to comprehend and may need interpretation [6]. Junaid et al.'s study focused on using verbs as a concept of ethics by concentrating on what one does rather than on what one is; because their field of study was ethics in engineering programs [6].

Students in public universities in SSA, for instance, may individually seek to accomplish their own potential by considering, recognizing, and contributing to the ethical fulfillment of others as an integral part of their own ethical fulfillment [3]. Attaining goals directed to processes in establishing such potentials is accompanied by a sense of the need for social cohesion demanding immersion into common values and practices as social beings. An individual being is encompassed by systems of moral ethics under a multicultural mix of ethical enrolled students, who must be directed to abide by bylaws and work together in value-free HLI. In this context, a morally educated person is processed to be the output of the expectations of the university curriculum. Moral development; therefore, becomes a self-guided process in which students have to learn direction or strengthen the previously founded behaviors. One should come to learn that students may do what people perceive as right or wrong with regard to the social focus of origination of the founded behavior, which might be difficult to apply in future. Under such circumstances, exposure to a new culture if not well defined according to the mix of cultural differences, individuals may dictate the student to a different character, seemingly good or bad, depending on the cohort and collegial caliber. Though Jacoby presents the implications of the individual character's particularity as contrasted to the general culture as explained

by Arthur, who provides the reasons, restraints, and incentives for conducting life, there remains the question of merging the particularity with the general exhibitions without affecting the morals of one's founded exhibitions [3]. Even though the aim of this paper is not to deal with one particular aspect of ethics in academia, in the current aspect some scholars have discussed specific areas of ethics in academics and revealed the reality of the need for the continuation of diversified studies in global ethics. For instance, Kim and Uysal found that the issues of plagiarism of text among international students were influenced by their ethical judgment and cultural backgrounds [7]. In a similar case, Wilson et al. concluded the discussion on the issue of equity in social welfare policy from the lesson during the Covid-19 pandemic that it was crucial for course instructors to revisit the concept of culture and multiculturalism for ethics in education [8].

Nevertheless, for the students traveling across provinces within countries, there are phenomena affecting their thinking to micro-changes in character, particularly of the youth cohort. On the micro-ethics level, Spiel et al. [9] defined ethics as moral philosophy, concerned with the study of what constitutes a good life and, consequently, how we should live. Allied ethics look into how we can think ethically about specific issues as students move in pursuit of education across the nations, for example, as they encounter changes that demonstrate the power of learning and living new ways. Similarly, the gears of globalization with learned students have imposed many challenges to the maintenance of the traditional values and beliefs in African universities, where Western and European cultures can be learned and practiced well in almost all spheres of life because of increased inventions of information channels, such as internet, radio, social media, and mobile phone [10]. Implicitly, globalization has been noted as the agent of macro-changes in African cultures and mediated through such as media and higher education. The question of what is the right character to practice in a mix of cultural standards have been reserved in scholarly works. Jacoby argues on the objective and subjective aspects of culture [3]. According to that analysis, aspects of culture may impose students into "cultural syndromes"⁴ of complexity, individualism, collectivism, and tightness. It becomes entirely difficult for the post-HLIs candidate to demonstrate characters that can be accepted as universal logic. Cross contended that the roles, norms, and values do not determine social actions but the reciprocal relations which students may negotiate and construct to live social reality which must conceal individual identities such that they can no longer be defined by such social systems of norms [11]. There are peculiarities manifesting through levels of conscience for humanism and formal ethical protocols among native cultures, which candidates in HLIs cannot exhibit in preciseness or may show total change. Consequently, they may be perceived as lacking fundamental human values, such as respect, self-discipline, and humanity, in particular, circumstances for self and others [12].

3.2 Relevance of students' ethical standards to public university cultures on first-time entrance

The HLIs stipulate their cultures in chapters in which students become followers. Such cultures are formalized to assist the university to achieve the goals of education which their attainment processes bring together students and resources to learning activities. Students may enter the HLIs without questioning their ethical and moral

⁴ A pattern of beliefs, attitudes, self-definition, norms, and values organized around a theme that can be identified in a society [3]

foundations, and with little experience of other contravening ethical and moral backgrounds. This reality was revealed and described by Colby's writing on "whose values anyway" [13], explaining the experiences of students at Messiah College⁵. Accordingly, Christian students were exposed to a secular education system similar to public institutions operating in value-free academic freedom with regard to their previously founded dos and do nots. The Christian faith was thus imposed to relative standards on the basis of various denominations, among others Roman Catholic, Protestants, Lutheran, Anglican, Pentecostal, and Charismatic grounds operating in a circular education system. This, in particular, formed a true representation of the context facing first entrants in HLIs, whose ethical standards may not necessarily comply with new experiences. Each student's worldview; however, brings a student into HLIs with internalized values that affect how a student confronts value-free academic freedom in HLIs. A student's worldview facilitates the education goals attainment process for the controls and choices that a student makes in ethical dilemmas. As Hirsto analyzed the aspects of student's worldview among Finish university students, worldview is normally integrated with a student's background regarding the history of that society, political, social, economic factors, human relations, and student's religious affiliations or beliefs [14]. Moreover, in confronting an ethical dilemma, worldview is important for preserving students' well-being because it strongly affects students' choices, goals, and their certainty in careers [14]. This lesson from a finish education system, where theology is considered as one of the core courses, revealed how students with religious background were more certain in ethics and life goals. Where the faculty created a tolerant environment for minority groups, students did not experience microaggressions except female students, who were disturbed by the class discussion on women ordination. In the era of globalization, students tend to learn a lot of things through different media, including broadcasting channels and internet, which sharpen their individualized values and beliefs. Early formal training adds to the compounded effects on moral development with firmly held theoretical bases they have acquired since high school education, such as Darwinism (evolution of man), Weberian (political), Marxism (economic), and Michael's social dominations doctrines, against the originally founded ethical bases [15].

It is logical to think, for example, the training given prior to university education that associates man with other animals must have an effect on the moral implications of man on viewing man as opposed to other objects and animals. The use of scientific logic as opposed to supernaturalism in solving problems emerged in the post-modernism period between seventeenth and eighteenth centuries, which was characterized by the prevalence of science, regarded as the age of reason because science represented something absolute, certain, and genuine. The scientific culture evolved prioritizing research of concrete things and strictly organized, and well-managed methods of enquiry to gain people's trust and put forth objectively driven values and rationalism as absolute values [16]. It is through such practices that collection of evidence could found doctrines on the fit and non-fit animals, including members of the human species, thinking of competitiveness to resources, and survival of the fittest. Weighing through the contravening implications of natural indifference, and fit and non-fit theories would lead to the assumptions on negative influences of formal education, particularly in HLIs on the development of moral ethics traditionally founded in the SSA cultures. It is however not clear as to how the doctrines on competition for survival and the concept of the unfit may leave a gap in training leading to

⁵ Strongly Christian college of the brethren in Christ Church

the public resources grabbed by the trusted elites from the HLIs processes, bearing in mind that uneducated ones rarely access national treasuries management and related bursary channels. The existence of misconducts, such as corruption cases and other malpractices, in the hands of post-HLI candidates, as described in one of the subsequent subsections; however, it implies that the conscience for humanism and formal protocols are less products of the exhibited and nurtured outcome of the value-free education in HLIs. The problem of the elite syndrome motivated Julius Nyerere, the first president of Tanzania, to urge African leaders to rethink the aims of education in the postcolonial era. Nyerere argued that national education after independence remained under the colonial influence, in regard to the kind of graduates it produced [17]. That education did not transmit values. Instead, it inculcated in the elite's mind obsession and passion for individual material wealth and domination of the weak, the elite being the stronger, particularly in the economic aspects as criteria for social merit and worth. Graduates tended to lack humility and a sense of appreciation for what normal citizens had sacrificed for them to get educated. Therefore, public universities need to figure out how to socialize first entrants into the university toward ethical preparedness before they graduate.

In the same way, utilizing man as the instrument of achieving political objectives has always downgraded civilians in most SSA countries where postsecondary education may leave a vacuum contributing to firm ground for such practices. In fact, political, economic, and social dominations imposed by the educated elites are subjects to test against the ethical procedures in most SSA countries, where HLIs products are claimed to have acquired hybrids of morals to favor unethical living, including the escalating problem of grand corruption. What cure does the HLIs in SSA countries have to offer in training? As argued previously on cultural syndromes, it would be challenging to offer singly a cure on a case that contravenes with people in a mix of cultures. In the case of relationship and courtship matters in one nomadic culture in SSA countries, for example, seducing a girl to an agreement would seem to be a weak husband, as man must show virility power to acquire wives. Subjecting this behavior to legal ethics derived from standardized thinking based on human rights would mean that the respective student has to learn issues that must be advocated to the domicile communities. However, someone must think about how powerfully held is something taught and practiced from childhood, especially talking about matters related to owning wealth, dominating socially, financially, and politically from which the rules to achieve may be relatively derived. The convergence of the arguments would be on the need that students must be taught good moral and ethical conduct at all levels, including HLIs.

3.3 Response to new public university cultures on students' retention through academic freedom

Continuing students in HLIs represent group of students affirming the characters and behaviors named in a given university. They form a part of the university culture, which can be demonstrated in various arenas of *universitas magistrorum et scholarium*⁶. It is ideal to think that a student has responded and complied with what has been resolved as the right course of action concerning the behaviors and characterization. Students pass through conflicting processes to reach a consensus about what is right and wrong. For example, in religious HLIs the faculty mentoring the “students

⁶ Community of scholars and their masters

to explore the relationship between reason and faith try to shake the students up, encourage them to think for themselves, and push them out of their comfort zone” [13]. In the same way, instructors and mentors in psychology and philosophy, in particular, become the real agents of change in the emotional intelligence of the students in public HLIs in which the moderation is depending on individual virtues and social circumstances the students are playing around with. Such changes however are marked by controversial thinking and actions relative to initial beliefs and values. The quality of the change is influenced by the type and nature of the society in question, in this case, multiple interacting cultural grounds to hybridize. Giannou explains such changes in ancient Greece that justice, courage, moderation, and wisdom were the central aspects of a virtuous person, according to Socrates and Plato, and Aristotle held that a lack of virtues was a lack of happiness—the absolute evil [16]. This would mean that the students should focus on the course of action, which must cause or multiply the effect of happiness.

According to Aristotle, there is nothing good in its own right but everything is good in relation to something else such that wisdom and knowledge of something could be used both for good and bad purposes—the ends could justify the means. Implicitly, someone could regard the usefulness of a particular logic and action of the cultural syndrome based on the effect—whether it would result in happiness or guilty. The emphasis can be made that virtues could be reached only if students choose the right means, and if the choice of means is within their power [16]. One should have the right desire to do the right thing and in the right degree and should act promptly in that way. There are different perspectives concerning the powerful will of man to do the right thing. In Christian philosophy, for example, one ethical influence is that human willpower exceeds human logic.

Another influence is that the human mind is incapable of solving its own big problems of human ethical life but rather, God’s authority is needed to guide humans to resolve such problems [16]. This is contravened by scientific logic and thinking by scientists, such as Einstein, on the other hand, posing that the human brain is so great that it can conquer even elements of nature. However, we hereby put forth that humans have a perfect will and ability to do good deeds, and the capacity to choose to do good or to be good. Though being good or bad seems to be rhetorical, it can be comprehended by a rational being in a given context. Informed students can develop a sense of moral obligations to do the right things, do things right, and be good. Immanuel Kant established a dual principle, the categorical imperative, which can explain indicators of ethical human activity; that always act so as to treat humanity whether in your own person or in that of others as an end and not as a means and act only on that maxim that you can make a universal law [16]. With the explanatory framework of the implications, Kant emphasized the autonomy and freedom to choose and act in a manner that can apply good to everybody. It is with such theoretical arguments that students should develop a positive will to treat humanity, and act in ways that can apply in almost all situations universally. However, it seems that the reality of the conflicting values and beliefs in multicultural contexts is being ignored in this case. Can universities establish common standards upon which all cultures can comply and students depend on? The whole situation would be resolved legally to set the conditions of legal justice and injustices, which may not necessarily reflect the requirements of social justice for all students. The general situation would be the creation of the HLIs’ environment with students challenged with the question of how to adjust to suit the education systems in such institutions.

In fact, Girmay has identified primary barriers to students’ adjustments in HLIs to include cultural, social, and academic exposures [18]. Cultural exposure imposes

barriers to students based on religion, orientation, and collective cultural issues. Within HLIs, students engage in networks of social interactions with diverse groups, including culturally similar and different peers, students' organizations, and associations. With social barriers, students may face problems of isolation, microaggressions, misperceptions, and prejudice [14, 18]. Some behavioral demonstrations and characterizations exposing students to stigma and neglect may lead the victims to withdrawal consequences from social engagements, a situation related to failure to adapt to the cultural ingredients of mixed sociocultural groups. The question of "whose values anyway" is the best to adapt and adopt remains paramount [13], which the legal prohibitions have inclined on resolving for a long time. Students become witnesses of acceptance and rejection of values and standards derived from interactions across cultures. The academic barriers include rigor, language, and structure used in academic communication [18]. Like the case that has been presented in universities in Russia, foreign students are influenced by subjective and objective factors to adapt to HLIs, in a process of mastering new cultural contexts and values of the new sociocultural environment [19].

However, the degrees with which students from historically disadvantaged social groups interact with their counterparts go on insufficiency below expectations as they exhibit less affiliation to the university cultures [11]. Despite their globalization desire to access better education, there are factors that alienate international students. Such students may be under social, cultural, and economic dominations imposing on them a situation of reduced efficacy to engagements which the emancipation processes may take long to post-training period in their future [20]. To resolve such challenges, deliberate initiatives are to be instituted in HLIs to recognize the need to develop such disadvantaged groups holistically in inclusive interactive approaches. The recommendation to mitigate such barriers is to have effective intercultural adaptation and management beyond interpersonal communications, where a college as an organism is vigorously working together to realize the process of an intercultural management system [20]. Cross also identified a triangular system linking lecturers, students, and institutions in resolving the relative values and ethical standards in conflicts in order to nurture the students' potentials [11]. Accordingly, the actor, in this case, the student, should be brought into the system and the system unto the actor according to a process of interiorization of norms and values by the individuals. This thinking recognizes students as the central agents of change, and the HLIs as a source of capacity to offer adequate remedies to the students. In fact, students prefer guidance through adjustment difficulties and social counseling to wage positive improvements and achieve total change [21]. Nonetheless, one would comment that the mechanisms through which the students respond to the experiential changes in cultures in the HLIs vary depending on the nature of students and the institutional capacity.

3.4 African students' appraisal of their initial moral values on first-time entrance in public universities

The HLIs are populated with students from various cultural origins. Higher education, therefore, enrolls larger segments of populations with complex interactions of ethical and moral values. In literature, demographic diversity is considered prestige and strength of any university according to Ford and Patterson [22]. Yet, universities have not taken considerable time to resolve the encounters first entrants face that impact their values. In fact, Ford and Patterson on ethnographic diversity found that universities with the lowest rates of ethno-racial diversity were more likely to engage in practices that enhance the appearance of diversity than universities with the

highest levels of student diversity. In this regard, an individual student is confronted by a situation of how to moderate and stabilize with appropriate disposition on the change, while retaining viable core principles of the previously founded ethical and moral standards. It is logical to think that while students should adapt to positive changes, they should retain the socially and culturally viable attributes with regard to the future requirements of the qualities of graduates suited to formal work. Without being naïve, one should recognize that while holding the formal values and beliefs as the secular curriculum ingredients, some local values, beliefs, and attributes that most of the university elites would call the indigenous identities would be essentially beneficial in holding and maintaining public office ethics deemed good. As the enrolled candidates include a mix of full-time students and others who work part-time, as well as other cohorts and calibers, such as married, parents, who seek sexual relationships, business people, priests and members of different religious affiliations, and politicians [13], moral ethics can be standardized on codes and bylaws, and the formulation should consider the cultural ingredients of the concerned students.

The student governing bodies in universities are primarily concerned with keeping students in compliance with the HLI's goals of learning. As highlighted in preceding sections, public universities operate in value-free education settings, where the faculty could not impose a particular culture on a student, but rather a student should develop the full identity and capacity to choose to do what is right. In practice, cultural interactions which Colby warns the curriculum design should take note of; face conflicts of compliance with the question of what is right way to do and wrong [13].

This question, what is right and what is wrong is still the widest ethical debate, which writers consider an ethical dilemma. An ethical dilemma is contrasted with an ethical issue and problem by Giannou for the sake of the current discussion [16]. Accordingly, an ethical issue would be a situational controversy on what individuals can do with regard to legal or technical perspectives, and what ought to be done from an ethical perspective. This is a total conflict between the legalities, bylaws, and technicalities with what can be ethically and socially justified by the HLI's members. The difference with ethical problems confines to the practices, where someone knows what they ought to do but their moral decisions become difficult to apply. Ethical dilemmas in HLIs occur where choices between two equally unwelcome alternatives relating to students' welfare make encounters, which may involve conflicts of moral principles the choice of which must affect one part between the alternatives to some degree.

Implicitly, students may be confronted by ethical dilemmas, where the choices of the right course of action are to be executed amidst the moral and ethical beliefs at crossroads. In a real sense, they should first undergo standardization of expectations of their ethical conduct, which can principally be subjective or relative. Ethical subjectivism manifests with individual students creating their own morality firmly holding that there are no objective moral truths, that is, appraising only individual opinions [5]. This perspective would have resulted in conflicting moral practices, particularly with students of strongly held religious and denominational affiliations in HLIs. The conflicts of interest at individual and community levels would base on the issue of whether the change influenced someone, or should they influence the change. The consequential experiences can be waived by reliance on guidelines and bylaws. However, the institutional guidelines and bylaws help to resolve such problems partly. It is regarded that moral evaluation should be rooted in experience, beliefs, and behaviors portraying a stipulated institutional culture with regard to the fact that what is wrong in one individual culture may be right in another, in the so-called cultural relativism [5]. The question of how should such guidelines include

the individual cultural ingredients satisfactorily into their framework remains unresolved. However, the basic plan of such guidelines and bylaws should focus on the goals of the education curriculum and the national philosophy of education. Some scholars such as Colby have thought about the possibility of the HLIs affecting the moral understanding and behaviors of the students [13]. Accordingly, they may affect students' moral appraisals by empowering them to face highly challenging moral dilemmas, intellectually serious way of moral issues that arise in academic disciplines, participate in service to the community, and reflect on what is learned in the process, adhere to high ethical standards regarding academic integrity, and other issues of honesty and mutual respect.

It is ideal to state that students in HLIs are exposed to moral processes, which demand them to accommodate by classifying, merging, and disorienting moral and ethical issues. Such processes should consider students' social, religious, and personal perspectives, mediating the achievements of educational goals stipulated in the university guidelines, curriculum, and backed up by students' bylaws. To bring about such achievements, the campus-created cultures may need to provide active roles to the faculty to exercise observer and critical position on students' behaviors [13]. Such roles focused on cultivating self-determination within and outside university campuses, and should empower students' personal development on one hand and dual relationships on the other hand. With self-determination, students should respect and promote others' rights to make their own choices and decisions, irrespective of their values provided this does not threaten the rights and legitimate interests of others [16]. This stance puts exceptions on self-determination and the freedom of one's choice when another's right to well-being is at stake. Implicitly, the subjective moral experiences of individual students should not victimize the rights of others complying with the guidelines and bylaws. In fact, Giannou presents dual relationships that it should offer protection against the damage done within the social systems, particularly on personal and social life of others, promoting dependence, reversing roles, mutual acquaintances, and joint affiliations and memberships [16]. It seems to be a logical presentation as students immerse in populations that they have to adapt, associate with, and accredit the values and beliefs at individual and group levels.

Appraising individual morals amid ethical dilemmas would therefore require attention to accommodate others from multiple perspectives. Though the compliance may not be ethically conclusive, it would at least set conditions for coordinated work to achieve the goals of education. Some ethical questions, such as questions on racial and gender equality [11], and sexual discrimination and prohibitions rooted in cultural beliefs and cemented by laws [23] among others, would be resolved with regard to the rationalized values. The problem with globalization is the channeling of influential cultural perspectives, which must be applied by others in response to the demands of human rights activists, legal workers, and advocates of equity and inclusion against public sentiments withholding what is right in traditional opinions. The HLIs are agents of cultural change, especially in the developing world where economic development needs to influence cultural change in the direction determined by foreign interventions. Some changes seem to be viable and inevitable, such as actions to equate and equalize gender roles and economic freedom, but those that seem threatening to indigenous cultures, such as sexual orientations and racial prioritization, have received opposition and prohibitions in SSA countries. Cross presents that some HLIs have run under the existence of unethical conduct, while pretending to neutralize and fight them, while Msuya warns that the female gender is highly affected negatively in such circumstances [11, 23].

It is, therefore, imperative to conclude on the notion by Rich that individuals may allow their emotions to overtake good reasoning, with social initiatives destructing good foundations for ethical decisions through social emancipations praxis [5]. While some cultural values to be held by students may be good to keep life in order, real emancipations may sway away from valued ethical principles in cultural heritage to hybridize them based on new thinking. In that case, there would be both positive and negative consequences. The positive consequences would be justifiably noted on the relieved sides of the ethical dilemmas. However, it has been noted that hybridizing cultures may impose seriously negative consequences on the means of association among groups in HLIs, and conspicuous distinctions from the general public. It is sound to argue that moral and ethical assessments and choices of practices should make a balance of emotion and reason [5]. Every movement to effect cultural change should base on the genuine cause of reason acceptable for ethics and morality among persons, and basically with the universal golden rule profound in the world religions: Doing unto others that which you think is good if done to you [12]. This thinking calls for the evaluation of daily life practices for improvements that must stress on human dignity; the core principles of good living, which maintain viable human species in safe and secure perpetuation.

3.5 Future possibilities through learning with new values and standards geared by globalization in African context

The most important component of the curriculum of instruction and philosophy of education statements should be the direction of the nation to be cultivated by education itself. As a learning social caste, the students in HLIs can form a component of the wider social system imposing steep change on the national culture development realized through educational institutions. Though this needs its own space in education discussion and research, learning from universities, such as the Portland State University, good faculty interventional programs are inevitable to protect national identity through regular talks to ensure all voices are heard in discussions of moral, political, and policy issues, aiming at maintaining what can be valued and keeping the wrong away [13]. As argued previously by Colby that students' choices might be inconclusive and unripe, and there should be ethical guidelines to provide the directions, which must be protected for the right future [13]. As rational beings, students have the ability to create universal laws and follow them [16]. It implies that any gap left would result in the course of actions that might distort the meaning of the valued education and its products—in the case of confusion on what social educational outcome should the processes provide.

Vividly, scholarly works by Mohlake on unattended social responsibility [12], Kumasey and Laba on ethical malpractices [24, 25], and Cross on cultural mutations [11] are true indications of the failures of education systems in SSA countries to provide quality products on moral and ethical perspectives. Mohlake notices faulty training in education systems, which has produced graduates lacking core values enshrined in our valuable cultures. Researchers have exposed issues, such as reported rampant cheating in exams, where students' motive is not to master their course and get skills for future work but to get certificates [26, 27]. This is a warning that the education systems in SSA countries need to curb the implications rooted in academic malpractices for curricula contents in HLIs. Should HLIs standardize students' moral and ethical principles to suit the requirements for future African livelihood or live the issue hanging. The authors of this chapter propose that more discussion is needed on

this matter. Nevertheless, the first entrants are the best to start with because are still malleable. An observation from Jansen was presented by Mohlake to be noted that:

...we are breeding a new generation of youthful South Africans who are learning early to be angry, deadly angry, without adult intervention and without political or pedagogical correction...we fail to ...educate youth minds broadly in ethics, values, reasoning, appreciation, problem-solving, argumentation and logic [12]

This presentation on South Africa captures several cases happening as failure of the education systems to prepare the students for moral and ethical qualities required to compete in the labor markets and societies, in general. It is a true indication that HLIs lack the completeness of expected ingredients to be imparted to graduates morally, ethically, and academically. It could be the case that much emphasis is made on academic content than social interaction competencies bestowed in cultural endowments to humanity. Non-stressed moral and ethical guidance might impose the wrong formulation of universal laws and logic, as the case may be in this regard. Similarly, Kumasey's work on ethics and values in Ghana notices frequent occurrences of unethical behaviors, such as fraud and abuse of resources, moonlighting, falsifying records, waste and misuse of official time, apathy, sexual harassment, payroll irregularities (ghost names in payrolls), and cash and procurement irregularities as the pitfalls of trained workers in public offices [24]. The demonstration of such cases puts in question the position of installments of the moral and ethical principles and guidelines through education channels strengthened by the HLIs. A simple logic would be held that traditional moral and ethical values would be sufficient to empower working free from such incidences but are not being emphasized, and academic training demonstrates good quality performance.

The presentation by Laba shows that identified malpractices in past and present in the HLIs, particularly in the admission of students, plagiarism, and dishonesty in writing exams go beyond the academic life to graduates' malfunctions in future society [25]. One would suppose that the doctor is too sick to treat the patients. Implicitly, the machineries are not well set to impose required ethical principles and moral guidelines on students. Laba further cautions that the present state of higher education in Africa, and the shift in fiscal priorities in the context of the government having the monopoly on higher education is disastrous [25]. Many countries in SSA have the government either owning or dictating the operations in HLIs. With exceptions of the religiously founded government regimes, the governance of the institutions would be justified through legal justices that do not necessarily satisfy the social expectations of cultural prioritization on one hand. On the other hand, secular education in public HLIs operating under value-free processes may impose students to serious inadequacy of moral and ethical development. With globalization forces operating in ethical processes, hybrid institutional cultures may lead to lethal cultural mutations [11]. This is particularly important to observe when the processes of the whole institutional culture are affected by the changes in the student's body or organs. It is worth to note that non-managed moral and ethical development of youth students in HLIs may lead to future evolution of hybrid moral values and ethical standards, which the desirability may not be guaranteed. One would therefore speculate on the possibility of future extinction of initial moral and ethical principles, the fact which was however not the focus of the current discussion.

Notwithstanding, based on the utilitarian approach moral actions are determined as good or bad by learning from the consequences [16]. What is it that is good or bad

consequences? According to classical utilitarians, the ultimate good is something that most people will desire that which gives happiness or pleasure. This would imply that the nations would move in blind ethical directions left in hands of the students in HLIs driven by globalization forces. In that case; therefore, a call for moral and civic responsibility inclusion into the higher education curriculum statement has been made [3, 13]. The assumption is that when the development of the student's moral and civic responsibility is the goal of the institution, then the idea of value-free education is a dead end in itself. This means there should be efforts to refocus students' achievement goals to morality, character, patriotism, and social justice across ideological lines and open communication. Students should clearly stipulate what they should live with protection from indoctrination in future life. Such curricular inclusion should emphasize on critical thinking and open-mindedness with an interest to pursue ideas, and backing up their claims while expecting others to do the same. Of course, being knowledgeable and having a perfect will to do the right things and do things right should enable them to think independently, hold their positions, and ensure commitments to moral and ethical principles.

It could be argued based on the observations that moral education was highly required in university training. There should be a given set of morals and civic engagements, which students should learn in order to comply with a society in which they are going to live and work. It is critical to state that individualized moral standards are subject to changes with time and space over the preexisting ethos. For example, Colby presents that a woman who self-described as racist into her thirties, became a leader in the black civil rights movement in her late thirties and early forties through a series of transformative experiences over several years and that an immoral financially successful businessman became a tireless advocate for poor in his middle age, in Roanoke Valley of Virginia [13]. The thinking that moral education should be imparted in higher learning curriculum is of utmost importance though highly challenged by the contexts in which should be, given the varied opinions and cultures of the institution members [13]. It implies that the existence of different culturally derived HLIs' members does not disapprove the formulation of moral education training in HLIs. Well-researched moral standards can be imparted and practiced by the institutional members and can be taken by the students, which should suit and positively improve livelihood in their domiciles. In particular, the moral standards for respect, roles, and duty are important ingredients of students' preparedness to take charge of responsibilities in family, community, and society. As much as ethics and norms would depend on what someone has to offer, this contention would be right if learning new things would be related to learning new ethics and morals, which is the absolute confusing reality in HLIs. On the other hand, open admissions would not restrict institutions to bring in singly culturally confined students. This would imply that; technical interventions were required to create training in the curriculum of HLIs, which would standardize the morals, which students have to rely on for their livelihood.

3.6 Observations for implementations of ethics education and training

Implementation of moral and civic education in HLIs is challenged in public HLIs with the emphasis on value-free education curriculum. In fact, moral and civic education in HLIs is challenged on two major issues. First, it is thought that college time is too late to offer moral and civic education [13]. Such thinking is based on the argument that college students are more likely to be regarded as adults given the current times of globalization forces. However, Colby considers it wrong to think that offering moral

and civic education to students in HLLs is too late [13]. Of course, one should agree that there have been noted changes in the perception of adulthood attainment in the post-early to mid-twentieth century. For example, Colby notices that higher learning institutions in the United States operated in loco parentis, at least until the early 1970s [13]. The faculty assumed the roles of the parents to help students manage time, and observe the rules on behavioral issues—to ensure that students observed behaviors and comply with social and moral norms. Presently, students have demanded to be treated with adulthood identities due to changes in global forces geared by politics and legalities through globalization—which the assumption is not correct with regard to Colby [13]. Consequently, the rules for freedom of choice in the case of children, youth, and adults have exacerbated the problem of mismanagement of ethics and morals demonstrated by the youth in value-free HLLs. This situation is a product of global movement assisted by globalization forces, and the education curriculum itself. For instance, universal codes on human rights, freedom of expression, and decision-making have left parents detached from their students in HLLs regardless of the student's age. Most of the universities, therefore, including some in SSA countries have instituted the offices of the Dean of Students to do the counseling roles—providing the student's with arrays of options to choose on the case of decision-making. The modern university education; however, put forward the facilitation of autonomy in college students rather than imposing moral choice on an individual [28, 29]. According to the sustainable development goals (SDGs) [30], tertiary colleges and universities are in-charge, move beyond the long history, and assume the role of creating knowledge or carrying out research and engagement in the development [28], which can only flourish in free and autonomous learning environment. However, it has been reserved on the basis of the distinction of counseling from real guidance that the former takes away the parenting roles on the basis of professionally supporting the students to choose what is right from wrong. Students in this case reserve the right to choose the course of actions they presume to be right, in order to provide pleasurable circumstances.

Accordingly, for the ages 18 to 22, which most of the undergraduate students may possess and which all of the major developmental theorists refer to represent the transition to adulthood, encompass the range associated with great moral and ideological exploration, ferment, and consolidation, as could be expressed that:

At this time in their lives, young people are questioning their epistemological, moral, political, and religious assumptions, making critical career and other life choices, and rethinking their sense of who they are, which is important to them. There could hardly be a time riper for moral growth [13].

The assertion above is of utmost importance for considering the freedom of the youth to choose the moral standards to live. It seems that there is a high possibility of such students being confronted by challenges to take the right path, hardly exercising the expectations of societies in their future. The reason here is that they have to learn new things, which might not be related to what they have to live. Choosing from an array of alternatives is highly challenging even for early and middle adults. This has led to the conclusion based on the most sophisticated level of moral thinking by Kohlberg, that post-conventional moral judgment does not occur until early adulthood and continues to increase at least until the end of formal education, and beyond for those participating in activities that challenge their moral thinking [13]. As a mechanism to establish a common national culture, the moral and civic education should be instilled even at the lower grades of learning. Some countries, such as

Japan, had implemented such education and abolished it in lower grades of elementary schools with a belief that children could not comprehend it and could not exhibit exceptional commitments characterizing their lives until adulthood, but the lethal aftermath forced reestablishment of the training to the children at the same level of schooling [3, 13]. Teaching children about what to live should be held as effectively as it is for guiding college students as youths. This is because both levels complement each other in imparting values and right moral choices.

Second, the value-free education practice holds on assumption that moral and civic education in HLIs is an intellectually weak undertaking [13]. Implicitly, such an assumption can be interpreted that moral and civic education programs undermine the intellectual rigor of the academic experience, which scholars represented by Colby proposes that it is not the case [13].

4. Conclusions

Academic primary goals in students' learning demonstrate better achievements when teaching incorporates moral and civic ingredients. Unfortunately, the case on the contextual nature of pedagogies in HLIs would be that some faculties may not be prepared to promote moral and civic development. It seems that the requirements for the new pedagogies, including training materials, to resolve ethical dilemmas might be challenging the faculties in HLIs, who wish to implement the programs for the first time. The question of what others are doing on the basis of global accreditation may sterilize what someone has to decide on inclusion due to the lack of global standardized ethical guidelines. However, moral and civic development centered on hands-on training, and integration of the service experiences with the academic material are critical to students' learning outcomes demonstrated through desired standard moral and ethical dispositions. One can hold that moral and civic training is necessary in HLIs for providing students with informed beliefs, values, and choices on encounters with ethical dilemmas in learning and teaching process. The quest of who to set ethics training standards at global or regional level seems to need more discussion and research to attain a certain level of objectivity and inclusiveness.

5. Recommendations

- i. Moral and civic education should be included in higher learning curricula. Such training should not be restricted to HLIs as teaching children what to live is more effective than teaching adults, so spiral learning on moral and civic education through the education system would be more beneficial.
- ii. The faculty need to be aware of facilitating an environment for students' development in ethical decisions as part and parcel of teaching and learning. Professors need to think about how to accommodate and tolerate the diversity of students' worldviews, and ethical decisions while students encounter value-free HLIs environment, which has influence from global perspectives. The faculty need to set a common ground for students to make the right ethical choices with informed perspectives without any kind of pressure or undue influence.

Conflict of interest

The authors declare no conflict of interest.

Acronyms and abbreviations

HLI means higher learning institutions
SSA means Sub-Saharan Africa

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Chapter 3

Perspective Chapter: The Role NSFAS has Played to Facilitate Poor Students in South Africa

Pierre de Villiers

Abstract

With the political policy of *Apartheid* that was followed in South Africa from 1948 until the early 1990s, educational funds (and opportunities) were spread very unequally between racial groups. *Non-white* students were totally underrepresented at universities. This, and the high cost of university education led to the introduction of the National Student Financial Aid Scheme (NSFAS) in 1991 to make higher education more affordable to poor students in South Africa. Funds spent by the government on higher education and the number of students helped through NSFAS since 1995 will be analysed. Using individual data, the throughput rates of NSFAS students are discussed in relation to non-NSFAS students as well as to see how their performance changed over time. NSFAS students outperform non-NSFAS students – a higher percentage of each first-time first-year cohorts obtain qualifications and a smaller percentage drop out of the system without qualifications. NSFAS funds alone were not responsible to increase the number of students from poorer communities. However, NSFAS did contribute substantially to getting poorer students into the higher education system and the greater financial stability (that comes with less financial risks) motivated poorer students to stay longer in the system until they obtained their qualifications.

Keywords: poor students, higher education access, National Student Financial Aid Scheme (NSFAS) of South Africa, higher education funding, throughput rates of students

1. Introduction

South Africa formally implemented the policy of apartheid¹ for 46 years, from 1948 when the National Party (NP) became the ruling party until the country's first democratic election in 1994 when the African National Congress (ANC) came into power. During the apartheid years, much more public funds were spent on white learners in the school system and students in the post-secondary school phase than those from other racial groups. One of the results of this unequal spending was that

¹ With the policy of Apartheid, the government stated that different racial groups should be given the opportunity to fully develop in their own regions. The slogan was "separate but equal", but in reality, it developed into "separate but unequal", with whites in South Africa receiving by far the majority of resources spent on social services.

the vast majority of students at Higher Education Institutions (HEIs) in South Africa were white. In 1955, for example, they constituted 89.7% of students, compared to the 5.5% that was black. More than three decades later – in 1990 – black students still represented only 37.7% of all students [1]. This disproportionate relationship between demographic share and representation at higher education institutions of the different racial groups reflects the broader injustice of the previous political dispensation.

In 1990 the ANC was unbanned and in 1994 South Africa held its first democratic election. High expectations emerged around the time of the country’s political transition that it would herald in a period of increased access to higher education for those groups that were previously denied access, based on racial criteria. In the period after 1994 tuition fees at HEIs increased substantially, which made it very difficult for students from poor communities to afford it. The National Student Financial Aid Scheme (NSFAS) was introduced to address this matter of affordability and to change the student profile at South African universities to make it more representative of the demographics of the country.

This chapter briefly looks at the public financing of higher education in South Africa. The emphasis will be on the two and a half decades since the democratic election, although some context will be provided about what happened during the preceding century. The development of NSFAS since its introduction in the mid-1990s will be analysed. The performance of students that received NSFAS awards (loans and bursaries) will receive attention as well as the change in the demographic profile of university students since the NSFAS has been in place.

2. The South African higher education landscape

The focus of this chapter is on the public higher education system of South Africa. The post-school education system of South Africa can be divided into universities and Technical and Vocational Education and Training (TVET) colleges. The university

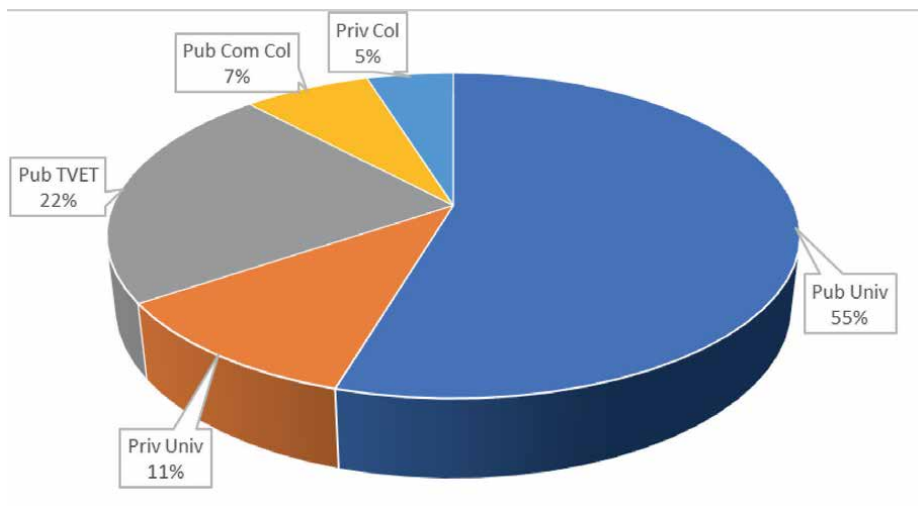


Figure 1. Composition of students in post-secondary education in South Africa according to institution type, 2020. Source: [2].

sector is divided into 26 public universities – 11 general academic universities, 9 comprehensive universities (an amalgamation of traditional universities and technikons), and 6 universities of technology. When we refer to HEIs in this chapter, we refer to the 26 public universities, unless noted otherwise.

In 2020 there were 2,005,408 students enrolled in post-school education and training in South Africa [2]. Of these students, 1,094,808 students were enrolled in the 26 public universities. There are also a further 132 accredited private universities attended by 219,031 students. This means that 83.3% of university students attended public institutions. There were 50 public TVET colleges with a total intake of 452,277 students. There were also 9 public Community Education and Training (CET) colleges with 142,538 students, while 96,754 students attended 126 private colleges (The numbers of the CET and private colleges were not audited.). This means that 84.3% of the total number of post-secondary students attended public institutions, and 77.2% attended public universities and TVET colleges. The percentage distribution of these students is portrayed in **Figure 1**.

3. Financing of higher education in South Africa

To understand South Africa's education system, it is important to note that separate schools for different racial groups were introduced more than a century ago. Previously, South Africa was divided into four provinces – Transvaal, Natal, Orange Free State, and the Cape Province – and in 1907 compulsory education was introduced for white learners only [3]. This established a culture of learning among white learners, and they (or their parents) understood the value (especially measured in future earnings potential) of education better than the other racial groups. Because the government did not provide sufficient educational resources to *non-white* learners and because these learners' parents did not have the financial capacity to pay for additional resources, *non-white* racial groups did not receive the same quality of education. As a result of the introduction of compulsory schooling, the number of South African learners increased by 92% between 1910 and 1920 [3]. This increase was mainly driven by the increase in white pupils, which represented 57.9% of all learners in schools in 1921.

It is therefore no surprise that in the decades before the first democratic election in 1994, educational funds were spent very unequally between racial groups. One way to illustrate this is to use the total amount that was spent on education per racial group and divide it by the population numbers in the 5–24-year-old cohort groups.² **Figure 2** clearly illustrates the unequal distribution of funds and the privileged position of whites. In 1920, for example, 97.9% of educational funds were spent on whites. Although per capita spending was still very unequal at the end of the period, the per capita spending on whites started to stagnate from around 1970. In 1970 74.9% of educational funds were spent on whites, but this percentage decreased to 37.2% by 1990. This unequal spending pattern is important to bear in mind when we look at how things changed after 1994 and why the introduction of NSFAS was necessary.

To evaluate the trends in public expenditure on higher education, three criteria are normally used, namely public financing of higher education in terms of total

² For the period portrayed in **Figure 2**, learners and students of different racial groups attended different institutions. Therefore one can compile a series of educational expenditure per racial group. After 1994 that is no longer possible as education at all levels is not provided exclusively on a racial basis.

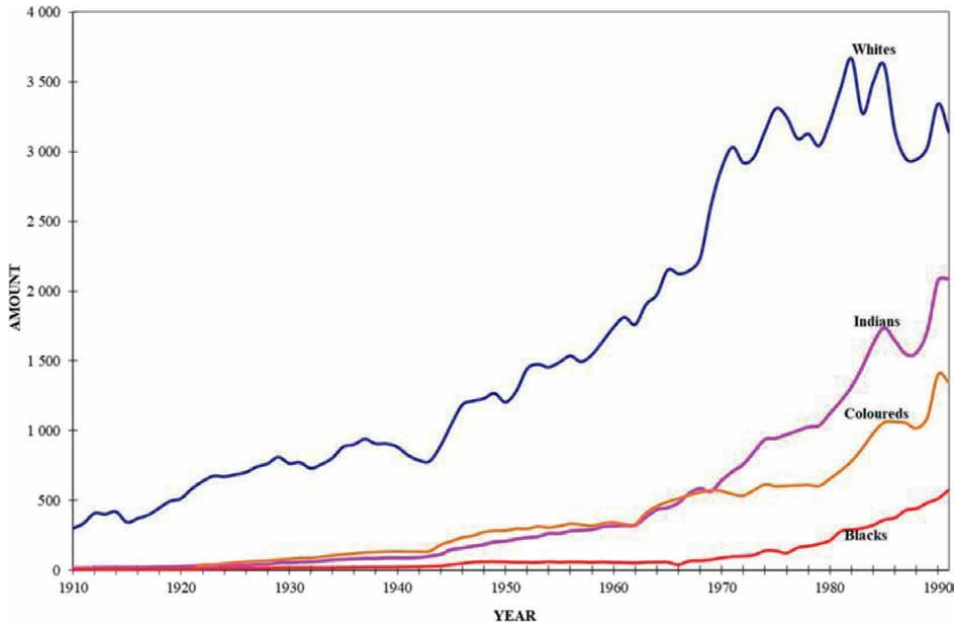


Figure 2. Per capita educational spending on 5-24-year-olds: 1910-1991. Source: [1].

educational expenditure, in terms of total public expenditure, and in terms of Gross Domestic Product (GDP). All three ratios increased after the elections in 1994, reached a peak before the end of the previous century, and then went down until about 2010. In the years after that, there is an increasing trend in higher educational expenditure, especially since 2018 when President Jacob Zuma announced that all post-secondary education will be free (see **Figure 3**). Clearly, the disconcerting trend of a smaller percentage of educational funds or total state expenditure or in terms of the GDP being spent on higher education turned around over the last couple of years.

Although the abovementioned indicators initially show an increasing trend in public higher education expenditure after 1994, this expenditure did not keep up with the increase in student numbers. This resulted in a decrease of 36% for universities and 43% for technikons (before technikons and certain universities merged into comprehensive universities in 2003) in the real state appropriation per weighted full-time equivalent (FTE)³ students between 1987 and 2005 [7]. This trend continued during the period 2000-2009, when real state appropriations decreased by 1.1% per annum per FTE student [8]. Due to the decrease in the real value of per capita state subsidies to universities, these institutions were forced to increase tuition fees to still be financially sustainable. Between 1987 and 2003, tuition fees increased by 49% at universities and 85% at technikons in real terms. During the decade 2000-2010, class fees per FTE student increased by 2.5% per annum in real terms [7]. Calitz and Fourie [9] also

³ The aggregation of the standardised credit values of the different modules for which a student is supposed to enrol in a particular year is the full-time equivalent value. A full-time student taking all the prescribed modules of a course for a specific year will have an FTE value of 1.0. A student taking all the prescribed modules, but is also repeating some failed modules or doing some extra modules, will have an FTE value of more than 1.0. A student taking only a few modules will have an FTE value of less than 1.0.

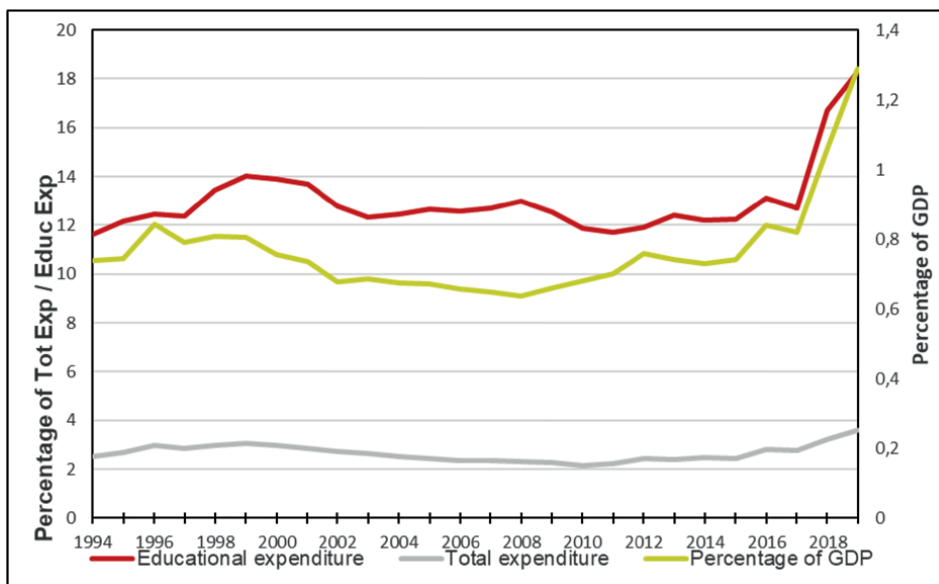


Figure 3. Public expenditure on higher education in terms of total educational expenditure; total public expenditure and in terms of GDP: 1994–2019. Source: [4–6].

indicated that higher education fees consistently increased by between one and five percentage points more than the headline inflation rate for the period 2009–2015.

While universities were expected to become more inclusive in terms of attracting more diverse students, the inevitable cost increases became a prohibitive factor for poor students to enter the system. Those who did become saddled with huge debts, and a solution had to be found to relieve the financial situation of poor students.

4. The National student financial aid scheme (NSFAS)

4.1 Background

Since the early 1990s, when South Africa embarked on a reform process towards becoming a democracy, the problem of outstanding student debt has been threatening the survival of some HEIs. Because many students from poor communities struggled to afford higher some form of financial assistance had to be given to those students. This was also an effort to create equal access to higher education and to prevent finances to be the stumbling block that kept poor students out of the system. This was also an effort to eradicate the racial imbalances that characterised the student body of South African university students (which was the result of legal restrictions as well as the unequal division of educational funds, as illustrated in **Figure 2**).

The National Commission for Higher Education advocated for a national financial aid scheme in its report of 1996 [10], a view that was fully endorsed in the Education White Paper 3 [11]. The Tertiary Education Fund of South Africa (TEFSA), established in 1991 by the Independent Development Trust, was contracted by the Minister of Education to administer this new scheme. The first NSFAS awards were made in 1995, but they could not satisfy the huge demand. For example, in 1996, only 70,000

of the 223,000 students that applied for loans received NSFAS funding. The NSFAS was formally established by an Act of Parliament in 1999 (Act no 56 of 1999) and in 2000, TEFSA was formally changed to the NSFAS. The NSFAS was also allowed to collect donor funding that then could be distributed to needy students through loans or bursaries.

The goal of NSFAS is to ensure that all South African citizens will be able to afford higher education. The state is the main financial contributor to NSFAS, but they also receive funds from local and international donors. It is the task of NSFAS to distribute these funds to needy students in the form of loans or bursaries. Only South African citizens registered at a South African university and that is studying towards a first qualification are eligible for NSFAS awards. They can receive NSFAS awards if they are studying for a second qualification only if that qualification will enable them to practice a chosen profession. In the past, only households earning less than R130 000 per annum qualified for NSFAS awards, but since 2018 this has been extended to include households with an annual income below R350 000.

To ensure that the correct poor students receive NSFAS funds a means test must be completed. The gross family income must be calculated as well as the number of dependents in a household, whether it is a single-parent household and whether any other dependent in the household is currently studying at a higher education institution. It must also be calculated whether that household will be able to contribute anything towards the costs of study of the student. An interview with the student must be undertaken to further determine the potential of the prospective student.

These criteria demand high levels of administrative capacity, and because TEFSA/ NSFAS had trouble handling this administrative burden, they requested the financial offices at the HEIs to handle it on their behalf. The universities were then responsible to report on the progress of NSFAS students and to inform the NSFAS board if students discontinued their studies. This changed in 2018 when the process was centralised, and all applications are now centrally handled by NSFAS itself.

The spread of NSFAS funds was determined by the demographic profile of the student body at each university as well as the cost of study (for each programme) that differs between HEIs. To calculate the average full cost of study (FCS) the tuition fees, as well as the boarding fees, are taken into account. When calculating the weighted number of disadvantaged students (WDS) at each institution, black students had a weight of 3, coloured students a weight of 2, and Indian students a weight of 1. White students did not enter this formula. The WDS and FCT at each institution were used to calculate each institution's NSFAS allocation. This means universities with more *non-white* students (especially black students) received more of the funds than universities where the majority of students were white. However, once an institution received the NSFAS funds, race played no role in determining who gets the NSFAS awards. The poorest students should receive the NSFAS awards, irrespective of race.

HEIs were supposed to use the formula below to determine the size of the NSFAS award (although most HEIs experienced that the maximum amount available through the NSFAS scheme was not enough to cover all the costs of a student):

$$\text{NSFAS award} = \text{costs} - \text{bursaries} - \text{expected family contribution.} \quad (1)$$

One of the disadvantages of this system was that because the HEIs with the most *non-white* students received the most NSFAS funds, students were forced to follow the money. Hence, affordability was a problem for poor students who wanted to attend

the historically advantaged institutions, because these institutions received less of the NSFAS funds than their historically disadvantaged counterparts. In 2003, before the higher education landscape changed with the merging of several HEIs, more than 60% of academic research in South Africa was done at five of the previously advantaged institutions (the University of Cape Town, University of Pretoria, Witwatersrand University, Stellenbosch University and University of KwaZulu-Natal) [7]. Attending the previously advantaged institutions carries with it a certain prestige and certain courses like medicine were only taught at these institutions. Even in 2020, the five institutions mentioned were responsible for more than 50% of accredited journal articles [12]. With the distribution of NSFAS awards now being centrally determined, the money can follow the students. In other words, once a student receives NSFAS funding they can attend the institution of their choice. South African universities have different tuition fee structures, with the previously advantaged institutions having the highest fees. A drawback of this new centralised approach is that students from poorer backgrounds may still find it unaffordable to enrol at these institutions.

Some events in recent years quite dramatically increased the funds that the government channelled to higher education via NSFAS payments. At the end of 2015, unrest broke out on virtually all university campuses as part of the *#FeesMustFall* campaign. Students protested about the high tuition fees and demanded free education. The government then announced that HEIs were not allowed to increase tuition fees for 2016. After renewed protests in 2018, Jacob Zuma, the then-president of South Africa, announced that higher education will be free. In practice, however, this was an empty promise because free higher education is not possible for a developing country like South Africa, and this policy was never fully implemented. Regardless, based on the number of students helped financially via NSFAS awards and the amount of money spent on NSFAS payments, it becomes clear that a renewed effort was made to make higher education affordable to a broader spectrum of students.

4.2 Number of students helped, and amount of funds spent on NSFAS

Table 1 provides a breakdown of the number of university and TVET college students that received financial support from the first recipients in 1995 until 2020. We will not focus on the TVET students, but they are included for greater accuracy. It is clear from the table that the number of university students that received financial NSFAS support increased substantially over time. It started with a meagre 40,000 students in 1995 and expanded to more than 500,000 in 2020. However, the trend can be broken up into phases that are clearly illustrated in **Figure 3**. There was an initial increase in the number of university students receiving NSFAS funding from 1995 until 2011 when 216,874 received funding. After that, the number of university students receiving NSFAS funding decreases until 2015, when only 178,961 students received NSFAS awards. It is therefore not surprising that the *#FeesMustFall* campaign started that year.

The funds paid out in NSFAS awards increased from R154 million in 1995 to R7.2 billion in 2015 (see **Figure 4**). Although this seems like a huge increase, one must consider that these are nominal values and do not take into account the huge increase in educational costs during this time period. It is also clear from **Table 1** that more emphasis was placed on the financing of TVET students (who receive 100% bursaries) rather than university students, and in 2015 no less than 235,988 TVET students received NSFAS financial support. However, one may get the wrong impression by just looking at the student numbers. In 2015, the average NSFAS award size was R40 199,

Year	University students	TVET students*
1995	40,002	
1996	67,641	
1997	63,272	
1998	67,558	
1999	68,363	
2000	72,038	
2001	80,513	
2002	86,147	
2003	96,552	
2004	98,813	
2005	106,852	
2006	107,586	
2007	113,519	12,283
2008	118,450	35,352
2009	135,208	55,838
2010	148,387	62,205
2011	216,874	115,313
2012	194,504	188,182
2013	194,923	220,978
2014	186,150	228,642
2015	178,961	235,988
2016	225,950	225,557
2017	260,002	200,339
2018	346,966	239,797
2019	393,767	346,270
2020	504,336	261,404

**Until 2007 no distinction was made about the recipients of NSFAS awards, but it was almost exclusively university students that received the awards. Then another category FET and agriculture college recipients was created. Currently it is classified as TVET payments.*

Source: [4, 13–17].

Table 1.
NSFAS awards paid out: 1995–2020.

but on average only R8 878 was paid per TVET student. About 80% of NSFAS expenditure in 2015 was still spent on more expensive university education.

After 2015 the number of university students receiving NSFAS funding increased substantially – from almost 179,000 in 2015 to more than 504,000 in 2020 (an increase of 181%), while the funds paid out to university students increased from R7.2 billion to R30.8 billion over the same period. In 2020, 83.2% of NSFAS funding was spent on university students and the average size of an NSFAS award was R61 562, while the corresponding amount for TVET students was only R23 825 (This TVET

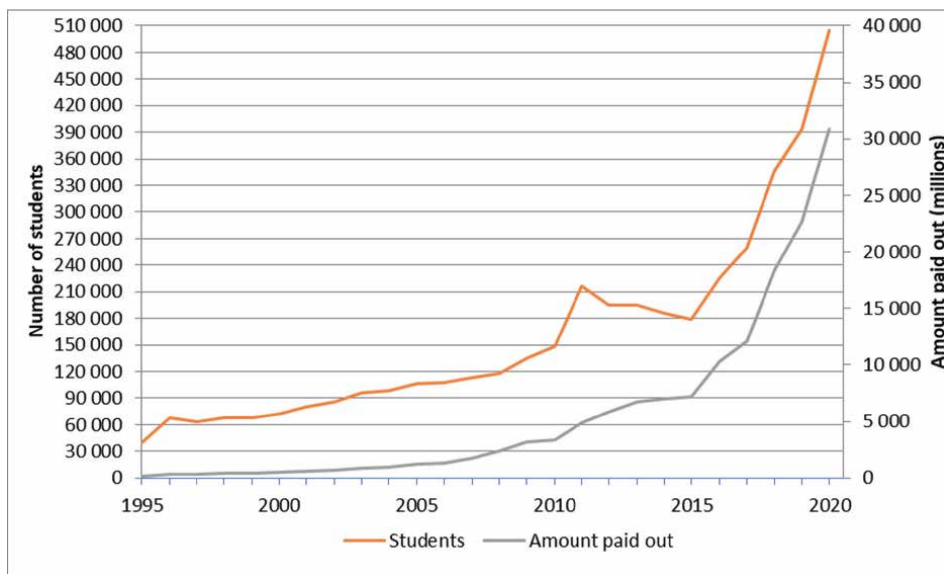


Figure 4. NSFAS students and amount (millions) paid out 1995–2020. Source: [4, 18–23].

amount is artificially high due to the unexplained decrease in TVET students that received NSFAS funding in 2020).

In total, 4,172,650 university students received NSFAS funding to a total value of R144.5 billion over the period 1995 to 2020. From 2007 to 2020 an additional 2,428,148 TVET students received NSFAS funding of R28.1 billion. In total, about 84% of NSFAS funding was paid out to university students over the period 1995 to 2020. As stated before, further analysis will be done for the situation of only university students.

Figure 5 provides a clear picture of what happened to state funding for NSFAS. When the scheme started in 1995 it budgeted a mere R40 million for NSFAS. This increased steadily over the years and by 2015 (when the *#FeesMustFall* campaign started) the state contributed R9.2 billion towards NSFAS. From then on there was an almost exponential increase in the state’s budget for NSFAS. The amount of R14 billion that was budgeted for NSFAS in 2016 was an increase of 51.8% from 2015. In 2022, R46.1 billion is budgeted towards NSFAS, translating to an annual increase over the period 2015 to 2022 of 25.8%. In total, R248.7 billion was paid by the government towards NSFAS since its introduction in 1995, with more than 82% of that amount being paid since 2016. The government’s intention to make higher education more affordable for needy students through NSFAS awards is indisputable.

Although the percentage split between racial groups and sexes differed between years, on average about 54% of NSFAS recipients were women and 46% were men. Approximately 93% of recipients were black, 5% coloured, 2% white, and 1% Indian (NSFAS website). This is hardly surprising, as this distribution closely correlates with the demographics and poverty distribution in the country.

4.3 Repayment of NSFAS loans

The NSFAS functioned as an income-contingent loan (ICL) and bursary scheme. Loan recipients only started repayments once they were employed, and their earnings

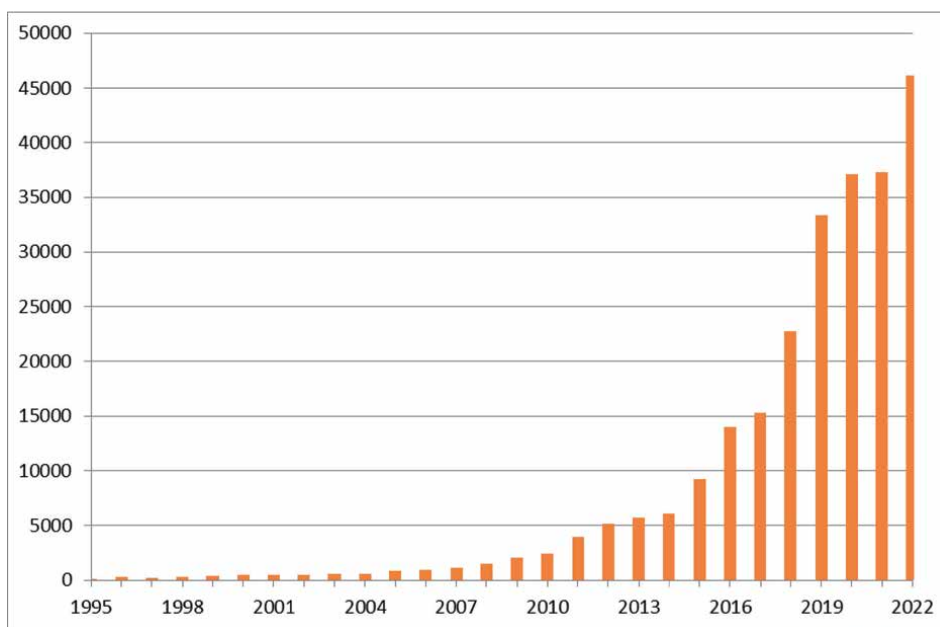


Figure 5. State budget for NSFAS 1995–2022 (R million). Source: [4, 18–23].

were above a certain income threshold. The principle is simple: It is a student that gets the loan/bursary, but a working person (mostly graduates) that repays the costs. A NSFAS recipient only starts repaying a loan once they earn more than R30 000 per annum, and then only 3% of the income. This percentage increases on a sliding scale to a maximum of 8% once their income is R59 300 per annum. The initial award that a student received was regarded as a 100% loan. For every 25% of the courses passed a student can convert 10% of the loan into a bursary. If students are successful with all their courses, 40% of the loan is converted into a bursary. Interest accrued on loans at approximately 2% above the previous year's consumer price index, but since 1 April 2008 it has been pegged at 80% of the repo rate as determined by the South African Reserve Bank. This policy changed in 2018 and most NSFAS awards are now – after President Zuma announced in 2018 that higher education will be free – given as bursaries.

The repayment of loans after recipients left the HEIs seems to be the biggest problem that ICL schemes experience internationally and NSFAS is experiencing the same problems. Once students leave the higher education system, NSFAS has great difficulty linking these debtors to their first place of employment. It is even more difficult to track students that fail and drop out of the system. These problems have persisted even though employers are obliged by law to report when they employ NSFAS students. In theory, linking ex-NSFAS students to NSFAS headquarters and the South African Revenue Service should be a simple procedure to monitor the repayment of loans. However, theory and practical experience are very different, and as experienced elsewhere in the world, this is a much more complicated process than in theory.

Despite these problems, **Figure 6** shows that the payments received from former recipients of NSFAS awards increased substantially over the years from R30.3 million in 1998 to R719.4 million in 2011. However, it is not clear whether NSFAS'

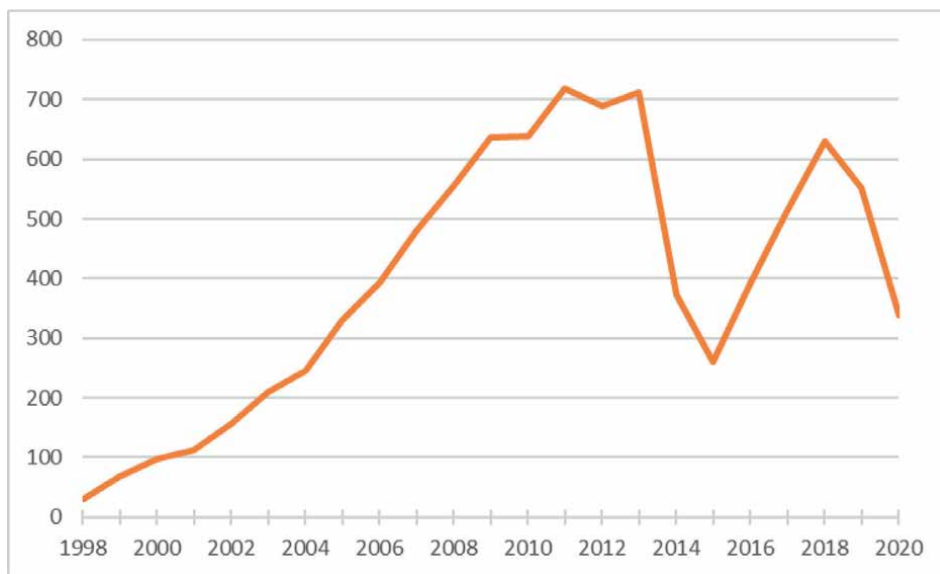


Figure 6.
Repayment of NSFAS loans (R million). Source: [13–17, 24–34].

records are up to date and whether they know exactly who owes them what. It is thus unclear whether South Africa's experience is better or worse than with other ICL schemes. NSFAS revised its debt book, which may explain the decrease after 2013. They made improvements to collect more repayments on loans after 2015, but that dropped again after 2018. The latter decrease in repayments may be explained by the fact that the majority of current student funding is provided as bursaries, along with an unwillingness of students who previously received NSFAS awards as loans to repay them.

5. Performance of students that received NSFAS awards

5.1 Performance of NSFAS students based on aggregate data

As was explained in Section 4.3, up to 40% of a NSFAS loan could be converted to a bursary if a student passed all the modules. **Table 2** shows that, according to the reported statistics of NSFAS, their students were very successful with their studies. Over the period 1996–2009, NSFAS reported that students passed on average 74.3% of the courses for which they registered. On average 28.5% of the NSFAS loans were converted into bursaries, which is consistent with an approximately 70% success rate. However, the Ministerial Committee [35] reported totally different results in 2010. They reported that 33% of all NSFAS students that received NSFAS funding since 1995 were still studying. Of the 67% that left HEIs 28% graduated, but 72% dropped out without obtaining a qualification. Thus, the NSFAS and Ministerial Committee statistics seem to be contradictory. Courses passed are not the same as obtaining a qualification, which may partly explain these contradictory results; however, Section 5.2 provides a more accurate picture.

Year	Percentage	Per cent of capital converted into bursaries
1996	72.6	26.6
1997	75.3	28.9
1998	76.1	29.4
1999	73.8	28.8
2000	74.6	29.4
2001	73.1	28.9
2002	73.9	28.7
2003	72.3	28.2
2004	74.3	29.1
2005	73.9	28.6
2006	73.4	27.5
2007	74.7	27.9
2008	72.9	28.3
2009	73.9	28.0
Average	74.3	28.5

Source: [24, 27].

Table 2.

Percentage of courses passed by recipients of NSFAS awards and of capital converted into bursaries: 1996–2009.

5.2 Performance of NSFAS students using individual data

This section deals with the performance of students when using individual data to track *individual* students through the higher education system. By making use of the Higher Education Management and Information System (HEMIS) the progress of a student can be monitored. It is possible to see whether a student changed courses or institutions and when they dropped out of the higher education system. Because one is using individual data it is possible to determine when these students drop back into the system. It is also possible to determine what qualifications(s) students obtained at which institutions as well as what students are still in the system without qualifications. The first study that investigated the performance of individual NSFAS students used the data of students that received NSFAS awards in the period 2000–2004 using HEMIS data up to 2009 [36]. In their analysis, they calculated how students that received their first NSFAS award in 2000 progressed through the HE system over the period 2000–2009. This process was repeated for the other cohorts that received their first NSFAS award in 2001, 2002, 2003 and 2004. To make results comparable, they calculated results for first-time first-year students for the 2000–2004 cohorts.

Of the first-time first-year NSFAS-funded students in 2000, 55% obtained at least one qualification (diploma, certificate or degree) by the end of 2008. Of this original cohort group, 6% were still in the system without obtaining a qualification and 38% of the original cohort group dropped out of the system without a qualification. The NSFAS-funded students outperformed the non-NSFAS students. Of the non-NSFAS students that were first-time first-year students in 2000, 46% of them obtained a qualification by 2008, 46% dropped out without a qualification and 6% of the cohort group was still in the system without a qualification. The other cohorts (2001–2004)

showed remarkable consistency in success/failure rates (for both NSFAS and non-NSFAS students).

Their analysis indicates that NSFAS-funded students outperformed non-NSFAS students. A higher percentage of them obtain qualifications and a smaller percentage drop out of the higher education system without qualifications (and this holds for all 5 cohorts). The financial support of NSFAS (with lower risks attached to it than conventional loans at financial institutions) seems to persuade students to stay longer in the HE system although they may not be successful initially. This is supported by the smaller percentage of NSFAS students that drop out without qualifications. One could argue that the money was spent efficiently, given that 71.2% of the money spent on the 2000 cohort group was spent on successful students (those that obtained at least one qualification). However, in some instances, it took too long to identify unsuccessful students that were still receiving an award. Some students received NSFAS awards for 9 years, without having obtained any qualifications.

Since 2016, the Department of Higher Education and Training (DHET) publishes an annual report that follows all first-time first-year students for a maximum of 10 years through the system since 2000. The latest report [37] looks at the progress of all first-time first-year undergraduate students until 2019. Their results are in line with the findings of [36], and a couple of clear trends emerge from the data. After about 6 years, most of the students that will obtain a qualification have already done so. For example, after 6 years, 52.9% of the 2005 first-time first-year cohort obtained a qualification (contact and distance education) and after 10 years, 63% of the cohort had obtained qualifications. The other characteristic is that a higher percentage of the successive cohorts obtained qualifications over time. **Figure 7** clearly illustrates this pattern. After 6 years of study, only 52.9% of the 2005 cohort obtained a qualification, but after 6 years 70.5% of the 2015 cohort had already obtained a qualification.

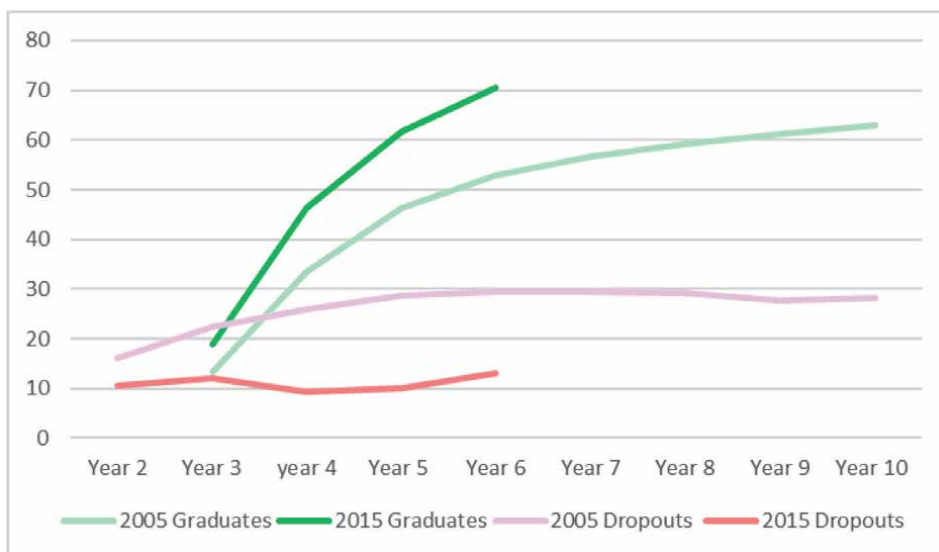


Figure 7. Percentage of the graduates and dropouts of the 2005 and 2015 first-time first-year students that received NSFAS funding (contact and distance education). The graph is not drawn according to calendar years, but according to the number of years students received NSFAS funding. This is because some students drop out of the system, work a couple of years and then drop in again. Source: [37].

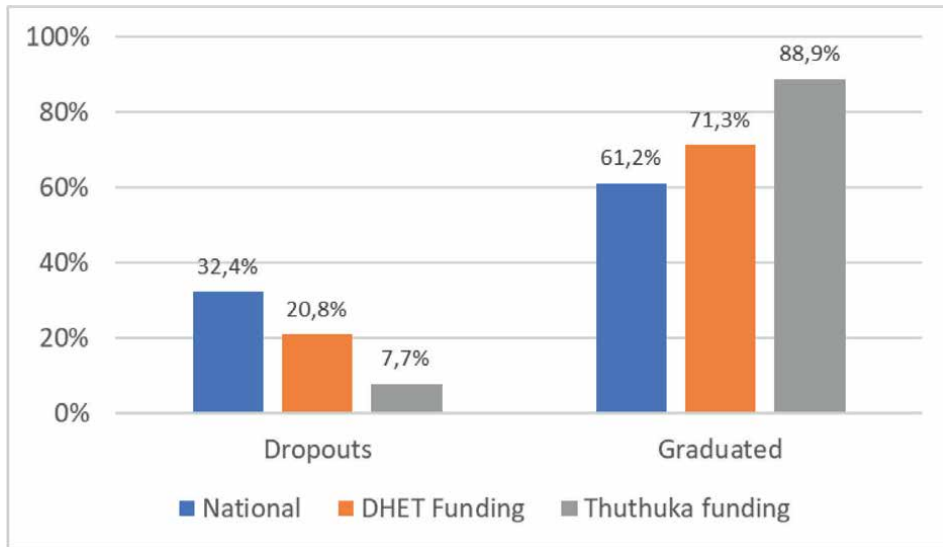


Figure 8. Dropout and throughput for National; DHET-NSFAS funding and Thuthuka-NSFAS funding students for the 2011 cohort. Source: [37].

Fewer students also tend to drop out without qualifications. After 6 years of study, 29.5% of the 2005 cohort group dropped out, but after 6 years only 13.1% of the 2015 cohort group had dropped out without obtaining a qualification. There is therefore a clear improvement in the performance of NSFAS-funded students over time.

The other interesting phenomenon is that students that received official NSFAS funding via DHET or Thuthuka⁴ on average performed much better than the students from that cohort that did not receive funding (see **Figure 8**). Of the 2011 cohort group (that was followed for a maximum of 10 years), 32.4% of national students dropped out while the corresponding figure for DHET-NSFAS students was 20.8% and for Thuthuka-NSFAS students a mere 7.7%. Likewise, while just more than 61% of the national student body of the 2011 cohort obtained a qualification by 2021, more than 71% of DHET-NSFAS students and 89% of the Thuthuka-NSFAS students obtained qualifications.

The same picture emerges for the 2015 cohort. By 2021, 22.4% of the national student body of this cohort dropped out, while only 13.1% of the DHET-NSFAS students dropped out and 7.2% of the Thuthuka-NSFAS students. Likewise, while 64% of the national student body that was first-time first-year students in 2015 obtained a qualification, the corresponding figure for DHET-NSFAS students was 70.5% and for Thuthuka-NSFAS students 84.2%. It does seem that the availability of funds plays an important role for students from poor backgrounds to pursue their studies.

⁴ Students that receive Thuthuka funding (for studies to become a chartered accountant) must be an African or coloured South African citizen, must be financially needy with an annual household income of less than R350 000, obtain a mathematics mark of more than 60%, pass the grade 12 exam with a university entrance qualification, pass the national benchmark test and must be accepted at one of the 12 SAICA accredited universities in South Africa [38].

5.3 Enrolment at public higher education institutions

Over the years, the number of students enrolled in HEIs increased quite substantially. **Figure 9** illustrates how the racial composition of these students changed over time. In 1994, there were 266,190 black students (representing 50.4% of the students) and 177,012 white students (representing 33.5% of the students). These two groups represented almost 84% of all the students enrolled at universities. There were also 28,949 coloured students (5.5%) and 31,908 Indian students (6.0%).⁵ By 2020, black students (862,313) represented 79.4% of the total number of students, and white students (118,505) dropped to only 10.9% of the students. While black students increased by 4.6% per annum over this period, white student numbers decreased by 1.5% per annum. Although Coloured and Indian numbers are small in comparison, they both increased over this period. Coloured students increased to 61,923 – indicating a healthy growth rate of 3.0% per annum. The growth rate of Indian students that increased to 41,262 in 2020 was 1.0% per annum. The big change, therefore, was the increase in black students to also make the student body more representative of the demographics of South Africa. NSFAS played no small part in making this happen.

Another aspect that changed over time was the gross enrolment rate (GER).⁶ The GER of Indians and whites are much higher than for the other racial groups – as

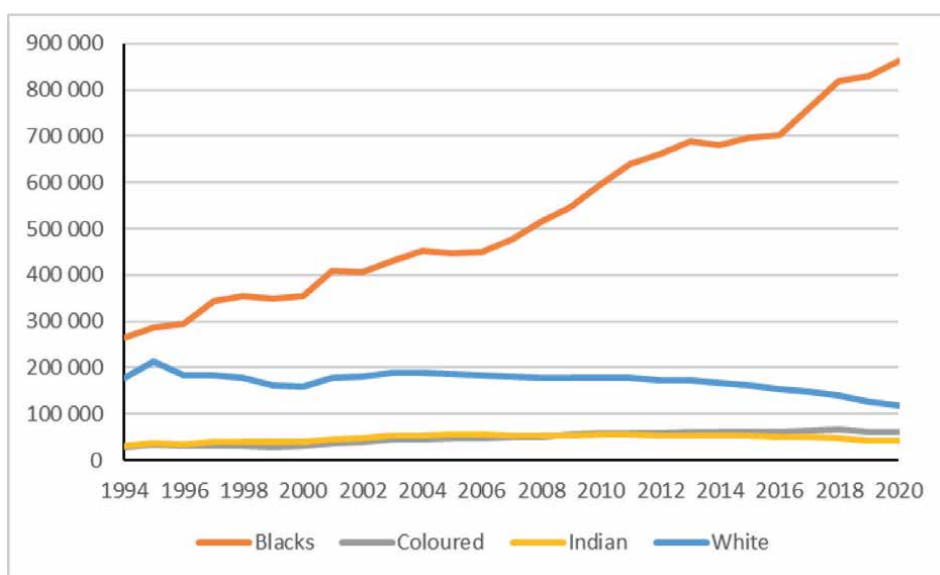


Figure 9. Number of headcounts in public HEIs per race, from 1994 to 2020. Source: [1, 2, 39–41].

⁵ The percentages do not add up to 100% because not all students revealed their race. The numbers in **Figure 9** represent almost 96% of the total number of students.

⁶ The GER (also known as the participation rate) is defined by the United Nations Educational, Scientific and Cultural Organisation (UNESCO) as the percentage of the total enrolment in a specific level of education (regardless of age) of the total population in the official age group that corresponds to this level of education. The GER is a critical indicator in understanding access to post-school education opportunities. The GER indicates the capacity of the PSET system to enrol students of a target age group. It can also be used to consider equity in access to education for a specific group, e.g., by gender or race.

Year	Black			Coloured			Indian			White		
	Female	Male	Total	Female	Male	Total	Female	Male	Total	Female	Male	Total
2002	12.6	10.6	11.5	11.4	10.4	10.9	51.8	41.8	46.6	53.8	50.5	52.2
2003	12.6	10.7	11.7	12.5	11.0	11.8	54.7	43.1	48.7	56.3	51.6	53.9
2004	12.5	10.4	11.5	12.9	10.8	11.8	55.0	42.4	48.5	56.5	47.3	53.9
2005	12.4	10.2	11.3	13.2	10.6	11.9	55.7	41.9	48.6	56.7	50.6	53.7
2006	12.2	9.9	11.1	14.0	10.5	12.2	56.7	40.9	48.6	56.9	49.6	53.2
2007	12.7	10.1	11.4	14.0	10.1	12.1	54.1	39.3	46.4	56.3	48.5	52.4
2008	13.6	10.4	12.0	14.7	10.2	12.5	54.6	38.6	46.4	56.9	48.1	52.4
2009	15.4	11.3	13.4	16.3	10.8	13.6	57.7	39.1	48.1	57.5	48.3	52.9
2010	15.2	11.2	13.2	16.1	10.6	13.3	58.0	39.3	48.4	59.3	49.8	54.5
2011	16.4	11.9	14.2	16.3	10.7	13.5	59.1	39.5	48.8	61.1	50.6	55.8
2012	17.1	12.2	14.7	16.2	10.4	13.3	57.3	37.2	46.9	61.6	49.7	55.9
2013	48.0	12.9	15.4	17.1	10.7	13.9	59.8	37.9	48.5	63.6	51.2	57.4
2014	17.9	12.9	15.4	17.1	10.6	13.8	60.3	37.9	48.7	63.6	50.5	57.1
2015	18.5	13.4	16.0	17.7	10.8	14.3	61.0	37.9	49.0	64.2	50.2	57.1
2016	18.8	13.7	16.3	17.8	10.8	14.3	58.0	36.5	46.9	62.5	48.8	55.6
2017	21.0	15.1	18.1	19.0	11.2	15.1	58.9	36.7	47.4	63.4	48.4	55.9
2018	22.6	16.0	19.4	19.7	11.3	15.5	58.4	35.0	46.2	63.0	46.9	54.9
2019	24.2	16.2	20.1	18.6	10.6	14.6	53.6	30.9	41.6	56.5	41.5	49.0
2020	26.2	16.5	21.3	18.9	10.4	14.6	51.9	30.2	40.3	53.8	39.3	46.6

Source: [42–63].

Table 3. GER in public universities by race and gender, 2009–2020 (%).

illustrated in **Table 3** Their GER decreased slightly over time, but there was a more substantial drop from 2018 to 2020, which may be COVID-related. Although the rates for coloured and blacks are still disappointingly low, they did increase over time and NSFAS funding must have played an important role in this regard. The GER of blacks increased by no less than 85% over the 18-year timespan or 3.5% per annum. Although there is still much room for improvement, the higher GER for blacks can to a large extent be attributed to the NSFAS funds that became available to qualifying black students.

Although NSFAS was not solely responsible for the change in the racial composition of permanent research and instructional staff members at universities, the system that is now up and running for more than 26 years must have helped many *non-white* students get access to higher education and further their studies. The racial composition of university staff changed drastically over the period from 2009 to 2020, as depicted in **Figure 10**. Although the number of Indian staff members increased by almost 18% over the period (from 1390 in 2009 to 1637 in 2020), it decreased as a percentage of total permanent research and instruction staff at HEIs in South Africa. The number of coloured staff members increased from 926 to 1498 (an increase of almost 62%) and increased from 5.7% of the total to 7.4%. Although their numbers changed quite significantly, the change is small relative to total staff numbers.

The big change occurred in white and black staff numbers. While the 9345 white staff members represented 57.3% of total staff members in 2009, this changed markedly over the next 11 years. White staff members decreased by more than 14% to 7995 in 2020. By 2020, they presented ‘only’ 39.4% of total staff members. On the other hand, black staff numbers increased from 4598 in 2009 to 8777 in 2020 – an increase of 91%. In the process, their share of total staff members increased from 28.2% in 2009 to 43.2% in 2020. NSFAS undoubtedly contributed to making staff numbers more representative of the demographics of South Africa.

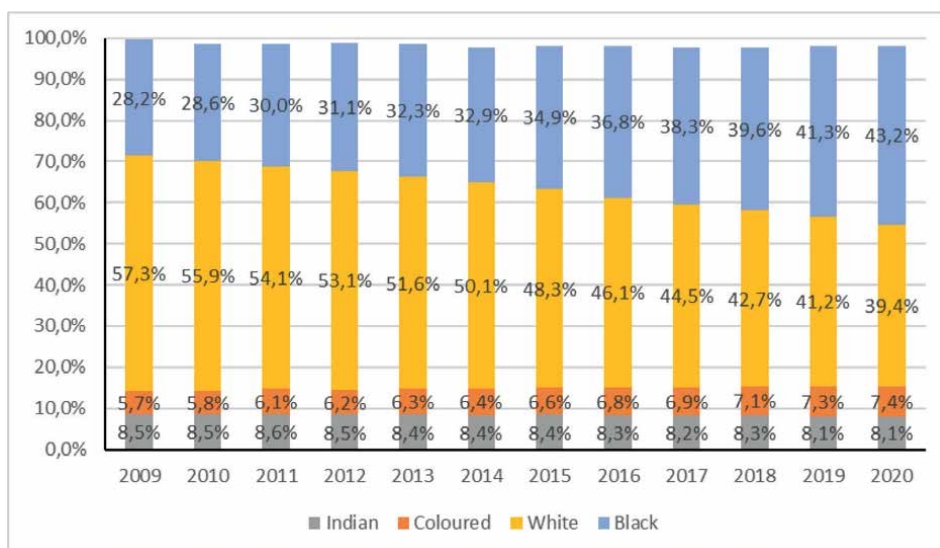


Figure 10. Percentage of permanent research/instruction staff in public HEIs by race, from 2009 to 2020. Source: [39 for 2009–2015]; [64–68 for 2016–2020].

6. Conclusion

With the new political dispensation, the government was under pressure to enable more students from poorer communities to get access to higher education in South Africa. Because government appropriations decreased in real per capita terms and higher education costs increased steeply, HEIs had to increase their tuition fees by more than the inflation rate to be able to “balance their books”. While racial criteria fell away after 1994 (although a lot of things already started to change before 1994), high fees at HEIs introduced a new economic barrier to a large percentage of students from poor communities.

The NSFAS began operating in 1995 to change the racially skewed composition of the student population in South Africa by providing funds for disadvantaged but deserving students. Over the period 1995 to 2020, NSFAS funded on average 198,697 university students per annum and spent R144.6 billion in total (while on average an additional 173,439 TVET students were supported financially through NSFAS since 2007 and R28.1 billion paid out). Especially since 2015 government has made a serious effort to make higher education more affordable to the poor by spending a much larger portion of their higher education budget on NSFAS than on state appropriations (subsidies).

NSFAS played no small role in the way the racial composition of the student population changed over time. In 1994 only 50.4% of students in higher education were black and 37.5% were white. By 2020, black students represented 79.4% of the total number of students at public universities, while the *non-white* component of the total number of students increased to 89.1%. Although NSFAS is not the sole contributor to this phenomenon, the scheme has played an instrumental role. For example, in 1994 NSFAS funded only 7.6% of university students, but this figure increased to more than 46% of the students in 2020.


The scheme undoubtedly contributed positively to making higher education more accessible and affordable to the poor. Furthermore, NSFAS students perform better than non-NSFAS students. A larger proportion of them obtains qualifications while a smaller share of them dropped out of the higher education system without qualifications, compared to the non-NSFAS students. NSFAS largely serves students from poorer backgrounds who are usually first-generation university students. Therefore, the success of these students in progressing through the higher education system is remarkable. Because almost all current NSFAS awards are bursaries the progress of NSFAS students will have to be closely monitored in the future to ensure that the money is still spent on successful students (that progress successfully through the system).

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Chapter 4

Perspective Chapter: The Transmission of National Languages and the Conservation of Intangible Heritage

Haoua Adjil Oumar

Abstract

The conservation and transmission of intangible cultural heritage is the most difficult thing to achieve. To be well done, it must go through field surveys. Among the elements that come into play for this preservation is the language. The latter constitutes the first vehicle for the transmission of heritage. A language, whatever its status, must be transmitted, because by transmitting it, one transmits an entire culture, that is to say all the habits, practices, and traditional uses relating to a given group as well as the set of notions relating to the past. Should higher education, in its programs, introduce training modules relating to the pedagogy of field surveys, especially since each field is situational? Field research is very important insofar as it constitutes an educational tool and a tool for learning and acquiring new methods of investigation.

Keywords: higher education, transmission, heritage, languages, pedagogy

1. Introduction

“To speak of linguistic heritage is first of all to dissociate language (its grammaticality) from language and to situate oneself within the explanatory framework of a sociology that constitutes the latter as a place of observation (or content) among others of the links and responsibilities between legators and heirs” ([1], p. 205). Language is the capacity that allows each individual to communicate with others. It depends on the natural faculties of human beings. Language belongs to a community; it is “a social product of the faculty of language and a set of necessary conventions, adapted by the social body to allow the exercise of this faculty of language and a set of necessary conventions” ([2], p. 25). Language and intangible heritage are therefore two closely related concepts. Language allows the dissemination of information and knowledge. It is through language that cultural heritage is transmitted. It consists of traditions or living expressions inherited from ancestors and passed on to descendants. These are immeasurable riches that a community can have. They contribute to the socio-economic development of peoples. States are therefore called upon to conserve them more. But how can they do this? Should

they simply collect them, safeguard them, and teach them in schools with pre-established programs and methodologies? Or is it better to revise them? The curricula in most countries, especially in Africa, are superficial and folkloric. This is what Tourneux ([3], p. 32) notes: “there is already a module entitled ‘Music, song and culture’ in Cameroon’s official basic education programs [...] These official texts are fairly vague and resolutely place ‘the’ national culture in the register of folklore and one of the objectives of its teaching is to provide exotic material so that pupils can animate the various official events [...]”. The methodologies used so far are fieldwork and some writing. Are these sufficient (good)? If not, how and who should be trained in the field for a good methodology of teaching the linguistic heritage that is the language? The aim of this chapter is to demonstrate that the transmission of national languages is a great contribution to the preservation of intangible cultural heritage. The hypothesis is that the transmission of national languages can only be effective if the method of collecting field data takes into account the whole chain of transmission, namely: the community, the interviewer (teacher and learner), and his or her actual presence in the field. This assumption includes the interdependence between the researcher and the field. The approach used is purely sociolinguistic. This approach is mainly based on the survey that is used to collect the data to be analyzed: words, interactions, speeches, written documents, field notes, logbooks, interviews, and observations ([4], p. 1).

2. The concept of intangible cultural heritage

Cultural heritage is defined as all tangible or intangible assets of certain artistic and/or historical importance, belonging either to a private entity (person, company, association, etc.) or to a public entity (municipality, department, region, country, etc.). This group of cultural assets is generally preserved, restored, safeguarded, and shown to the public, either exceptionally (such as the European Heritage Days, which take place on a weekend in September) or regularly (castle, museum, church, etc.), free of charge or for a fee.

- The so-called “tangible” heritage is mainly made up of built landscapes, architecture and town planning, archaeological and geological sites, certain agricultural or forestry developments, art objects and furniture, and industrial heritage (tools, instruments, machines, buildings, etc.).
- The so-called “intangible” heritage can take different forms: songs, customs, dances, gastronomic traditions, games, myths, tales and legends, small trades, testimonies, capture of techniques and know-how, written and archival documents (including audiovisual), and so on ([5], November 9, p. 4).

In the past, intangible cultural heritage was limited to monuments and objects. Today, however, UNESCO has broadened the sphere of intangible cultural heritage to include living traditions and expressions such as oral traditions, performing arts, social practices, rituals and festive events, knowledge and practices concerning nature and the universe, or the knowledge and skills necessary for traditional craftsmanship ([6], p. 1). UNESCO, in 2003, through the Convention for the Safeguarding of the Intangible Cultural Heritage, defined five main domains in which intangible cultural heritage is expressed: oral traditions and expressions, including language as a vehicle of intangible cultural heritage; performing arts; social practices, rituals, and festive events;

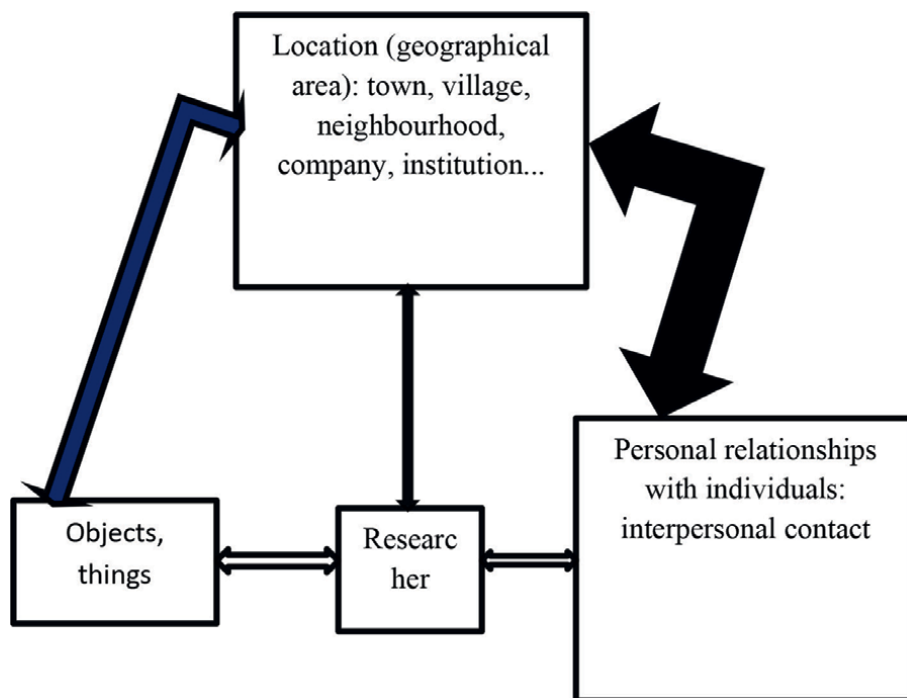


Figure 1.
The researcher's place in the field.

knowledge and practices concerning nature and the universe; and skills related to traditional crafts. Therefore, our topic on the transmission of languages and the conservation of intangible heritage is part of UNESCO's concerns on the protection of this heritage.

In fact, the transmission of languages is referred to as a means of preserving cultural heritage, as local languages are losing their value. The transmission from generation to generation is no longer respected. If this continues, entire heritages will disappear from the world and, with it, knowledge and know-how.

Heritage appeals to the idea of an inheritance bequeathed by the generations that preceded us, and which we must pass on intact or increased to future generations, as well as to the need to constitute a heritage for tomorrow ([5], November 9, p. 4).

The use of local languages, especially in Africa, will help in the transmission of customs and traditions and their preservation. This will help in learning ways of doing and thinking that will enable the understanding and practice of languages and the preservation of heritage (**Figure 1**).

3. Language as a cultural heritage to be safeguarded

Language is the natural, inherent, and universal ability of human beings to construct systems for communication. Language is that system belonging to each community that is used for communication.

Language is the natural, inherent and universal faculty of human beings to build systems for communication; its study is divided into two parts, one dealing with language (the code) and the other with speech (the use of the code). F. de Saussure.

Language is a system of vocal signs specific to members of the same community; it is an instrument of communication within that same community and, from a sociolinguistic point of view, a symbol of identity and cultural belonging. As a code, language remains a social convention, a priori independent of individual variations. F. de Saussure.

As a result, every language has its own way of thinking, its own identity, and its own culture. These three concepts are part of the tangible and intangible heritage of a given community insofar as they represent a certain wealth and contribute to the socioeconomic development of individuals. To know and understand a language is to know how the society functions, that is, its resources and its biodiversity in general. And this is how the preservation of cultural heritage will be effective.

Cultural heritage is, in its broadest sense, both a product and a process that provides societies with a set of resources inherited from the past, created in the present and made available for the benefit of future generations. It includes not only tangible heritage but also natural and intangible heritage. Nevertheless, as noted in “Our Creative Diversity”, these resources constitute “fragile wealth” and as such require policies and development models that preserve and respect the diversity and uniqueness of cultural heritage, because once lost, they are not renewable ([6], p. 132).

It is therefore time that every language, whatever it may be, be preserved, since the loss of a language is equal to the loss of a cultural heritage to be protected. Concepts, expressions, and objects, in some languages, cannot be easily translated into other languages just by words or phrases because they are full of meaning. A single word or phrase cannot translate them. One must use either phrases or images to do so. It is in this sense that each language has its importance to play in the conservation of cultural heritage.

The notion of heritage is important for culture and development as it constitutes the “cultural capital” of contemporary societies. Heritage contributes to the ongoing revaluation of cultures and identities and is a significant vehicle for the transmission of expertise, skills, and knowledge between generations. It also provides a source of inspiration for creativity and innovation, resulting in contemporary and future cultural products. Cultural heritage has the potential to foster access to and enjoyment of cultural diversity. Through the development of an individual and collective sense of belonging, it can also enrich social capital and contribute to supporting social and territorial cohesion. Furthermore, cultural heritage has acquired great economic importance for the tourism sector in many countries while, at the same time, creating new challenges for its conservation ([6], p. 132).

To preserve non-codified local languages, it is necessary to go into the field to study them.

4. The concept of the field

Field cannot be defined *ex nihilo*. “Terrain is not a thing, it is not a place, nor is it a social category, an ethnic group or an institution” ([7], p. 35). It must be associated with the researcher. This is why researchers who have already worked on the issue speak of “doing the field.” In this expression, we understand that there is an idea of interaction; that is, the researcher must not go into the field and work alone. He or she must be surrounded by informants of all ages and academic levels and must be a field rat, that is, go wherever there is information to be gathered.

Doing fieldwork refers, *de facto*, to a dynamic aspect. For the researcher, it is a question of going to the field, being accepted there, staying there, interacting, observing,

noting, discussing, weaving links, trying to understand... this research tool—fieldwork—therefore presupposes a commitment of the body, a common experience, a sharing. p. 56.

Fieldwork is an eternal restart, a perpetual questioning to avoid failures. This is why it is necessary to train in the field in order to know its intricacies so as to be able to transmit.

5. Training in the field

Language, an essential element in the preservation of cultural heritage, must be transmitted in order to avoid its extinction. And to do this, training is needed. This training must take into account the field for the collection of data, if all African languages are not written. To carry out this work, the States must set up research structures, that is, laboratories and research centers, computer equipment, and financial resources, with the aim of training teachers in the training of learners and vice versa, a sort of chain, a collaborative work between teachers and taught. Clearly, either the teacher transmits to the learner the theoretical bases of the field, and once in the field, the learner applies it and reports back with possible difficulties and suggestions, or the teacher and the learner both go to the field and confront the realities of the latter so that they experience and transform together the field method to be adopted. This is because the field is a complex notion. It cannot be understood as a fixed object to be studied, and the researcher cannot claim to give an objective account of what he has collected. There will be an element of subjectivity that will be included especially when translating from unwritten local languages to written languages. The researcher has, as it were, an “intimate and subjective relationship with the field” ([8], p. 1).

One cannot rigidify the field by solidifying it and making it an object of research, comparable to the object of the hard sciences for example. The field pre-exists the one who analyses it and escapes the experimental procedures of the laboratory and therefore the production of stable evidence (quoted by [8], p. 1). In the same perspective, Bourdieu [9] speaks of “participatory objectification,” which presupposes certain reflexivity. The researcher is therefore a victim of his or her emotions, which he or she uses in his or her analyses and interpretations. In addition to this difficulty, there is the difficulty of expressing the particular realities of a given culture.

The subjectivity in question is imposed from the moment that what is collected in the field is not fixed; everything is dynamic. It is information that is constantly being acquired from generation to generation, which is subject to modification, addition, and removal. This training requires enormous resources from (political) decision-makers. It is important to have a large and well-trained human resource. To do this, start by training trainers in the development of manuals for learning traditional knowledge and practices. These concern almost all areas since it is the cultural heritage that needs to be transmitted. They can be:

- Technical: machines, instruments for technical use, means of transport;
- Human and animal health: medicines, activities, names of drugs and stimulants, work tools...
- Culture and communication: leisure, music, new forms of enjoyment, media, sports, new clothing...

- Agriculture: exotic agricultural products, new agricultural techniques, names of foreign foods;
- Wildlife: names of animals and landscapes;
- Customs;
- Songs and games;
- Riddles, proverbs, tales, songs;
- However, there is a difficulty in expressing certain realities on the ground.

6. The difficulty in expressing realia

Realia are those non-linguistic realities, whether objects or expressions, that are difficult to convey in words and for which one is obliged to use images or illustrations to express them.

Existing objects in the world perceived or considered independently of their relation with the sign [10]. Anyone who wishes not to sacrifice the inherent unruliness of the reality of facts soon finds themselves exposed to succumbing under the weight of documentation and, ultimately, in danger of producing work of little value. The solution lies first in a division of tasks: historians, sociologists, etc., are responsible for observing and describing the realia and their evolution, while grammarians are tasked with identifying the signifiers in their various aspects and presenting them clearly and orderly. (G. Antoine, *L'Hist. de la lang., probl. et méth.ds Fr. mod.* 1981 t. 49, p. 146) ([11], p. 1).

The way of thinking, the culture, and the identity are specific to each language. Thus, without the field, it is almost impossible to transmit certain cultural knowledge; the way in which it is transmitted and those who transmit it must be in direct contact with those who gather the information:

What characterizes “fieldwork” above all [...] is its human dimension; fieldwork necessarily involves a relationship with people: professionals, users, inhabitants... whom the researcher will regularly call “actors” or “subjects.”

It is in this way that researchers will be able to construct a new epistemology.

7. Toward a new epistemology of field education

Until today, traditional knowledge in Africa has only been transmitted orally to children and at home for those who still use their languages. Speaking of the Palenque people, Pabla Pérez Tejedor describes the transmission of this knowledge as being similar to that of other peoples, especially Africans, who have not yet codified their languages.

All this knowledge and practice is transmitted by the elders to the new generations, through observation, practice, and use of the spoken language. It is through the spoken language that the elders and adults of Palenque transmit their most valuable knowledge to their brothers, sons, friends, nephews, cousins, members ([12], p. 76).

This traditional transmission must give way to a methodologically well-thought-out academic transmission. It would therefore be wise for higher education to think

and rethink the training of students and teachers in a new field methodology. This must be able to combine modernity and tradition. Thus, any field study must be designed in such a way that the involvement of those concerned is necessary, or even compulsory. In concrete terms, the field in question must be made up of the interlocutors of the languages in question but also of the speakers of these languages, that is, those who have learned the language as a second language (Language 2). They will consist of different age groups and genders. The learners should be accompanied by their trainers. In this way, knowledge will be gathered objectively as several sources are brought together, and those concerned, those who have mastered the language and are able to manipulate it, are also present.

What can be proposed is an epistemology based on the researcher (teacher or student). The researcher must be at the center of the whole methodology and at the same time all around. This means that we return to the reflexivity of the fieldwork in question. The researcher must go and find the objects, must go to the places and to the individuals:

[...] The method of transmission of this cultural heritage is essentially based on dialogue and the telling of stories by the elders, combined with observation and practice of the knowledge that is at the heart of the learning process. In other words, children and young people appropriate collective knowledge by observing and reproducing the activities of the elders and adults, thanks to a permanent dialogue between the two groups. Two languages are involved in this process. Tejedor ([12], pp. 76–77).

The figure below shows the place of the researcher in the field. This figure shows that the researcher must be at the center of everything. This means that he or she must go towards the objects, the things; surround himself or herself with individuals who will inform him or her, establishing interpersonal relationships; and actually be in the place of investigation. All of these elements combined will make it possible to carry out scientific fieldwork.

The field, here, is all those elements that surround the researcher. For a good field study, the researcher must be “in” the field, that is, be at one with the field for it to be properly understood and transmitted. All the elements around the researcher must also be interconnected with him/her.

8. The transmission of national languages and cultural heritage

Researchers (teachers or trainers and trainees or students) + interviewees gather in the field, study it, and find a *modus vivendi* for a good transmission of languages, which will be the basis for the transmission of cultures, including the cultural heritage of peoples. This group thus formed must study these languages in the field. Once the study is done, it will be necessary to train the trainers in order to train the students. Tourneau ([3], p. 25–26) mentioned that “it is especially important to have excellent teachers who are well trained in linguistic fieldwork and who are not stingy with their time.”

Example: safeguarding traditional knowledge and practices. Let us take the example of the Kotoko people, an indigenous people of the Logone Valley.

The Kotoko people are a water people because they live all along the Chari and Logone rivers. Their main activity is fishing. Appropriate means are therefore used for this purpose. The instrument used by this people for fishing is the “wàm zémí.” This tool is “made up of two distinct parts.” It is the “wàm,” which is the dugout canoe in

which the fishermen carry out their activity, and the triangular net placed at the front of the dugout canoe, which is called “zémi” [13], p. 4. This knowledge can only be transmitted when one is in contact, including in the field, to observe and collect the data necessary to teach it.

It is a disappearing skill since today none of these pirogues exist on these rivers. It is perhaps time that a fieldwork with linguists, historians, sociologists, and geographers, a multidisciplinary team, be done on this very important material of the Kotoko culture with the aim of rehabilitating it because it is part of the cultural heritage of a people. This disappearance has impoverished the Kotoko, because they had to look for other sources of income apart from fishing. And yet, if the educational system already took into account the transmission of cultural heritage, there would certainly not have been this loss.

9. Conclusion


At the end of this work on “the transmission of national languages and the conservation of cultural heritage,” it emerged that language plays a major role in the conservation of a people’s cultural heritage. It was noted that because of the neglect of local languages in favor of official languages in most African countries, several aspects of culture are disappearing or have disappeared, with enormous consequences for the socioeconomic development of the populations. This transmission must be sustainable. It will therefore be necessary to do a great deal of fieldwork to collect and rehabilitate objects, elements of the natural environment, everything that is living and non-living in the environment, as well as everything that concerns human activities.

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Chapter 5

Perspective Chapter: Higher Education Problems in Angola

Adilía Mendonça da Costa e Silva

Abstract

Higher education has extreme importance in the countries' economical, political, and social development. Since it has a fundamental role in a country's development construction in all its aspects and provides political and strategical support that a country requires for its development. Higher education tends to improve human resources capacity that is integrated with the several activity sectors of a certain country or region, adding to business fabric consolidation and technology innovation. And this makes investment in the education sector, especially in higher education, crucial. This paper's objective is to search for the main problems faced by educational institutions. To this end, based on the qualitative and descriptive method in which, through observation and interviews, information was collected, which after being analyzed with the help of NVivo, allowed to present a set of failures such as lack of investment, lack of management knowledge and planning on the part of managers of educational institutions, and lack of support for publication, among others.

Keywords: higher education, quality of education, investment in education, higher education institution management, Angola higher education system

1. Introduction

One of the many challenges of African countries' is related to education quality search [1], such as Angola. Higher education quality is achieved through scholars' professionalism improvement and administrative officers' and students' ability to learn [2], being that lecturer's refinement and work conditions improvement are essential to higher education institutions' quality determination.

Higher education in Angola shows countless debilities, and the search for quality has been higher education institutions', as well as the government bodies', main goal. The way this search for quality has been made is constantly questioned by several elements connected to the teaching process, and also by general population. After the postwar period (2002), there was a growth of higher education institutions, without, however, improving their quality. Institutions are created with the aim of reaching as many of the school-age population as possible, but without taking into account the minimum requirements necessary for teaching with the desired quality. On the other hand, many students formed by Angolan higher education institutions are discredited by their leaders by labeling them as "students without quality" for given function, to the detriment of students from outside the country.

The aim of this chapter is to show some of the main problems faced by higher education subsystem in Angola.

1.1 Angola higher education system

Higher education development in Angola was conditioned for many years due to civil war that ended in April 2002. The first higher education institution in Angola (at the time Portuguese colony) arise around 1962 through Decree-Law number 44530, August 21st from Ultramar Ministry, and it was designated as Angola's University General Studies. The first courses were created in 1963 and were allocated in three cities:

Luanda—medical surgical courses, power engineering, mining engineering, mechanical engineering, and chemical-industrial engineering;

Huambo, former Nova Lisboa—agronomy, forestry, and veterinary medicine; and

Lubango, former Sá da Bandeira—pedagogical science.

Around 1968, Angola's University General Studies are renamed Luanda University and in 1969 the first Luanda's university hospital was opened, where the medicine faculty operated. With the transition government creation, Luanda's University was decentralized in university centers Luanda, Huambo, and Lubango. And with the country already independent, in 1976 Luanda's University was renamed Angola's University, and in 1985 it is designated Agostinho Neto's University in honor of the first Angola's republic president, who would become the University's first rector.

Until 2009, the country only had one public Higher Education institution—Agostinho Neto's University—with university centers in the provinces of Cabinda, Uíge, Benguela, Huambo, and Huíla, and five private higher education institutions all located in Luanda. Back then, Agostinho Neto's University showed countless operating difficulties, such as infrastructure and courseware lack (Gaspar & Soares, 2021). The first private higher education universities arise in 1999, following the order: Angola's Catholic University (UCAN), Angola's Jean Piaget University (UniPiaget), Angola's Lusíadas University (ULA), Angola's Private Institute (ISPRA), and Angola's Independent University (UnIA), the first functioning only took place in 2000 (Angola's Catholic University).

Higher education expansion all over the country, as well as national boards training in several areas abroad, were some of the government embraced strategies, in the local development perspective of the region and the country in general. In 2009, through the Decree-Law nr. 5/09, April 7th, seven academic regions were created, based in Luanda, Benguela, Cabinda, Malange, Huambo, Huíla, and Uíge provinces, and in each province, one higher education institution, with the goal of the gradual increase of students that could have access to higher education. Therefore, with the war ending in 2002, it was verified that there is an increase in the number of students searching for higher education, going from 871 in 1977/1978 to 12,566 in 2002. Between 2002 and 2008, the number of students that searched for higher education differed from around 12,566 to 70,000 students, with annual vacancies offered from 850 to 8300. This fact led to the approval and creation of several public higher education institutions, especially private throughout the country, because the government could not match this higher formation search increase.

The Angolan government focused on the education expansion for a long time and forgot about teaching quality in the same institutions. Therefore, the institutions, especially private ones, arise without verification of the curriculum they presented, which was never in accordance with the necessary requirements for their functioning, many of them without appropriate facilities and without enough teachers to follow the several existing courses. And several other factors contributed to the higher education institutions' quality being relatively low. Among those are the teacher's lack of scientific investigation, as well as the nonperformed studies publication, the lack of suitable libraries and labs, internet resources lack, etc. The public higher education institutions continued to function mostly without their own facilities, and without lecturers, not even labs. The lecturers' number did not grow with the same rate the number of institution numbers and student numbers grew. For example, in 2016, regarding the public higher education institutions all over the country, a total of 26 institutions, there were 8758 lecturers (4650 graduated, 2917 with a master degree, and 838 Ph.D.) to respond to around 212,284 students, adding to the fact that most of them collaborate in private institutions.

A serious error committed by the supervisory body is the fact that they are constantly approving educational institutions' creation without an analysis or research of the market needs. In the 2001 national development plan, it was already talked about the necessity of surveys to the market and employers' needs regarding professionals profile that they required, so that institutions and courses were created according to the market needs and accomplish regular reformulations and adjustments in the existent courses curricula, depending on the changes that take place in the market, as well as seeking to include tutored learning in a real work environment, that is, internships in the courses last years and professionalizing and technical-professional training. The expansion of institutions was carried out and continues to be carried out without taking into consideration these aspects that are very important in the architecture of a country's education system and its development.

The Angolan state has been carrying out successive reform projects in the higher education subsystem for years. Any of these higher education reform projects in the country were conditioned by the nonparticipation of the main stakeholders of the teaching and learning process in their formulation: teachers, students, civil society, and unions. As a result, their constant failures were verified [3]. This author concludes that economic, social, political, and cultural transformations are the ones that affect the country's education system the most. That is, despite the existence of a decree that defends democratic management in higher education institutions, defining it as the participation of all actors in the higher education subsystem, including civil society, in improving quality, and respecting the norms in force applicable to them (Article 9 of Decree No. 90/09), it was only in 2022, after a series of demands by the teaching profession, that the process of electing the public higher education institutions managers in the country was carried out. As a result, it is expected that there will be effective collaboration and participation of all in the decision-making of higher education institutions.

It is known that in Angola higher education institutions worked at the service of the political agenda instead of their true mission, vision, and value, which has led them to face numerous constraints such as the lack of administrative, disciplinary, and pedagogical autonomy; scientific, cultural, and financial values; the lack of competent staff; and social recognition and appreciation of its mission [3], which places quality, the institutions' improvement, and the project's development as a challenge and also a strategy on the political agenda. This fact is supposed to change with the policy of

electing the higher education institutions' management bodies, but some teachers discredit it because managers are, mostly, partisan preventing higher education institutions' academic and scientific freedom. That is to say, the Angolan educational system has always been linked to the political system, in which the public higher education institutions' managers' functions have always been conditioned by the political power, since they were appointed by the supervisory body (Higher Education Ministry) that controlled all their actions, turning them into simple executors of the ruling party policies. For this reason, the higher education institutions' autonomy in Angola has always been legally recognized, but never implemented [4], as the State has always appeared as the guide and supervisor of the activities carried out by educational institutions. The Higher Education Science, Technology, and Innovation Ministry has always been in charge of the higher education policies management and execution in Angola and was oriented to access promoting and higher education massification.

Until the end of the academic year 2021/2022, the Angolan State took the main decisions relating to the academic process, besides controlling it, and higher education institutions had only administrative and financial autonomy, controlling the financial process according to the budget shares allocated to them [5]. According to Appiagyei-Atua, Beiter, and Karran [6] higher education institutions' autonomy level in Angola is 46.6% and is found in the set of African countries that comply with the required level of compliance with rights and individual freedom of 61.7%, with academic freedom of 70%. This is questionable since academic freedom has never been felt. However, Paiva and Campos [7] believe that the process of electing managers of public higher education institutions will provide some autonomy regarding the activities to be developed, allowing them to indicate their work cast and freedom for higher education institutions, allowing them, in some cases, to define their own laws. At the beginning of the 2022/2023 school year, the first elections were held in Angola at the public higher education institutions level, which gave hope to the academic community in terms of institutions teaching and learning process improvements, and mainly greater appreciation of the country class.

The purpose of this work is to take an approach to the main problems of Angolan higher education institutions, from the failures of the management of the guardianship body, the managers of the institutions themselves, to the teachers and students of the same. However, the research questions are:

- What are really the main problems facing Angolan higher education institutions?
- Managers, teachers, or students, who least contributes to improving their quality?

2. Method

The research is part of a descriptive study since it is intended to determine the main flaws of the Angolan higher education system [8], and the study is qualitative in nature, in which through observation (also reflected in the long years of service in higher education in Angola) and conversation with some students (a total of 30), teachers, managers, and administrative staff of some higher education institutions in the cities of Lubango and Moçâmedes, provinces of Huíla and Namibe, a series of answers were obtained to the questions asked. The interview with the students was done in groups, in an adaptation of the “focus group”, to facilitate the collection of information and later the answer was worked with the help of the NVivo program.

3. Results

The results are presented in stages (titles), depending on the variables addressed in the interviews (leaders of educational institutions, teachers, students, evaluation system, and pandemic effect), in a simple and clear way so that it is noticeable at all levels.

3.1 Characterization of the interviews

The students were mostly in the 20–30 years age group (justified by the fact that they were regular, day students) and are in the third and fourth year of the degree (**Table 1** of the appendix). Five students were from humpata’s average polytechnic in Huila province. About 13 teachers participated, of which 5 are part of the management of higher education institutions. Most of the teachers who participated have more than 10 years of service and are masters (**Table 2** of the appendix). Only two administrative officials agreed to participate.

3.2 Presentation and discussion of results

3.2.1 What to say about the Angolan higher education institutions leaders?

It is known that the teaching and learning process quality depends on all stakeholders’ quality in the education system, especially the various heads of departments and sections and especially the team leaders of the higher education institution.

One of the teachers and also manager said that “*the most of the higher education institutions leaders and managers in Angola were appointed for party convenience*”. And for this reason, according to Simões et. al [9], many of them did not have any knowledge in terms of financial management, human resources management, and especially institutional planning management, not to mention that they did not have the habit of reporting accounts on a regular and periodic basis. “*And the Higher Education institutions efficient and effective management for which they were responsible was called into question*”. On the other side, these educational institutions’ managers’ lack of management knowledge led to the trend to import management models from abroad, without an analysis of the local reality. And the same trend is verified within the country itself, in which policies and theories applied in the country’s capital are imposed in the various provinces, without a study being carried out on the locality reality, as they are different realities, with economic and social dynamics completely different, leading to such policies failure.

		N	%
Students	Sex	Female	9 36,0
		Male	16 64,0
	Total	25	100,0
	Age	21 a 30 years	15 60,0
		More than 30 year	10 40,0
	Total	25	100,0

Table 1.
 Characterization of the students.

		Years	N	%
Teachers	Years of service	33	2	15,4
		31	1	7,7
		19	1	7,7
		17	1	7,7
		11	3	23,1
		10	3	23,1
		5	1	7,7
		2	1	7,7
		Total	13	100,0
Academic nível	Doctorate degree	3	23,1	
	Master's degree	7	53,8	
	Graduate	3	23,1	
	Total	13	100,0	

Table 2.
Characterization of the teachers

“Every public Higher Education institution manager appointed by the supervisory body, wanting it or not, was and had to be affiliated with the ruling party, and therefore any activity or project developed in the supposedly autonomous and independent academy, was actually dependent on the will and interest of actors outside the academic community itself” (Manager and teacher). That is, they were always subordinated to the interests of higher bodies.

Currently, “educational institution managers are elected by the academic community, which shows a great step taken toward the true academic and scientific freedom of Angolan Higher Education institutions” (teacher). Therefore, the goal of the election is to obtain leaders who have greater ability to lead an institution responsible for the country’s development, through policy implementation that provides greater quality in the teaching process, from high quality staff recruitment, and quality facilities and equipment, and mainly, high-quality graduate students supply to the job market, which is able to face global challenges. “Although there is an “however”: educational institutions are totally dependent on the State Budget for their survival, and as a rule, managers end up submitting to the wishes of higher bodies for their own survival¹. That is, few talk about what is really wrong to guarantee a bigger slice of the pie” (teacher). Which ends up indicating a “masked” academic democracy.

For any educational institution’s success, it is essential that the leader knows how to efficiently manage it. This leads to the need to have as a leader someone who knows how to correctly interpret the school concept and the basic needs for its functioning, identify the connection need of the education subsystem structures, strategic planning need, strong professionalization and specialization in management practices need, transparency and rigor need in the institutional funds’ management, and regular accountability.

¹ Angolan people characteristic.

3.2.2 Major flaws. The most remarkable

The investment lack in higher education is completely visible. “*The Higher Education institutions in Angola operate, mostly, in borrowed and unsuitable buildings*” (managers, teachers, and administrative officials). And this applies not only to public higher education institutions but also to private ones.

Academic region	Higher Education Institutions	Year of creation	Location
I	Bengo Pedagogical School	2009	Bengo
	Higher Institute of Arts	2015	Luanda
	Higher Institute of Communication Sciences	2009	Luanda
	Higher Institute of Education Sciences	2009	Luanda
	Higher Institute of Physical Education and Sport	2015	Luanda
	Superior Institution of Social Work	2009	Luanda
	Higher Institute of Information and Communication Technology	2014	Luanda
	Military Technical Higher Institute	2007	Luanda
	Agostinho Neto University	1962	Luanda and Bengo
II	Polytechnic Higher Institute of Cuanza Sul	2009	Sumbe
	Katyavala Buila University	2009	Benguela and Cuanza Sul
III	University Eleven of November	2009	Cabinda and Zaire
IV	Malange Polytechnic Higher School	2009	Malange
	Malange Higher Institute of Agri-Food Technology	2015	Malange
	Malange Polytechnic Higher Institute	2009	Malange
	Lueji A Nkonde University	2009	Malange, Lunda Sul and Lunda Norte
V	Bié Pedagogical Higher School	2009	Bié
	Higher Institute of Education Sciences - Huambo	2009	Huambo
	José Eduardo dos Santos University	2009	Huambo, Bié and Moxico
VI	Higher Institute of Education Sciences	2009	Huíla
	Mandume Ya Ndemufayo University	2009	Huíla and Namibe
	Namibe University	2016	Namib
VII	Cuanza Norte Pedagogical Higher School	2009	Cuanza North
	Higher Institute of Education Sciences	2009	Uíge
	Kimpa Vita University	2009	Uíge, Cuanza Norte
VIII	Cuito Cuanavale University	2014	Cunene and Cuando Cubango

Source: 2016 Statistical Yearbook of the Ministry of Higher Education.

Table 3.
 Higher Education Public Institutions

Although there are currently around 81 higher education institutions in the country, 26 of which are public and 55 private (see **Tables 3 and 4** in appendix), “*we hardly find a single institution that has been conceived, designed and built as an educational institution in the true sense of the word, with classrooms in conditions and in sufficient number, labs, amphitheatres, libraries, computer rooms, offices for teachers and the administrative part of the institution itself, among others*” (managers). “*Some projects conceived and designed at the level of higher education end up dying on paper and advertising campaigns for a better, quality education and a promising future for Angolan youth*” (teacher).

Academic region	Higher education institutions	Year of creation	Location
I	Technical Higher School of Sports Sciences	2017	Luanda
	Higher Institute of Angola	2012	Luanda
	Higher Institute of Administration and Finance	2017	Luanda
	Higher Institute of Business and Humanities Sciences	2012	Luanda
	Higher Institute of Social Sciences and International Relations	2007	Luanda
	Superior Polytechnic Institute Dawn of Youth	2012	Luanda
	Instituto Superior Politécnico Atlantis	2012	Luanda
	Superior Polytechnic Institute of Science and Technology	2012	Luanda
	Kangojo Polytechnic Institute	2011	Luanda
	Higher Polytechnic Institute of Technologies and Sciences	2011	Luanda
	Deolinda Rodrigues Polytechnic Higher Institute	2012	Luanda
	Polytechnic Higher Institute of Cazenga	2011	Luanda
	International Polytechnic Higher Institute of Angola	2012	Luanda
	Intercontinental Polytechnic Higher Institute of Luanda	2017	Luanda
	Kalandula Polytechnic Institute	2012	Luanda
	Katangoji Polytechnic Institute	2012	Luanda
	Metropolitan Polytechnic Higher Institute of Angola	2011	Luanda
	Instituto Superior Técnico de Angola	2007	Luanda
	Zango Polytechnic Higher Institute	2012	Luanda
	Tocoist Polytechnic Institute	2016	Luanda
	Catholic University of Angola	1992 ¹	Luanda
	University of Belas	2007	Luanda
	Gregory Semedo University	2007	Luanda
	Independent University of Angola	2005	Luanda
	Jean Piaget University of Angola	2001	Luanda
	Lusíada University of Angola	2002	Luanda
Methodist University of Angola	2007	Luanda	
Oscar Ribas University	2007	Luanda	
Private University of Angola	2007	Luanda	
Technical University of Angola	2007	Luanda	

Academic region	Higher education institutions	Year of creation	Location
II	Catholic Polytechnic Higher Institute of Benguela	2012	Benguela
	Benguela Polytechnic Higher Institute	2011	Benguela
	Polytechnic Higher Institute of Porto Amboim	2012	Cuanza-Sul
	Libolo Polytechnic Higher Institute	2017	Cuanza-Sul
	Jean Piaget Polytechnic Higher Institute of Benguela	2012	Benguela
	Lusfada Higher Polytechnic Institute of Benguela	2012	Benguela
	Wonder Polytechnic Higher Institute	2012	Benguela
III	Cabinda Polytechnic Higher Institute	2012	Cabinda
	Lusfada Higher Polytechnic Institute of Cabinda	2012	Cabinda
IV	Lusfada Polytechnic Higher Institute of Lunda Sul	2012	Lunda South
	Cardinal Alexandre do Nascimento Polytechnic Higher Institute	2017	Malange
V	Higher Polytechnic Institute of Humanity and Technologys Ekuiki-II	2011	Huambo
	Caála Polytechnic Higher Institute	2017	Huambo
	Catholic Polytechnic Higher Institute of Huambo	2018	Huambo
	Lusfada Higher Polytechnic Institute of Huambo	2012	Huambo
	Higher Polytechnic Institute Sol Nascente	2012	Huambo
	Private Polytechnic Higher Institute of Luena	2017	Moxico
	Walinga Polytechnic Institute	2017	Moxico
VI	Polytechnic Higher Institute of Tundavala	2011	Huíla
	Gregório Semedo Polytechnic Higher Institute	2011	Huíla
	Synodal Polytechnic Institute	2017	Huíla
	Evangelical Polytechnic Higher Institute of Lubango	2017	Huíla
	Independent Polytechnic Higher Institute	2011	Huíla
VII	Private Polytechnic Higher Institute of Uíge	2017	Uíge
VIII	Private Polytechnic Higher Institute of Menongue	2017	When Cubango

Source: *Legal Framework of Private Higher Education Institutions (2018)*.¹The authorization for the creation of the Catholic University of Angola was given in 1992 through Decree No. 38-A/92 of 7 August, and was formalized in October 1997 through decree of 29 October 1997. The teaching activities began on 22 February 1999 (see www.ucan.edu).

Table 4.
 Higher Education Private Institutions.

On the other hand, investment directed to the education sector remains insignificant, far below the average for SADC countries [4]. This author said that the fear of investing in higher education was the result of the morbid fear that a greater investment would provoke political instability, given that the quality of the course given in institutions in Angola was not a priority, as some government positions did not reflect the interest for the academic community, but rather the interest of specific groups that, from higher education institutions, sought to extend their influence and control for purposes outside

the organization itself. Since higher education produces externalities in the value form for a society that benefits from an educated workforce, consumers, and citizens, not only those that are directly linked to the teaching-learning process but everything in general [10], it is important that the government invests seriously in education, especially in higher education.

“Until the present day (September 2022), the country does not have a single scientific journal”. Even though the Supervisory Ministry created a technical group in June 2021 (Order no 106/2021), responsible for promoting and implementing actions inherent to the creation of a network of scientific journals with the support of UNESCO and the scientific journals network from Latin America, Caribbean, Spain, and Portugal; no results have yet been seen (project continues on paper). And therefore, not even the little research done is taken into account, it is not valued. *“There is not a single institution that takes into account the studies results carried out by us”* (students). Angola has always participated in the ideas, innovation, and new products fair, in Nuremberg, Germany, and received several awards for the presented projects. As an example, we have the projects (teacher and students):

- “Anti-Skip Class”, which is an electronic timesheet book created by the Instituto Superior de Tecnologia de Informação de Comunicação (ISUTIC);
- Strategy for the prevention of snake bites in Angola and another project on studies of venoms and envenomations caused by snakes in Angola, presented by the Center for Information on Medicines and Toxicology (CIMETOX) in Malange, of the Lueji A’Nkonde University. It is an antivenom that is applied against snake bites, and potential investors were looking for its large-scale production. And the project’s first phase had already received an award at the same fair in a previous edition; “Palanquinha”, an app that allows users to know Angola’s historical and touristic spots;
- “Obstacle detection system and airplane ascent in an emergency situation” presented by Hélder Silva, a system that signals the obstacle and warns the crew that there is an imminent collision. If the crew does not act during the next five minutes of warning, the system takes control of the aircraft by raising the device and only returns the command to the pilots when each one enters their respective code;
- “From garbage to luxury,” a project that allows garbage recycling and transformation into products such as paste, glasses, and slippers;
- “Vorex One,” a device that transforms wind energy into electrical energy, resulting from the movement of vehicles on roads with high road traffic;
- Etc.

“These inventors, mostly students accompanied by their teachers, are usually the ones selected at the fair that takes place internally to represent the country at an international level. It should be noted that the Instituto Médio Politécnico da Humpata in the city of Lubango, province of Huíla has also presented several innovative projects, among which we highlight, for example, the car developed by a teacher and his students that works with a battery charged with sunlight. These are just examples of projects that, even after being presented internationally, end up abandoned in a room at the winning educational institution. There is no support from the local business

community, much less the government itself. And that, this support lack in the product of students and their teachers, the investment lack, not only creates demotivation for them (teachers and students), but also does not help in the development and recognition of the country itself”.

“Educational institutions in Angola are totally dependent on the State Budget”. There are almost no university extension projects that involve communities and that can bring additional income to educational institutions [9]. Currently, any extra income made by educational institutions in Angola ends up being reflected in the State’s accounts (Finances Ministry), as it has become mandatory to pay any fee through a RUPE (single reference for payment to the state) generated by the Finance Ministry locally.

The educational institutions’ courses and curricula in Angola are totally out of place and unstructured. The country’s labor market needs are not adequate. On the other hand, the subjects presented in the different courses are excessively theoretical and lack updates. “It is possible to find today, in Angolan higher education institutions, courses with curricular plans designed more than 20 years ago and which have never undergone any updates”. They remain the same: onerous, extensive, excessively theoretical, decontextualized, and without general pedagogical guidelines.

3.2.3 Confidence lack in lecturers and students

Debates about the teacher’s quality lack in Angolan educational institutions are constant. These were and continue to be pointed out as teachers without the desired quality to teach in higher education, in addition to being few, forcing them to become multipurpose: the teachers lack in Angolan educational institutions forces the few teachers to teach a large number of subjects, and in many cases, subjects outside their comfort area.

“There are cases, for example, in which a history teacher is forced to teach mathematics or geometry, even without the necessary basic knowledge. And the problems that arise there are dragged into higher education” (teacher). “Our teachers are excessively theoretical, making the classes of no interest to the student, many do not have the pedagogical component, they are not capable of revolutionizing their knowledge”.

One of the biggest problems observed in relation to this issue is the fact that most Angolan teachers have only a degree. Some higher education institutions have already offered master’s courses, in most cases with the participation of foreign institutions and teachers. Not with the desired variety but an acceptable number can already be considered. But at the doctoral and postdoctoral levels, it is practically non-existent. “The government has invested heavily in training staff abroad. Monthly, the Angolan government spends about 2,200,712.69 USD for the payment of supplementary scholarships for students who are in abroad”². However, some of these students end up not returning to the country, evading the current situation in which they live. “Many teachers who go on training abroad with a government scholarship, at a given moment, are forced to give up their training due to the difficulties they encounter along the way:

² Spoken words by the Science, technology and Innovation Higher Education Minister, May 18th 2020, in the Angolan Parliament.

- *Some postgraduate scholarship holders benefited from a 2-year scholarship for training of more than 3 years. Being totally dependent on help sent by family members who, at a given time, with the difficulty of obtaining foreign exchange, were forced to return without completing the course. In addition, constant delays in the payment of subsidies by the institute responsible for the scholarship holders, made them either enter the job market in the country where they are, or give up their training returning to the country.*

“On the other hand, not all teachers are privileged to benefit from a scholarship. Some who want to progress in their teaching career seek to train with their own resources, and with the difficulties encountered, many end up in the situation exposed above”.

Many teachers choose to teach abroad, because it is considered that every professional trained outside the country has a greater capacity to respond to the challenges faced by the country, ending up totally undervaluing the teachers who have trained in the country. It should be noted that the teachers themselves are partly to blame for this situation, since many of them, because they feel unmotivated and undervalued, end up adopting unworthy teaching behaviors, further devaluing their own teaching and sinking their own image. These teachers, both university and basic education, are unhappy because they do not feel valued, they argue that they have the lowest salaries on the market, and currently, with the exchange rate practiced in the Angolan market, the salary of a university teacher, assistant professor category is equivalent to 600 euros, and the living cost in Angola is very high.

Teachers are also identified as uninterested in scientific research and accommodate themselves to the positions in which they find themselves. These justify themselves by the lack of incentives, research subsidies (or insignificant), and works research, followed by work conditions lack, and incentives lack for the teaching-learning process, which in no way motivates the teaching activity. In response, the government decreed on June 7 (Presidential Decree n° 128/22, June 7th 2022), a new research subsidy, of 22% of the university professor's base salary, as a way of encouraging scientific research, although being little compared to the subsidies from other sectors of activity, teachers face it as a valid initiative for change, appreciation, and improvement of the teaching process.

On the other hand, students are indicated as not having an adequate profile compared to the entry profile required in the different courses. Who will be to blame? How are the different course curricula taught by higher education institutions designed? On what basis? Who makes them? Generally, higher education candidates are admitted to the competition for access to the various courses available at the institutions depending on the training they have in basic education. For example, a student who has studied economics and management has the right profile for the economics faculty and other institutions that lecture courses such as economics, management, accounting, etc.; students who have studied biology or chemistry have a profile for biological sciences and medicine. Therefore, to say that students do not present the appropriate profile for entry into the educational institution is an error of the institution that allows it and not of the student.

Angolan students are accused of not having reading habits [4], which, in a way, ends up having a great influence on their learning low level. The lack of public and/or private libraries reflects the reading habit, not to mention that students are mostly low-income. On the other hand, some students enter a higher education institution with the idea of obtaining only a diploma that attests to their higher education in a certain area, considering it as a passport to the job market, in which the quantitative

part, diploma grade, ends up having much more weight. In part, this is due to the traditional and mechanical method that teachers are used to teaching in their classes, and above all the social and economic situation in the country, in which more value is given to those who have a rich diploma. Many lecturers force their students to replicate the content they provide during classes, thus discouraging interest in learning, as they end up feeling that they have no opinion of their own.

In many cases, Angolan students are identified as not able to develop their own ideas and defend theories and are considered students with weak argumentation skills. The Angolan education system leads us to this conclusion. The teachers themselves do not believe in their students and, therefore, in what they teach to their students, giving no credit to them [11], said that professionals who have completed higher education abroad are more capable of responding to the needs and challenges faced by the country. This just reflects other countries' different teaching dynamics. Our teachers are excessively theoretical, most of them inexperienced in the job market, they are lecturers who limit students' learning by forcing them to reproduce everything they see in the classroom, and when they try to do something different they are soon stopped by structural conditions lack, which goes from adequate infrastructure lack and didactic and pedagogical material lack, among others. One aspect that is important to mention is the fact that many teachers search for additional jobs in which they give their soul to keep it, leaving teaching only as a guarantee in case they lose the other job. And the result is reflected in their failure to comply with the class plans, leaving students dependent on the teacher's goodwill to finish their training or not.

Students have little power to influence the education system [12], and in the case of Angola, we venture to say that they have no voice, as their opinions regarding academic issues are never taken into account, being forced to consume only what has transmitted to them and nothing else. This, in a way, associated with other problems already mentioned here (lack of libraries, internet, obligation to reproduce knowledge, etc.), ends up limiting them in the search for additional knowledge.

3.2.4 Educational institutions quality assessment system

Quality is of great significance as it enables educational institutions to achieve educational excellence. The quality evaluation in the educational sector is not only reflected in test scores, as well as in the information set, guidelines, and teachings that lecturers transmit to students, but also in the student's own experience throughout the teaching-learning process, during interaction with nonteaching staff and other components that are part of the institution, since the teaching effectiveness can be measured through the students. In other words, institutions' teaching quality is generally measured according to the perception that students have about the service offered by the institution in question (academic processes and services, education system, buildings conditions and their surroundings, existing resources, etc.).

"If there is a quality assessment through interviews or surveys, or any other instrument, it is possible to detect flaws that occur throughout the teaching-learning process, and with this, evaluate them and seek solutions in order to improve services that are provided by Higher Education institutions. Being the feedback obtained from students, teachers and other interested parties extremely important".

Mendes [13] states that higher education institutions' evaluation is the pillar and the promoter of their quality. In order to define quality in organizational terms, we

take into consideration a set of factors that contribute to the higher education institutions functionality, such as student satisfaction, social expectations, educational institutions management and administration, human and financial resources, and existing infrastructure, among others.

The Angolan education system, like others, foresees the educational institutions' evaluation, which in practice does not happen. There are evaluation process initiatives that end up being diluted and do not produce the expected effect. And studies carried out on the educational institutions' evaluation are not taken into consideration. This is a pity, because evaluation is a process that should be integrated into the educational institutions' management cycle and provides for their continuous improvement [14], and it is, therefore, strategic when it is in stake the higher education development and the country itself [13].

“In Angola, there is almost no evaluation process for educational institutions. These do not have the practice of reporting on the evaluation process themselves, who evaluated them and how. In my 12 years of teaching at a Higher Education institution in Angola, I do not remember seeing a single complete assessment of the institution's teaching-learning process. Generally, Angola's educational institutions students, especially public institutions, are afraid to make assessments for fear of retaliation by teachers, as many argue that if they evaluate negatively a teacher, they will not be successful in the subject taught by that same teacher. The question that remains is, what strategies have institutions used to overcome this problem? What strategies have institutions used to encourage students to participate in assessments, and be honest in their responses?”

In fact, many institutions do not evaluate the services they provide to the academic community. Not for students, not for teachers, not for society in general. And yet, these are the teaching and learning process's main elements, whose set of information provided by them is fundamental for the continuous improvement of the quality of the entire process of the institutions and, in general, of the place where they live and the country itself.

A few studies on quality assessment that take place in Angola are always by curious students or teachers who prepare the work with particular objectives and, unfortunately, even present the final results at conferences and other national and/or international platforms, do not take advantage on them. That is, all the information obtained, besides making it public, is useless, because it is not usage to use data from work done by students or teachers, only by referenced institutions.

In Angola, in addition to this information lack about the quality of the service provided by educational institutions (both higher and basic education), it is visible the lack of specialized services in inspection, supervision, and evaluation of both higher education and higher education institutions, there is no information regarding the fulfillment of the foreseen objectives. Simões et al [9] said that the institutions and mechanisms for guaranteeing education quality, the National Institute for the Assessment, Accreditation, and Recognition of Higher Education Studies (INAAREES), do not function properly. Currently, despite some improvements in its functioning, the main problems remain. These institutes aim to create quality assurance policies and mechanisms that allow and facilitate the higher education institutions' evaluation and the entire teaching process, besides recognizing and validating studies carried out at national and international levels.

The verified post-civil war period was accompanied by higher education institutions' proliferation throughout the country, which was justified by the need to expand

education and be able to respond to the higher education needs that the country faced. However, this expansion was not properly accompanied by the quality of teaching and service provision. Many private institutions, for example, ran unauthorized programs, there was no accuracy in recruiting academic and nonacademic staff, and some look at higher education simply as a lucrative business. These are problems constantly pointed out by both educational institutions as well as the supervisory body, but they are still present.

The institutions' evaluation need and continuous improvement of the entire teaching process had already been identified, projects have been launched, but in the end, for some reason still unknown, the conclusion is not seen. And this works like a cycle, government leaves, and government enters. And perhaps this is one of the Angolan government's main mistakes.

3.2.5 COVID-19 pandemic resulting Effect. What did we learn?

The pandemic caused by the SARS COVID-19 came to monitor investments made not only in the health sector but also in education and above all in the higher education subsystem. The pandemic led governments to close university campuses and face-to-face classes suspension for a considerable period of time as a measure to prevent the virus contamination spread. Some countries that had the distance learning modality in their school curricula were forced to make it a strategy, intensifying them, with the aim of reducing the pedagogical damage that was felt as a result of the pandemic caused by COVID-19. Other countries, given the uncertainty of an end date for the pandemic, were forced to bet on this modality of distance learning.

Until 2020, the Angolan State did not recognize any studies carried out at distance, both within the country and abroad (Presidential Decree n° 59/20, of 3 March). The emergence of the pandemic was necessary to show the importance of distance and blended learning, leading it to adopt the strategy used by most countries, in order to avoid a catastrophe at the educational level.

The distance learning strategy resulting from the COVID-19 pandemic is the set of sectoral measures taken by different governments in order to continue the curricular studies of students, as well as other regular educational activities when schools and other educational institutions are closed, requiring learning activities to be reviewed, planned and alternative learning program solutions provided with the support of teachers, the educational community in collaboration with students and their families, for these strategies to be successful [15]. Ref. [16] defines distance learning as synonymous with online teaching, e-learning, distance education, correspondence education, external studies, flexible teaching, and massively open online courses. Distance learning is usually provided with the help of technological equipment, digital systems, and various programs and applications, as it is done through videoconferences. And that, in many cases, implied the need to develop digital literacy [17], and high investment in technology, especially in the internet. COVID-19 showed the country (Angola) the need for investment not only in education but also in other basic sectors for the population's survival. With the exception of the country capital, in other provinces capitals with internet access, as many municipalities do not have access to the internet, it is almost nonfunctional most of the time. Associated with this are the problems of electricity restrictions for the most vulnerable populations.

The Angolan government, after approving distance learning and blended learning (Presidential Decree n° 59/20, of 3 March), forced by the COVID-19 pandemic, tried to develop an electronic platform with several features that would allow the didactic

material availability and monitor student learning, in order to reconcile distance and blended learning in the pandemic phase [15]. And as always, it was not functional, since most educational institutions did not have access to it, if not all, with the justification that there is no internet, much less digital means necessary for this purpose. “Classes were given in-person but always considering the security measures imposed by the State, since attempts to take online classes were frustrated by internet lack”.

“Investment, in this case, is not simply related to internet issues but also to the classrooms conditions, buildings and their surroundings, and other services provided by educational institutions” (students and administrative officials). Pandemic also showed, and more importantly, the improvement need in the educational institutions’ hygiene in Angola. Educational institutions have bathrooms, but most of them are unusable, not even for teachers, administrative staff, and especially for students, ranging from the structure itself, which lacks security due to the lack of doors or windows, lack of water in the bathrooms, toilet paper, among others.

Another important aspect to bear in mind for higher education institutions is the need for a health center. There are cases in which students or teachers, for some reason, need to be observed, however, the absence of a school health office or post, responsible for the first aid of students, teachers, and other employees of the institution, does not allow a ready care, often leading to greater damage. Because hospital emergency services in Angola are precarious.

4. Conclusion and recommendation

Higher education institutions will continue to be essential for a country’s social and economic progress, due to their role in research, evaluation, knowledge and information transfer, and the economic development process. This implies that any investment made in education translates into an investment in the country’s development, since education, especially higher education, is responsible for promoting the country’s development and growth, allowing the acceleration of technological diffusion, reducing knowledge gaps and, consequently, poverty, provides an increase in tax revenues, savings, and investment, reduces population growth, improves the country’s health, and makes society more entrepreneurial, civic and democratic. And if Angola really wants to develop, there is a need to think more and more about better investment in the education sector.

The 2018–2022 national development plan presents, as intervention priorities for higher education policy, the improvement of the network of higher education institutions, reflected in the increase in courses and number of graduates, greater postgraduate offers and improvement of the teaching quality, masters and doctors qualification, development of higher education assessment and certification system, promotion of research and development in higher education institutions and research centers in the country, and policies that, to a certain extent, are already being put into practice:

The commitment to the training of university lecturers continues, despite the difficulties in sending teachers abroad, due to the exchange rate problems presented by the country, the Angolan government has invested more in internal postgraduate training (masters and doctorate within the country).

The attempt to create an international journal continues so that patients and researchers can publish their work locally.

Regarding issues related to studies evaluation and certification, it was sent to all public institutions of higher education, the presidential decree project about

the regulation of the process of homologation of higher education studies. So, the academic community could participate with suggestions in the creation of the new legal diploma that establishes the technical requirements and criteria that must be observed in the process of homologation of higher education studies.

The government has already introduced the subsidy to support pedagogical research and scientific research in an attempt to encourage research in institutions and higher education (Presidential Decree no 128/22).

The elections that took place at the level of higher education institutions are considered to be a good step toward achieving total academic freedom. But this long-awaited academic and scientific freedom largely depends on the character and courage of both managers and teachers at educational institutions. It is necessary for academics to learn to separate academic issues from partisan issues, as most managers are always linked to the ruling party, they are afraid of contradicting their interests and decisions, losing the notion of a true academy. The academic community must not remain silent for fear of reprisals by the party. The academy does not marry politics. And as long as we continue to have managers who believe they are in office to serve the interests of the party, and who have to do so in order to progress both professionally and personally, we will not have an academy in the truest sense of the word.

The evaluation of higher education institutions and the entire teaching-learning process is essential to measure the performance of the educational system, in order to improve their quality. Therefore, it is important that institutions begin to carry out evaluations of their activities and the services they provide to the community, as it will be from these evaluations that they will be able to collect the necessary information to improve the quality of the services provided, through the detection of errors, failures that occurred throughout the teaching-learning process, which must be analyzed and subsequently resolved.

There is a huge need to listen to the entire academic community, to involve everyone (students, teachers, nonteaching workers, entrepreneurs, and civil society) in the teaching and learning process. The information they provide is essential for the process of improving the educational institution. Listening to the business community of the region and the country, in general, is essential so that the courses are created and structured according to the needs of the market, which will provide development for the country itself.

It is true that we have professors who fall short and students who show no interest in developing their intellectual capacities, but we also have many good professors and brilliant students who have developed great projects for which they have not seen any recognition from the government or the business community, and it demotivates them. It is much easier to get recognition outside when we are first recognized at home. Often, recognition comes from abroad, but love for the country brings them back to the house where they end up being abandoned and forgotten. And finally, they are accused of not being good students, let alone good teachers.

OECD report 2018 [18] states that educational institutions are the main ones responsible for the students' training with new skills that will allow them to face changes, develop and use new technologies, handle several organizations, and succeed in this highly interconnected world.


We emphasize the importance of greater investment in the education sector and recognition of the work done at the academic level. Well, in the end, the country will emerge victorious.

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Chapter 6

Perspective Chapter: Neoliberalism, Quasi-Marketization, and the Cultural Changes in the Philippine State Universities and Colleges

Vergel P. Miraña

Abstract

The historic EDSA People Power Revolution in 1986 toppled the 21 years' reign of the dictatorship of the then Philippine President Ferdinand E. Marcos. It was followed by a series of deregulation, privatization, and international pacts and agreements in adherence to the neoliberalism ideology. After more than three decades, the Philippines remains a developing country, and the quality of education falls below in comparison with most of its neighboring Asian countries. This chapter presents a personal viewpoint on the influence of neoliberalism principles implemented in higher education institutions in the Philippines. The chapter describes how SUCs have embraced neoliberalism knowingly or unknowingly as they implemented their operational policies and plans to achieve their strategic visions. The discussion draws its contents from relevant works of literature and personal account. The mutation of administrators into a corporate-style managerial elite; the infusion of managerial prerogatives; spiderweb-like, top-down organizational staffing; competition and publicity; outsourcing; and quality assurance compliance are some of the neoliberalism practices enumerated in the discussion. Higher education institutions' new "cultures" cemented neoliberalism in the Philippine higher education systems.

Keywords: neoliberalism, quasi-marketization, cultural changes, higher education institution, Philippines

1. Introduction

The concept of neoliberalism may not be well understood by many Filipinos, yet ask them about privatization, deregulation, and globalization, and they can surely relate to them. Unknown to many of us, neoliberalism in the form of policy packages by the Philippine government – often comes with foreign aids or debts (Structured Adjustments Programs by IMF, World Bank, ADB, USAid, etc.) or as an obligation as a member of international organizations (APEC, ASEAN, GATT, UN, etc.) – has already re-shaped, transformed, and defined our economic and social lives and the future of the Philippines. Its impact on education is pervasive and wide-reaching.

In fact, I believe that its influence in education is an assurance that neoliberalism is here to stay. Neoliberalism, as a form of governance, is a policy-making strategy “aimed at decreasing the political, legal, and social limits on market processes, corporate growth, and capital accumulation” [1]. It pertains “to ways of governing society that emphasize the central role of markets and advocate for minimal state involvement and intervention in market processes” [2]. It is a corporate market ideology that the world’s government embraced since its crucial evolution in the 1980s. Championed by the then US President Ronald Reagan and UK Prime Minister Margaret Thatcher, who described it to be “TINA” – there is no alternative – following the economic turmoil during that period created by “command-economies and state-led capitalism” [3], neoliberalism has been the default approach by most governments around the world since then.

Neoliberalism principles are exemplified when market ideas and practices are introduced in government organizations and in the delivery of government services (marketization); when public assets are sold (privatization); when rules limiting businesses are abolished (deregulation); when public services are reduced, or users are charged (user’s pay); through modified unionism; by limiting or removing legal protection for workers and local industries; and in economic reforms that lower taxes on high-earning individuals and companies. Neoliberalism in economic terms is equivalent to a free-market idea and the rise of the oligarchs. Over time, neoliberalism has promoted key cultural changes in the society. This includes expanding the reach of the market and its ability to determine things and services as a product that can be sold (commodification) where education is now considered a commodity; turning local economies to depend on the world market and the in and out of foreign capital (globalization); restructuring public institutions in the model of competitive private companies (public sector reform); and giving power to managers who undermine local collective decisions (managerialism) [4].

So far, neoliberalism has already cemented its foundation in the Philippines. Since the takeover of President Cory Aquino in 1986 up to today’s government of President Ferdinand R. Marcos, Jr., neoliberalism has dictated policies and reforms initiated by each president in a span of six administrations. This is not surprising since most government officials elected and appointed have studied their masters and PhDs in the US and in the UK [5]. Its takeover of public higher education is continuing, and although the process is uneven, without a doubt, it will get there soon. Hence, this paper discusses the impact of neoliberalism on public higher education institutions in the Philippines. Specifically, it will describe how quasi-marketization has been implemented and regulated in public state colleges and universities. The Commission on Higher Education’s (CHED) directive on Quality Assurance and Internationalization will be given a closer look. The eventual cultural changes among SUCs will also be discussed.

2. The quasi-marketization and globalization of higher education

The quality of Philippine higher education was once considered the second best in Asia, second only to Japan [6]. Today, this status has been left behind, and the country now lags to many nations in the continent and remains a developing country. The present system of higher education in the country is regulated by the Commission of Higher Education, an agency directly under the Office of the President of the Republic of the Philippines. It was created on May 18, 1994, through the passage of

the Republic Act (RA) No. 7722 or the Higher Education Act of 1994. It governs all colleges and universities offering tertiary, professional courses and graduate studies. The Technical Education and Skills Development Authority (TESDA), on the other hand, regulates all schools offering vocational courses, while the Department of Education (DepEd) takes care of the basic education from kindergarten to K-12. This trifocalization of the Philippine education system is one of the educational reforms studied and outlined by the Congressional Commission on Education in 1992 as a response to the continuous decline of the quality of education in the country.

Data from the Commission on Higher Education website indicate that the Philippines, as of June 8, 2017, has 1710 private higher education institutions – 21% of which or 351 institutions are sectarian schools, while there are only 283 public higher education institutions; these are the State Colleges and Universities (SUC's) and local universities and colleges (LUC's) created by national laws or local ordinances. The commission has direct and strong regulatory powers among private institutions to the extent that, given enough violations and/or non-compliance, it can order a closure to the institution. State universities and colleges, including local colleges, on the other hand, cannot be sanctioned likewise; since these institutions are created by law, CHED has a modified regulatory power over these SUCs but has full administrative control. The chairperson of all the state colleges and universities' governing bodies, the Board of Trustees, or the Board of Regents is the CHED chairperson. This was mandated in the RA No. 8292, otherwise known as the Higher Modernization Act of 1997. This law required the commission to “establish a complete, adequate, and integrated system of higher education” [7]. It provided power to the commission to modify and uniformly establish a governing board to every SUC nationwide. This law institutionalized the implementation of neoliberal principles in higher education institutions in the country. This is where the accreditation of programs offered in every SUC, ISO compliance, SUC leveling, and other schemes summarized under the Quality Assurance program, were systematically implemented, transforming every SUC to work like a private company under global standards and measures, providing neoliberal powers to the administrators and eventually changing the culture of public higher education permanently.

A significant impact of neoliberalism in education is the reforms seen worldwide with the main feature of aligning government schools with market-based ideas and practices. This marketization of education is often referred to as quasi-marketization. This is because, instead of mainstreaming government schools in the principles of free market, the government maintained strong regulatory powers while introducing reforms, making public education operate more like a private company. This policy stems from the perception that public schools have become inefficient, irrelevant, and unaccountable and do not effectively develop human capital [2]. Government intention to introduce market ideas and practices is supposed to be the solution. In the Philippines, education remains under government regulation and control. Several reforms in partnership with funding agencies, like the USAid, the British Council, AusAid, JICA, the World Bank, the IMF, the ADB, and numerous non-government agencies, were introduced to address the challenges in this sector. This scheme became the gateway for neoliberal policies to be implemented in the country as a required condition from the benefactors. Beginning from the modification of the composition of the Governing Boards of chartered state universities and colleges (SUCs), which resulted in the mutation of administrators into corporate-style managerial elites, trained with business perspective and paid like corporate managers, CHED have issued a series of memoranda and orders to implement the mandated functions of

“(a) achieving a more coordinated and integrated system of higher education; (b) rendering them more effective in the formulation and implementation of policies on higher education; (c) providing for more relevant direction in their governance; and (d) ensuring the enjoyment of academic freedom as guaranteed by the Constitution”. The latest is the CHED Memorandum Order (CMO) No. 46 series of 2012 or the Policy Standard to Enhance Quality Assurance in Philippine Higher Education through an Outcomes-Based and Typology-Based QA [8].

Quality assurance institutionalized the infusion of free-market ideas in public higher education in the Philippines. The memorandum provides a template for SUCs as to what kind of institution it will be. The memorandum issued on December 11, 2012, aimed to: (1) “get HEIs to contribute more vigorously to national development”. Citing the importance of globalization, CHED believed that HEIs played a significant role in boosting the national economy by producing competent graduates. Very clearly, this policy perceived education as an economic necessity rather than a search for knowledge. (2) “regain the Philippine competitive advantage close the competitive gap”. CHED argued that it is through the quality assurance that the Philippines could enhance its competitiveness close enough to compete against its Asian neighbors. Hence, the accreditations that come with this order are internationally based standards evaluating local practices and traditional ways and means [9]. (3) “adapt approaches that will resonate with national needs and international practice”. The commission wanted to steer higher education along with a learner-centered, competency-based, and industry-linked curriculum. This requires HEIs to embrace outcomes-based education, which countries around the world have already dismissed [10]. (4) “remain in step with the ASEAN in adopting and substantiating National Quality Framework”. The CMO complements the issuance of Executive Order No. 83 series of 2012 issued on October 1, 2012, the Philippine Qualification Framework with alleged pressures from APEC and ASEAN [10]. (5) “enhance the competitiveness of Filipino graduates, reduce their vulnerability to sub-optimal working conditions within and outside the country”. Through quality assurance, Filipino workers, domestic and abroad, are required to be highly skilled and competent. This also ensures the labor mobility within the ASEAN Economic Community after its integration in 2015.

With these objectives, CMO 46 directed all HEIs, including private institutions, to (1) “shift to an outcomes-based quality assurance”. This required SUCs to state their roles (instruction, research, and outreach) in an outcome form, including the extent and manner of evaluating them. This imperative also resulted in the re-statement of SUCs’ Vision, Mission, and Goals to be outcomes-based. (2) “adapt an outcomes-based accreditation of the HEI’s program offering and itself”. Under this scheme, SUCs needed to (a) get a Certificate of Compliance for programs offered in both the undergraduate and graduate studies, (b) voluntarily submit itself to determine whether they qualify as a Center of Excellence (COE) or Center of Development (COD) for programs offered, and (c) undergo the accreditation process of these programs offered conducted by Accrediting Agency of Chartered and Universities in the Philippines (AACUP). This accrediting agency describes itself as an independent and international benchmark company, which in effect sets standards for public higher education in the country. Presently, AACUP is a member of the International Network for Quality Assurance Agencies in Higher Education (INQAAHE) based in Barcelona, Spain; CHEA International Quality Group from Washington, D.C., USA; and the Asia-Pacific Quality Network (APQN) based in Shanghai, China. Both the AACUP and CHED promote the benefits of accredited programs for SUCs, which include: “lend prestige to universities and college, ensure the listing of SUC in the

list of Internationally Accredited Universities/Colleges (UNESCO-IAN), reveal their strengths and weaknesses that need to be addressed, help parents identify which schools they may send their children to for quality education and make possible for prospective funding agencies to know what academic institution is worth supporting”. The result is also used as a “criterion in administrative decision-making in a variety of ways”. It is also a requisite for budgeting SUC leveling and performance bonuses [11]. These shared perspectives on benefits by AACUP and CHED reflect what truly is the purpose of accreditation – competition, publicity, globalization, the commodification of education, and administrative control. (c) on the institutional level, public HEIs are mandated to become ISO compliant also. Not only are the programs evaluated under international standards, but also the institution itself is evaluated by measures not really designed for education. (3) adapt a typology-based quality assurance. Under this process, SUCs are classified according to their status as a college or a university with its corresponding level to which they are qualified. This SUC leveling makes use of the HEI’s compliances and accreditation processes it underwent and other criteria relevant to its functions as the basis for its classification or leveling. For example, an SUC could be level 1 up to level 5. The leveling comes with an enticing incentive of attaching the level to the official designation of the head of the SUC; if the SUC is level 5, the president is consequently, officially and formally, addressed as SUC President 5, which carries with it an additional budget and financial incentives. The achievement of SUCs in this leveling mechanism is a motivation for other SUCs to work harder, prompting a competition among the group.

Although globalization has been around in the country, its formal, deliberate, and strategic entry in higher education was on October 1, 2012, when Executive Order No. 83 series of 2012 had been issued by the then President Benigno C. Aquino III. Its main purpose was to align the country’s educational standards to international standards and low mobility of people within the ASEAN region and beyond in preparation for the ASEAN Integration in 2015. The outright response from CHED was the issuance of CMO No. 46, which subjected HEIs to quality assurance accreditation. Then, on November 11, 2016, when quality assurance had been integrated into the SUC system, CMO No. 55 series of 2016 or the Policy Framework and Strategies on the Internationalization of Philippine Higher Education was dispensed. The main purpose was to “address the effect of globalization and the recent ASEAN Integration. The CMO also acts as a guide to HEIs to ensure that their internationalization efforts serve the country’s interest, security, and identity” [12]. Finally, CMO No. 62 series of 2016 or the Policies, Standards, and Guidelines on Transnational Education came out. The British Council, one of the major benefactors of the K-12 Basic Education Reform, together with several British universities, forged courses with SUCs with excellent quality assurance accreditations in the Philippines [13]. The integration and transformation of SUCs with free-market ideas have been completed. The Philippine higher education is now on its way to follow the footprints that were left behind by those who did it first.

3. Neoliberalism and the cultural changes in SUCs

One of the most significant cultural changes in public higher education institutions in the Philippines that has evolved because of neoliberal infusion is the managerial prerogative of the administrators. The complete transformation of SUCs by CHED to operate like a private company provided its respective heads to define the

kind of SUC they would be. The powers vested among the administrators to decide for the organization “substantially displaced organizational democracy” [2]. While consultations may be frequently elicited, and suggestions may be accepted, in the end, it is the managerial prerogative that prevails, making consultations sound more like a window dressing. It is in this context that the ideology of competition among members of the organization of every SUC becomes alive. Faculty members and staff must secretly and openly compete against each other to get a designation. The built-in perks, which include administrative powers, financial incentives, and prestige, drive and motivate many to clamor for a position as an administrator. The process disregards and undermines the spirit of cooperation and camaraderie, which are the primary requirements for an organization to work.

This spirit of competition, the core of a free market concept, together with the managerial prerogative, resulted in wide anxiety, disloyalty, and distrust among members of SUCs. Consequently, the commitment that everyone brought in from the first time they joined the SUC was now shuttered. Self-interest set in instead of doing work in the public interest. The love of teaching gradually faded, and the excitement of intellectual discovery was replaced by the quest for personal glory, craving for promotion, and monetary returns. Insecurity resided among those with designations, and factions emerged, making it difficult for programs and projects to be implemented or even planned [2]. To address this insecurity and ensure obedience and control, neoliberalism strategy of spiderweb-like, top-down organizational staffing was implemented. Getting permissions through a request to spend delegated funds, conduct research, and travel to a conference or training are neoliberalism managerial strategies that extend control, while the managers themselves are usually exempted. Yet, amidst these challenges, there are still members of the organization who continuously work honestly, sincerely, and with unwavering commitment. And despite these complications, SUCs have managed to undergo different accreditation tasks required by the Quality Assurance policy of the commission.

Competition is not limited within the institutions. SUCs also compete not only against each other but also against private universities. The market logic of getting an advantage over other institutions – public or private – prompted SUC managers to resort to a corporate technique of publicity. SUCs now deliberately create an image for themselves or a brand and a slogan that would boost their market presence. Public displays using huge tarpaulins of students, staff and institutional achievements, awards, and board exams results; even a motorcade to celebrate board top-notchers is a common practice among SUCs now. Further, limiting the workforce in the organization by outsourcing services like security and hiring casual or part-time employees have also become a strategy. The decline in the budget of SUCs and the normative funding approach forced them to create programs and projects that would potentially yield a profit that would increase their income. An irony, I believe, indeed, is that the organizations that were built to serve the public interest are now getting profit from the public. One thing is very clear here though; neoliberalism in public higher education has now deeply positioned itself, aided by the government’s reforms.

4. Conclusion

Neoliberalism has engulfed public higher education in the Philippines. Aided by quality assurance schemes and internationalization programs, CHED was able to integrate neoliberalism in the country’s educational system. These policies have


completely transformed SUCs to operate like a private company, vesting powers to their administrators that led to permanent cultural changes in the organization. The transformation is still ongoing. While individual progress among Philippine higher education institutions is uneven, there is a common direction and a collective vision of becoming relevant globally, influenced and guided by neoliberal practices.

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Chapter 7

The Perils and Promises of Private Higher Education in Zimbabwe: The Case of Developing an Online University in Zimbabwe

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Abstract

The purpose of this chapter is to describe the experiences, challenges and lessons learnt from developing a new private online higher education institution in Zimbabwe. Using a case study of Unicaf University Zimbabwe, the chapter highlights the perils and promises of establishing a private, independent, online university, the first of its kind in the country. The chapter traces the various stages involved in registration, licensing and accreditation of Unicaf University by Zimbabwe Investment Development Authority and the local national accreditation regulator. The chapter describes the uniqueness of Unicaf University Zimbabwe, opportunities or promises that it offers the higher education sector and the challenges or perils that were encountered in the early stages on its road towards establishment in Zimbabwe. The chapter concludes that private online universities are essential for institutional differentiation and the introduction of real competition in Zimbabwe's higher education landscape.

Keywords: accreditation, distance learning, higher education, online, e-learning, private, regulator, Zimbabwe

1. Introduction

Zimbabwe like most African countries is undergoing a major transformation in higher education. The outbreak of Covid-19 has accelerated the changes taking place in higher education including online and e-learning programmes. Private higher education is not new in Zimbabwe as the first private and church-related institution, Africa University, was established in 1992 in Mutare, Zimbabwe by the Global Board of Higher Education and Ministries of the United Methodist Church that is based in Nashville Tennessee, in the United States of America. A number of churches felt challenged by this move and started pursuing their own projects to start new Universities in Zimbabwe as will be highlighted below.

Zimbabwe currently has 21 accredited Universities. Out of these institutions, 14 are public or government-owned and the rest are private Universities owned mostly by international churches. In Zimbabwe, the leading churches that now operate fully

fledged private Universities are the United Methodist Church (USA Diocese), Seventh Day Adventist (SDA) Church, Dutch Reformed Church, Catholic Church and the Ezekiel Guti, Zaoga Pentecostal Church. Clearly, churches in Zimbabwe have demonstrated a keen interest in developing Universities in future, and a few are already engaged in this process of setting up their new institutions of higher learning. These include the Anglican Church Zimbabwe Diocese, Methodist Church in Zimbabwe (John Wesley, British Diocese), AFM and Mutendi Church. In addition, Maranath Christin University is listed on the Zimbabwe Council for Higher Education website as one of the institutions that is currently operating with a provisional license.

Unicaf University offers a unique model in the sense that it is the first, private, independent, pan-African and internationally recognized Open and Distance-E-learning institution to be established in Zimbabwe. The only other University that has a similar business model to that of Unicaf University is the Zimbabwe Open University (ZOU) which is a public, open and distance learning higher education institution. The ZOU was established by the government of Zimbabwe in 1999 to meet the needs of those who wanted higher education but could not afford to leave their jobs and attend University at the same time. Because of the growing demand for part-time higher education, public Universities in Zimbabwe started to introduce Block Release and weekend programmes to cater for students who would not manage to attend college as full-time students due to other pressing work or family needs. Despite these efforts, the higher education market in Zimbabwe is not yet saturated, and there is an urgent need to have universities that cater for the underserved markets such rural areas, the working class and those who may be saddled with family responsibilities such as caring for a loved one on a full-time basis.

The purpose of this chapter is to describe Unicaf University's experiences, challenges and opportunities in trying to establish a private, independent, internationally recognized online and blended learning institution in Zimbabwe. The University has achieved some milestones including review of its 28 academic programmes by local experts, aligning its academic programmes curriculum to the Education 5.0 and the Heritage-based Learning as espoused by the Zimbabwe Ministry of Higher and Tertiary Education, Science Innovation and Technology Development (MHTESITD). In addition, Unicaf has built a state-of-the art campus in Harare and is now waiting for full accreditation of its academic programmes and the institution.

Unicaf experiences in establishing campuses and e-learning centres in different African countries are unique, and each country case is affected by different socio-economic environment and political context or circumstances. This chapter focuses on experiences of Unicaf in Zimbabwe and in particular its various interactions with the Government of Zimbabwe (GOZ) especially through the Zimbabwe Council for Higher Education (ZIMCHE) and the Zimbabwe Investment Development Agency (ZIDA).

1.1 Background information

Unicaf is headquartered in Cyprus, Europe, and it has developed a network of campuses and e-learning centres throughout Africa. Unicaf is now present in 12 African countries and is set to expand its reach to five additional countries in Sub-Saharan Africa. In other words, Unicaf University is a pan-African university with British and local accreditation for its academic degree programmes. For instance, Unicaf degree programmes are accredited by the British Accreditation Council (BAC), the United Nations Academic Impact (UNAI), and it is locally accredited by the National Regulatory Authorities in the respective African countries. The regulatory

and accrediting authority in Zimbabwe is called the Zimbabwe Council for Higher Education (ZIMCHE). It was established by an Act of Parliament, the ZIMCHE Act Chapter 25:27 promulgated in 2006 to provide oversight on quality higher education.

In addition to its network of campuses and learning centres distributed throughout Africa, Unicaf operates in partnerships with leading Universities in Europe and the United States of America. The Universities that are currently operating in partnership with Unicaf are the University of East London, University of Liverpool John Moores, University of Suffolk and the University of California at Riverside.

The advent of high-speed internet which facilitates ubiquitous connectivity has provided momentum for the spread of online learning on the continent of Africa and throughout the rest of the world. Post-Covid-19, higher education is seeing increasing delivery of online and virtual provisions as an alternative to the traditional brick and mortar or face-to-face learning that has characterized most public universities for decades. Online or e-learning provides flexible approaches and resilient alternative pedagogy in the face of complex or difficult problems associated with Covid-19 and an uncertain future [1]. The world and, in particular, developing countries have not made a complete shift or pivot to online as questions still arise in terms of quality of online pedagogy, poor access to ICT infrastructure in most African countries and failure to understand the online business model by policy makers in charge of regulating quality in the delivery of higher education. Ye according to the World Economic Forum, an estimated 70% of new value created in the economy during the coming decade will be based on digitally enabled business models.

Unicaf University will add to a growing list of private Universities in Zimbabwe. To date, there are seven private universities that are fully registered and operating in Zimbabwe. Among these Universities, six are church-related institutions and one is a wholly private and non-church-related University. Unicaf University is a private, independent, online and blended learning institution, and it is pan-African in both scope and nature. **Table 1** shows the 21 registered public and private universities currently operating in Zimbabwe.

1.2 The establishment of the Unicaf University Zimbabwe

Realizing the potential offered by online teaching and learning, Unicaf made initial moves to establish the Unicaf University Zimbabwe campus in 2018 in the capital city, Harare. The Harare campus has been operating with a Provisional Registration License that was issued in October 2019.

Unicaf was granted an investment license by the Zimbabwe Investment Agency (ZIA) in 2018 which was later renewed by the Zimbabwe Investment Development Agency (ZIDA) in 2022. The investment license allowed the Unicaf University Zimbabwe to operate and set up facilities that are required for it to launch a functional University in Zimbabwe.

Unicaf is supported by reputable international investors in the United Kingdom, United States of America and Africa. These leading investors are, namely University Ventures, British International Investment and Goldman Sachs.

1.3 Vision and mission of the university

The vision of Unicaf University is *to be a leading contributor to excellence in tertiary education and research in Africa and the rest of the world*. The University has three-pronged mission as follows:

No	Institution	Type	Year established
1	Bindura University of Science Education (BUSE)	Public	1996
2	Chinhoyi University of Technology (CUT)	Public	2001
3	Great Zimbabwe University (GZU)	Public	1995
4	Gwanda State University (GSU)	Public	2015
5	Harare Institute of Technology (HIT)	Public	1988
6	Lupane State University (LSU)	Public	2004
7	Manicaland University of Applied Sciences	Public	2016
8	Marondera University of Agricultural Sciences & Technology (MUASt)	Public	2017
9	Midlands State University (MSU)	Public	2000
10	National University of Science and Technology (NUST)	Public	1991
11	University of Zimbabwe (UZ)	Public	1952
12	Zimbabwe National Defense University (ZNDU)	Public	2021
13	Zimbabwe Open University (ZOU)	Public	1999
14	The Pan African University of Minerals Processing (SIRDC)	Public	2008
15	Africa University (AU)	Private	1992
16	Arrupe Jesuits University	Private	1994
17	Catholic University in Zimbabwe (CUZ)	Private	1999
18	Reformed Church University	Private	2012
19	Solusi University	Private	1994
20	Women University in Africa (WUA)	Private	2002
21	Zimbabwe Ezekiel Guti University	Private	2012

Source: The Zimbabwe Higher Education Council, 2022.

Table 1.
Higher education institutions registered in Zimbabwe, 2022.

- “To help students receive quality education, achieve their academic and professional goals and assume responsible roles in a changing world of global cooperation and interdependence.”
- “To promote applied research and the generation of knowledge.”
- “To be of service to society through the dissemination and application of knowledge, as well as through innovative partnerships with business and civic society institutions.”

In Zimbabwe, and globally, the higher education landscape has been reshaped by Covid-19. Although higher education institutions were already undergoing some major changes, the global pandemic has accelerated the pace of adoption of online and e-learning in most Universities. Unicaf University Zimbabwe, whose unique learning and teaching model is based on the provision of quality online and blended learning is well positioned to expand access to higher education for potential students in Zimbabwe and surrounding countries in the SADC region. Because of its high

literacy rate pegged at 92%, Zimbabwe has the potential to become the hub of the Unicaf University in the Southern Africa region. However, bureaucratic tendencies in the licensing and registration of Unicaf University in Zimbabwe have become a major source of frustration for the European investors, key shareholders and the University leadership that has been hired to spearhead its development in Zimbabwe. Unicaf University is guided by a comprehensive set of core values which clearly sets it apart as a highly reputable international university with global educational focus and reach. The core values for Unicaf University are highlighted in **Table 2** in the section below.

The afore-mentioned principles underpin the Code of Practice for the Unicaf University Zimbabwe. The core values framework highlights the key core values

Core values	Description/explanation	Implementation/practice
Personal and academic integrity	Promoting personal and academic integrity through honesty, trust, fairness, openness responsibility and accountability.	By avoiding conflict of interest in meetings, conducting research and decision making.
Innovative thinking	Cultivating, promoting, transmitting and exchanging knowledge and safeguarding academic freedoms; autonomy and responsibility.	Liberty to question, the free pursuit of knowledge and freedom of expression.
Good Governance and Management.	Promoting and ensuring democratic governance and management of the University.	Effective and efficient management of the University, discharge of ethical leadership and shared governance or the collective responsibility of smooth operation of the institution.
Professionalism and Diligence.	Respect for the University's regulations, and the laws of Zimbabwe.	Special focus on laws relating to data protection and confidential information.
Ethical Behavior	Promoting high standards of integrity and ethical behavior, exhibiting professionalism and diligence.	Avoidance of unethical or questionable practices. Arises when making or appealing against decisions, and practicing general courtesy and professional ethics.
Civic Responsibility	Promoting civic and social responsibility and responsiveness to the needs of society, the country and the region.	Commitment to the students and the society; taking a responsible role within civic society and responsiveness to the wider needs of society and the economy.
Multi-cultural Awareness.	Promoting tolerance, diversity and multi-cultural awareness.	Through the curriculum, constant debate and respect for cultural diversity and opinions of others.
Sustainability of Resources	Efficient and sustainable use of infra-structural, human and financial resources so that the University remains financially viable and environmentally friendly.	Involves effective management, avoidance of waste and emphasis on health and safety.
Personalized Attention and Student Focus.	Provide responsive and personalized attention to students in both academic and administrative matters.	Maximize and optimize student learning experiences, academic achievement and personal growth.

Source: www.unicaf.org, 2022.

Table 2.
The Core values framework for Unicaf university Zimbabwe.

driving the institution. These core values serve as the lived experiences for students, faculty and staff. In addition, the principles espoused in the framework in turn form the basis of the University guidelines and procedures in running the core business operations of the private and independent and internationally recognized online and blended learning university.

1.3.1 The development of new academic programmes for the Unicaf university Zimbabwe

Unicaf started with twenty-eight (28) academic programmes that it initially wanted to register with the Zimbabwe Council for Higher Education (ZIMCHE). On further consultations with the government regulatory authority, ZIMCHE, Unicaf University was tasked to review its academic programmes to ensure that they were compliant with Education 5.0 and Heritage-based education.

During a period of about 12 months from September 2020 to December 2021, Unicaf University led the review and revision of all the 28 academic programmes by local external experts. The revised programmes were later submitted to ZIMCHE for final consideration and accreditation. It became apparent that ZIMCHE would not accredit all the 28 programmes, and it was decided that Unicaf would instead submit eight (8) graduate programmes for initial accreditation and the rest would be submitted in future in batch format.

In the meantime, invitations to inspect physical facilities as part of programme accreditation were sent out to ZIMCHE. The invitations were crafted in January and the regulator managed to come in September citing Covid-19 complications of conducting a physical meeting. Unfortunately, although standard practice is to provide a feedback report within 2 weeks, more than a year elapsed without this ZIMCHE report. The negative experiences, complications and hurdles that led to the regulator's failure to meet its own commitments and subsequent delays spilling over into the following year had a major bearing on the pace and pathway that Unicaf followed in its journey to establish the first private online and blended learning University in Zimbabwe.

2. Part 2: the promises of private higher education in Zimbabwe

A study conducted by World Bank [2] (2020) identified six areas as defining opportunities in Zimbabwe's higher education sector. For the purposes of this chapter, the following three out of the six areas which are (i) Expanding Access and Improving Equity, (ii) Improving Quality and Relevance and (iii) Expanding Technology Transfer were found to be particularly relevant for the mission and vision of Unicaf University Zimbabwe. In order to expand access, enhance quality and improve technology transfer, Unicaf university had to position itself as a highly competitive institution with state-of-the-art infrastructure and facilities and an internationally reputable global brand.

2.1 Competitiveness of Unicaf University Zimbabwe

2.1.1 Triple accreditation status: Local and international accreditations

Just like so many other Universities both private and public, Unicaf University Zimbabwe is expected to compete for students in the domestic and regional markets. In order to enhance its global brand, Unicaf University has acquired international

accreditation status for its academic programmes in other countries. The triple accreditation status arises from the fact that its academic degree programmes are accredited by three different accrediting bodies. First, the academic programmes are accredited by the British Accreditation Council for Independent Further and Higher Education. Second, these programmes undergo the rigorous process of accreditation by the national regulatory authority for higher education in respective countries, such as the Zimbabwe Council for Higher Education (ZIMCHE). Third, Unicaf University degrees are accredited by the United Nations Academic Impact. In general, triple accreditation status gives the Unicaf University degree programmes international recognition by employers and industry in across many different parts of the world.

2.1.2 Virtual learning environment

Unicaf University has developed the bespoke Virtual Learning Environment (VLE) that is used to offer various course modules via on line and blended learning, examinations as well as professional development programmes. Every student is inducted into the VLE and offered a lap-top in order to fully participate in their degree programmes.

2.1.3 Unicaf academic innovation

The main thrust of academic innovation in a university setting is to constantly enhance students' experience by helping the learners achieve their best academic outcomes and personal goals. Academic innovation is underpinned by new innovations in teaching, learning, assessment and campus operations designed to ensure the development of a quality learning environment. In other words, academic innovation involves investing in systems, processes and procedures to support a seamless student experience from enrolment to graduation. The practice or implementation of innovation activities falls into three categories namely, product or service innovation, technological innovation and innovation in knowledge systems. The culture of academic innovation deals with making the best decisions for students, faculty, lesson delivery and curriculum. With proper planning and execution, academic innovation will result in positive outcomes such as engaged students, greater learning flexibility and a safe campus [3]. Higher education institutions such as Unicaf University are using academic innovation to respond effectively to students who are demanding engaging, collaborative and immersive learning environments.

Academic innovation strives to promote academic growth and allow mindsets and imagination to flourish across university disciplines. In terms of sustainable academic innovation, it requires addressing learning gaps, continuous improvement by catering for the needs of students, faculty and support staff and more importantly replacing outdated or legacy technology with a modern campus technology ecosystem while improving student experience in order to improve retention and success. Besides, academic innovation entails empowering researchers and accelerating research to drive innovation in teaching, service and related areas. Academic innovation is quite central to the promotion of academic excellence.

2.1.4 Unicaf student scholarship programme

Since its inception, Unicaf has distributed over \$100 million worth of scholarships as student financial aid that has assisted thousands of students across Africa. This scholarship scheme has enabled poor students acquire high quality Unicaf University

Rank	Country	Percentage (%)
1	Zimbabwe	321
2	Lebanon	208
3	Venezuela	158
4	Turkey	99
5	Argentina	87
6	Sri Lanka	86
7	Iran	84
8	Rwanda	41
9	Suriname	40
10	Lao PDR	39

Source: Food Security, 2022.

Table 3.
Zimbabwe food inflation relative to other countries, November 2022.

degrees or an equivalent degree from its partner institutions. As a result of falling household incomes and rising inflation in Zimbabwe which is currently pegged at 321 per month, Unicaf Scholarships are useful for assisting students particularly those from low-income households acquire a degree from highly reputable pan-African institution in collaboration with strategic partners and leading Universities in the United Kingdom and the United States of America (**Table 3**).

It is noteworthy that the Unicaf Scholarships play a pivotal role in eliminating or reducing disparities in access to higher education in Zimbabwe. Given that Zimbabwe leads the World Bank list of countries hit hardest by food inflation at 321%, access to education is therefore threatened by exposure to high inflation. Unlike South Africa, Zimbabwe does not have a national financial aid scheme (NFAS) for students. In developed nations such as the United States of America, United Kingdom and Canada, financial aid schemes for students are readily available especially for students from low-income backgrounds. Once the Unicaf University Zimbabwe is fully accredited, the Unicaf Scholarship Scheme could complement limited corporate scholarships and government financial support such as BEAM which is meant for students from poor families, and this will in turn help to lower financial barriers to tertiary education in Zimbabwe [4].

2.1.5 Local versus global strategic partnerships

Unicaf has forged strategic partnerships with a number of local banks, Telcoms and other key institutions. For instance, Unicaf has signed Memorandum of Understanding (MOUs) with CBZ, TELECEL, Institute of Chartered Accountant of Zimbabwe, (ICAZ) and the Zimbabwe Open University (ZOU) among others. These strategic partnerships are designed to advance academic excellence and generate leads for Unicaf. Corporate partnerships in particular usually involve Unicaf extending its scholarships to mobile phone subscribers in telecoms, private banking clients and individuals who are drawn from these private institutions.

Unicaf University has forged value-added strategic partnerships with key institutions in Europe, United States and throughout Africa. As previously highlighted,

in the United Kingdom, Unicaf University has established mutual, synergetic partnerships with University of East London, Liverpool John Moores, University of Suffolk including the University of California Riverside in the United States of America.

2.1.6 Unicaf Call Centre

Unicaf operates a Call Centre which recruits prospective students on a daily basis. Since academic programmes at Unicaf University had not received full accreditation from the ZIMCHE, and were still undergoing accreditation considerations, the Call Centre was restricted to enrolling students on behalf of other Unicaf University campuses in Sub-Saharan Africa as well as the afore-mentioned partner institutions from around the world. The Call Centre is therefore an essential cog in turning the wheels of Unicaf University campus network forward in its bid to be highly competitive in the student recruitment arena on the continent of Africa.

2.1.7 Unicaf sustainability award

Unicaf University subscribes to a number of core values such as *personal and academic integrity, liberty to question and pursue knowledge, respect of democratic governance and management, professionalism, diligence, ethical behavior and civic responsibility, respect of all human beings, multicultural awareness, tolerance and personalized attention and focus on each individual student*. In addition, Unicaf University is being molded as a sustainability campus. In 2021, Unicaf University won the Green Gown Award for sustainability which is a recognition for its sustainability credential across all its campuses throughout Africa.

3. Part 2: the perils of private higher education in Zimbabwe

3.1 Challenges facing higher education in Zimbabwe

3.1.1 High cost of tuition, poor access to decent accommodation and food insecurity

Exorbitant tuition fees and relatively high cost of accommodation are among some of the major challenges facing students at both private and public higher education institutions alike in Zimbabwe. The Southern Africa sub-region has witnessed a number of student demonstration dubbed the “#Fees Must Fall” which started in South Africa but have since spread to Zimbabwe and other countries. The average salary for a school teacher in Zimbabwe currently stands at \$100 a month, and that low-income figure for a public servant leaves them with no disposable income to cater for school or college fees. The recent 500–1000% spike in tuition fees at University of Zimbabwe which resulted in flash student demonstrations in September 2022 is indicative of the extent of the problem that has been simmering on the ground. Students have been paying Z\$50,000 per semester, and the fees were increased to between ZW\$300,000 and ZW\$500,000 or US\$930. However, Master’s students were expected to pay ZW\$1 million in tuition following the increase. Clearly, those tuition fees are out of reach for most poor families in Zimbabwe. Similar trends in tuition increases have spread to other public institutions such as the Midlands State University, Great Zimbabwe University and National University of Science and Technology although these have been introduced against vehement resistance or displeasure from both

the students and the hard-pressed parents. Meanwhile, the average Unicaf tuition is pegged at US\$100 per module or US\$3000 per programme. Clearly, these fees are beyond the reach of many average Zimbabweans. The issue of affordable fees is a major challenge in the Zimbabwe's economy where majority of the workers are struggling with the highest inflation in the world which is eroding household incomes and making it difficult for students to afford university education.

3.1.2 Low student enrolments rates

The world has been facing what has been dubbed “the great enrolment cliff” or a major decline in enrolment numbers across both public and private Universities and Community Colleges. The onset of Covid-19 accelerated the rapid decline in student enrolments and made an already bad situation worse. In Zimbabwe, Universities have been grappling with falling student enrolment numbers for years a predicament that is in tune with global trends. Compared with its regional counterparts, Zimbabwe is lagging behind in tertiary student enrolment rates. According to the World Bank (2020) report, Zimbabwe's 8.5% tertiary enrolment rate lags behind that of regional leaders Botswana (23.4%), South Africa (20.5%) and Kenya (11.7%). In addition, drop-out rates are high and heavily correlated with the relatively high cost of tuition fees as the main cause or reason for dropping out of tertiary institutions. Similarly, the outbreak of Covid-19 has negatively affected enrolment rates at major universities worldwide. Although specific numbers for enrolment declines attributed to the pandemic are not available, anecdotal evidence shows that most students failed to attend classes at universities during Covid-19 era with international students being heavily and seriously impacted negatively.

3.1.3 Negative publicity

The local higher education regulator recently published a negative notice stating that Unicaf University Zimbabwe was not a registered institution and that it was not allowed to serve as a recruiting agent for foreign Universities. This fallout resulted in litigation with Unicaf University Zimbabwe contesting the intentions of the national regulator of placing the advertisement in press knowing fully well that Unicaf was in the process of applying for the renewal of its provisional registration license. Although an assessment of the damage has not been completed, some private partners withdrew from negotiations to establish MOUs with Unicaf without providing any clear reasons, and this could only be attributed or related to the negative effects arising from that public notice that was flighted in a local newspaper.

3.1.4 Lack of political support

Doing business in Africa is not only affected by the conditions or eligibility requirements that are set for future businesses or potential investors, most of which are clearly laid out. What is deeply disturbing is that political culture in most African countries including Zimbabwe makes it hard to conduct normal business depending on who you are taking to and how connected one is to the key political actors or levers of power in the land. Without the necessary political or social capital, meeting eligibility criterion may be necessary but insufficient to pave the way for successful completion of investment deals in an African country such as Zimbabwe. What is even more troubling is the fact that strings that are attached by these dubious political actors or people with

influence are oftentimes invisible and what you experience are the negative outcomes or delays that cannot be explained rationally or attributed to the rules and regulations affecting doing business in given country or investing in particular economic sector. This borders on corruption, abuse of power and a tendency to indirectly demand bribes without clearly doing so as that is against the law or can be contested in a court of law. The ability to counter such nefarious practices by lobbying relevant key players could eventually result in securing the intended outcome which is often elusive given the information asymmetry associated with such conduct.

3.1.5 Bureaucracy in institutional and academic programme accreditation

Unicaf has been operating in Zimbabwe since 2018. Despite its lengthy presence in Zimbabwe where it is expected to establish its future hub for online teaching and learning in Southern Africa, the institution does not yet have accredited academic programmes and renewal of its registration license has been delayed unnecessarily. Bureaucratic wrangling between Unicaf and ZIMCHE appears as the main stumbling block in institutional and academic programmes accreditation. Although numerous communications have been exchanged between Unicaf University Zimbabwe and ZIMCHE, there has not been much progress in the past 4 years.

The bureaucratic tendencies have been manifested through delays in holding key inspection meetings, such as the physical facilities inspection visit that was originally slated for April but was eventually held on the 9th of September 2021. Although a report on the proceedings of the meeting was to be prepared by regulator and shared with the host institution, a year later no formal report was submitted or shared with Unicaf University. Another area that has suffered from bureaucratic wrangling is the delays in approval of eight (8) graduate programmes that were submitted for accreditation in December 2020. Almost 2 years later, the regulator has not formally responded to the institution regarding the status of these programmes. In addition, the Provisional Registration License of Unicaf University Zimbabwe was allowed to lapse in October 2019 despite numerous efforts to remind the regulator to renew this license before the expiry date. Similarly, bureaucratic delays were experienced in the form of lack of feedback on the University Charter that was submitted in 2021 and University organogram.

It appeared as if the Quality Assurance regulator was pursuing an agenda of 'strategic ambiguity' or in worst-case scenario 'strategic confusion' as there were cases when communications between Unicaf University and the local regulator were suspended pending outcome on legal actions that were being pursued by Unicaf University Zimbabwe as a game of last resort.

3.1.6 Legal challenges in institutional accreditation

Because of the frequent delays, suspensions in communication and inaction on key decisions, Unicaf University was left with no option but pursue the legal route during its pursuit of institutional accreditation. One of the major motivations for pursuing the legal route was the Public Notice that was fledged by the regulator in the local press warning Zimbabweans that Unicaf University was not registered by the local regulator. Although this seems to state the obvious as Unicaf University had applied for a renewal of its Provisional Registration License at the time, and in fact, its case was being heard by the Council, the regulator still went ahead in a move that was designed to tarnish the image and reputation of the institution. Although the

University did not win its case against the regulator after filing an Urgent Chamber application in the High Court for the regulator to withdraw the damaging Public Notice, the Judge felt that the case was not urgent since it was filed after 2 weeks of internal consultations among the leadership at Unicaf University. The Judge felt that the case between the two parties could be heard based on its merits.

The University felt aggrieved when the regulator allowed its Provisional Registration License to lapse and then proceeded to not renew this license yet requests for renewal were sent a long time back. Unicaf also appealed the decision on the grounds that the regulator took almost a year to conduct a physical inspection of facilities blaming the delay non Covid-19 despite a request for virtual assessment by the University. The bureaucratic tendencies or bungling by the local regulator birthed an acrimonious relationship with an institution with a noble mission and vision to service an under-served market by developing a state-of-the-art online teaching and learning by establishing a private, independent and pan-African university in Zimbabwe.

3.1.7 Potential risk of lack of multicultural awareness among employees

Unicaf University is a global institution with its students, staff and faculty drawn from more than 160 countries. There are now almost 40,000 students in the Unicaf University campus network. Not every employee of Unicaf has been exposed to international university culture, and therefore, this implies the need for Unicaf in its induction process to train its workers and students on the significance of multicultural awareness. Multicultural awareness is a core value for Unicaf University, and both employees and students are expected to model this behavior by creating a flourishing and diverse multicultural environment at the institution.

3.1.8 Governance issues: conflict of interest in council membership

Membership in ZIMCHE Council comprises current and former Vice-Chancellors of private and public universities among other scholars. This raises the problems of conflict of interest as Councilors are likely to prioritize their own institution through self-interest behavior and thus may exercise bias when voting on decisions or outcomes affecting the institution deemed as a competitor.

3.1.9 Digital divide: low ICT penetration in Zimbabwe and Africa

In rural areas and some urban towns, access to the Internet or *WiFi* remains intermittent. Yet in the knowledge society, digital access is not a nice to have, but it's a must have in the same league as utility such as electricity and water. Zimbabwe's Internet penetration is 30% while mobile penetration is above 90% in 2021. Affordability of gadgets such as computers and laptops also tends to interfere with access to quality online higher education. In order to circumvent this challenge, the Unicaf University provides a complimentary lap-top to all its registered students.

3.1.10 Economic recession and high inflation

Zimbabwe currently ranks among the top three nations in the world having a very high rate of inflation. The inflation rate in Zimbabwe was 285% (i.e. as of October 2022) and is currently 321% (i.e., as of November 2022), and this makes it difficult to conduct normal business while students often struggle with payment of their tuition fees under

such hyper-inflationary situation. In such a scenario, students struggle to pay for accommodation, food and health insurance forcing them to drop out from the Universities. With majority of parents earning in Zimbabwe Dollars, the depreciation of the local currency against the United States dollar makes it more difficult for parents to afford to send their children to college. Recently, some public universities in Zimbabwe have faced waves of student demonstrations protesting against more than 100% hike in some colleges fees. Unicaf is better placed to weather this storm as it offers scholarships to its prospective students which help to ease the burden of high cost of tuition and other fees at the university.

3.1.11 Lack of land to build university campus

Unicaf University has not secured large tract of land on which to build a fledgling university campus in Zimbabwe. Such a development will signal to both the government and other key partners that Unicaf has a long-term intention to invest in Zimbabwe's higher education sector for the benefit of the local population and students that will be drawn from other SADC countries in the sub-region. Unicaf can easily implement the strategy currently being used by other relatively new universities that have bought land in surrounding areas of Harare given that it is both cheaper and easily accessible to the city centre in order to support the business activities of the university.

Given that Unicaf does not own land in Zimbabwe currently as its main campus is located in a rented space in Central Business District in Harare expansion plans which are predicated on successful institutional accreditation should entail securing vast tracts of land to build its own campus. Suffice to say the government views Universities that have invested in land favorably as it sends a clear signal to demonstrate long-term expansion and presence in a given country. Renting in Central Business District may not be sustainable especially as the University plans to grow its campus into a major hub for Southern Africa.

3.1.12 Covid-19 outbreak

The global pandemic has negatively affected the steady progress in the establishment of Unicaf University in Zimbabwe. Although developed nations have established technological infrastructure to support transition from face-to-face or brick-and-mortar to e-learning and distance education, in contrast most developing countries are still underprepared for this transition [5]. For instance, the Unicaf University Zimbabwe which is trying to establish a state-of-the-art e-learning institution in Zimbabwe suffered a severe blow when it lost its founding Deputy Vice-Chancellor and Acting Vice-Chancellor to Covid 19 in 2020. Even as the pandemic was raging, a number of staff including two senior management contracted Covid-19 and were hospitalized. The University adopted a series of strategies including trainings on Covid-19 prevention, hand washing, sanitizing, fumigation of offices, the wearing of masks, limiting visitors to campus and holding virtual meetings as ways to curb the spread of the pandemic at the Harare campus.

3.1.13 Science, technology engineering and mathematics (STEM) deficiency

In Zimbabwe, the National Skills Audit Report [3] of 2018 identified major gaps in the area of Science, Technology, Engineering and Mathematics [6]. The deficiencies in STEM are manifested through an acute shortage of academic staff, laboratories and

workshops and related specialized facilities to support teaching and learning in STEM programmes especially in the public Universities. Given that Unicaf University is a technology-centred institution, any shortages or deficits in technology skills which are relevant for driving e-learning and e-innovations have a direct negative impact on the future development and growth of the University. The challenge in terms of weak supply and demand for STEM at the national level requires close attention from not only policy-makers but those who are tasked to establish online and blended e-learning institutions which put information and communication technology (ICT) at the centre of their very survival as well as the ability to thrive in the long-term.

4. Conclusion

Unicaf University is a pan-African, independent and internationally recognized institution with a network of campuses and Learning Centres situated in 12 different African countries. In Zimbabwe, Unicaf University was granted a license to operate a university in 2018 by Zimbabwe Investment Agency (ZIA). Unicaf University operates in partnership with highly reputable institutions in Europe and United States of America. These include University of East London, University of Liverpool John Moores and University of Suffolk. In the mainland of United States of America, Unicaf University has partnered with the University of California at Riverside.

Unicaf University is the first, private open and distance e-learning institution to be established in Zimbabwe. Unicaf is currently situated in the Central Business District of Harare and has built a state-of-the-art-campus comprising a digital library, offices for senior management, lecture rooms, tutorial rooms, Auditorium, Call Centre and Walk-in Centre among other facilities. Despite building such modern facilities, the local regulatory authority has taken more than a year to approve the teaching and learning facilities. While some delays could be blamed on Covid-19, even after the peak period key decisions required to launch the use of these modern facilities remain outstanding or are still pending.

The entry of Unicaf University in Zimbabwe's higher education landscape is in direct alignment with and advancement of key observations and recommendation made by the World Bank report that the country's low level of tertiary enrolment coupled with the dominant position of public universities in tertiary sector and the government's limited budgetary resources point to the need for an expansion strategy based on "institutional differentiation" and "real competition." The pursuit of such a strategy would create an opportunity to tap into complementary benefits of various institution types (including private Open and Distance e-Learning) and educational modalities (online and blended learning) to create a flexible, adaptive and fit for purpose workforce.

Although the situation is not dire, there are still problems that are associated with navigating the treacherous accreditation of private, open and distance e-learning institutions in Zimbabwe and Africa in general. However, Unicaf University will continue to grow into an internationally reputable institution that is resilient, welcoming, multicultural and supportive of its students, faculty and staff as well as conducting its civic duty in relation to uplifting the livelihoods of the local communities that it serves.

The Unicaf University offers a relatively new alternative and innovative distance education model through a private university set up that helps to meet the growing demand for tertiary education and life-long learning programmes. Such a development adds to the much needed public good in terms of diversification of institutional

composition, thus complementing the traditional public universities. In addition, e-learning that is being provided by Unicaf model in its various campuses is a necessity even in times of Covid-19 pandemic induced shuts downs and lock downs. Further, the increasing role of private distance learning will help to ease the burden or pressure on government education budgetary resource in short to medium term.

Disclaimer


The views or opinions expressed in this chapter are mine and in no way represent the official position of Unicaf University, its shareholders or strategic partners. Any mistakes, errors, false claims or misrepresentations that may be contained or identified in this chapter should be attributed to me and not the institution that I represent or work for in this regard, Unicaf University.

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Section 2

The State of Online Education

Chapter 8

Perspective Chapter: Lessons from Implementing a Higher Education Program in Lesotho

Pulane Lefoka

Abstract

Recent developments in the Lesotho higher education landscape necessitated a change in this subsector. In particular, the Ministry of Education and Training established the Lesotho Council on Higher Education (CHE) as a regulatory body. Among its achievements, the council legislated that academics teaching in institutions of higher learning undergo professional development. This development coincided with the completion of Lefoka's PhD thesis. One of the findings of the PhD research is that most higher education teachers do not have professional qualifications for teaching in the subsector. The thesis recommended that higher education teachers should be capacitated for a teaching role. This recommendation motivated the National University of Lesotho to comply with one of the council's policies by introducing a Post Graduate Diploma in Higher Education (PGD-HE) program. In this chapter, the author uses reflective practice literature to guide the presentation on the implementation of the PGD-HE program. The chapter articulates lessons emerging from the change of initial plan due to disruption by the COVID-19 pandemic. The major change involved the reduction of academic duration and a move from blended teaching to online teaching mode. Based on the lessons learned, this chapter recommends the use of the lessons to improve the offering of the program.

Keywords: professional development, higher education, COVID-19, thesis, reflection, PGDHE, program, online teaching

1. Introduction

The chapter discusses issues that were considered in developing and implementing a new program in the higher education field. Gibbs [1] model of reflection provides a framework for sharing lessons originating from the field. Gibbs [1] argues that there is a need to reflect on experience to ensure that lessons are recalled for learning purposes. Hence, the importance of reflecting upon an experience. Most importantly, it is from the feelings and thoughts emerging from the reflections that generalizations or concepts can be generated and it is generalizations that allow new situations to be tackled effectively [1]. Reading the work of one of the great philosophers, Dewey [2] influenced the writing and thinking about reflection. Dewey describes reflective practice

[as] the ability to reflect on one's actions, so as to engage in a process of continuous learning. He points out that it involves paying critical attention to the practical values and theories that inform everyday actions. He points to the value of examining practice reflectively and reflexively. Although the decision to use reflective practice in the field was not systematic, the idea facilitated employing reflection in thinking about experience based on teaching in the National University of Lesotho Post Graduate Diploma in Higher Education (PGDHE) Program. In describing the background, information is drawn from the PhD thesis and the Lesotho higher education context.

1.1 The Lesotho council on higher education policy

Undertaking a study, in the context of PhD, focusing on higher education teachers, means piloting the idea of researching higher education in Lesotho. Teachers in the Faculty of Education at the National University of Lesotho were invited to participate in my study. Two teachers in each of the three departments of this faculty were purposively selected. The major question for the study was: *What are the sources and application of professional knowledge among teacher educators*. This study [3] revealed, among other findings, that a common feature for all teacher educators given that they all started teaching before acquiring a postgraduate qualification in higher education is that they were immersed in the teaching of student teachers; they learned the art of teaching in the actual context of a teacher education program. It is therefore significant that the other sources of professional knowledge for teacher educators are practical, experiential, and/or phronesis but they lack epistemic knowledge. Upon completion of the PhD study and equipped with the findings, the challenge was on addressing the problem and embarking on facilitating the training of higher education teachers. The completion of the PhD study coincided with new developments in the context of higher education.

1.2 The impact of PhD thesis

The Government of Lesotho, through the Ministry of Education and Training (MoET) launched the council on higher education (CHE) to assume the role of the regulator in the subsector. One of the major regulatory requirements of the CHE is that higher education teachers should have credentials for teaching at the higher education level. Consideration was made regarding this development; this was an opportunity to develop a new program: *Post Graduate Diploma in Higher Education (PGD-HE)* for higher education teachers. This would be the best input for PhD work in the Lesotho higher education context. The idea required following the University and the CHE procedures and protocols. Reflection on the process alludes to lessons and numerous challenges at both levels.

At the university level, there was realization that implementation of innovations follows procedures. Procedures include presenting the program to various university committees: department board, academic programs committee (APC), and the Senate for the latter, being the highest body in the university, to consider and approve the program. Engaging the University Senate requires developing a program document to ensure acceptance. Developing the program document presented challenges, including having a credible rationale, good program philosophy, and good courses, which would attract higher education teachers to enroll in the program. The Center for Teaching and Learning settled for seven courses, including Lesotho higher education in context, teaching and learning in higher education, assessment in

higher education, curriculum design and development, scholarship of teaching and learning in higher education, e-learning in higher education, and quality assurance in higher education. Although, as one of the CHE requirements, a needs analysis for the program had been conducted, this was an ambitious program with too many courses to be taught in one program. However, the university committees considered and approved the submission presented by the Center for Teaching and Learning for onward submission to CHE. This was an opportunity to contribute to the discourse of teaching and learning in higher education in Lesotho.

1.3 Requirements and developments

The key step required by the Council on Higher Education was to ensure that the procedures were followed. Such procedures were guided by numerous documents, which had to be followed if the program was to be accredited by CHE. Key among the documents was the CHE *self-assessment* document. This document had to be comprehensive and has to ensure quality. It serves as the document that the CHE uses in assessing and thereafter accrediting programs. While following the procedures for approval presented challenges the various stages dully presented immense lessons, including upholding quality requirements when presenting a new program for accreditation.

1.4 Development of the program for accreditation purposes

The implementation of the program necessitates following procedures for mounting it. Reflecting on critical issues experienced in the field during the implementation of the program presents positive and negative encounters. Four subthemes emerge.

2. Teaching and learning

The initial plan was to follow a blended learning approach. Pillay and Gerrard [4] citing Garrison and Vaughan, [5] describe blended learning as “the thoughtful fusion of face-to-face and online learning experiences” (p.965). Stacey and Gerbic [6] also share Pillay and Gerrard cited description. An unexpected decision to use online teaching and learning approach was due to the COVID-19 disruption. Facilitators for teaching in the program were minimally prepared for using the online mode. Yet, using online teaching and learning approach is a process that requires designing a course using a credible approach. Most importantly, good teaching in the new era of online teaching would benefit from practicing reflection systematically.

2.1 The program duration

The initial plan was to offer the program for a period of 2 years. However, due to the COVID-19 pandemic disruption, a decision to change to one year was proposed, approved, and implemented. This meant negotiating with the Council on Higher Education to change the mode of delivery. Although CHE agreed, the decision caused the university M30 000. Agreeing to change a mode of delivery was costly since the university had already paid M100 000 for initial accreditation. Yet, ensuring that the new decision was properly articulated was not assessed. The situation means that professional experience could not bear the new developments.

Nevertheless, this development meant implementing the program using a different mode, but most importantly, ensuring that those who teach in the program receive training for e-learning. However, equipping the teaching staff with e-learning skills was not catered. In this regard, besides offering a shortened program in terms of time, expertise was minimized. Each course was, regardless of the number of credits, taught for a period of 3 months with an allocation of 2 days a week for the 15 credits courses and 3 days a week for the 20 credits courses. The students who were enrolled in the programme were employed in their institutions as teachers. Hence, challenges inflicted by studying online. Sharing their experiences in their portfolio of evidence, students revealed that time allocated for their studies was insufficient. Most significantly, the study workload was too heavy, especially coupled with their teaching workloads. This means a tool to measure their views could have been developed in order to measure the students' feelings. Measuring their feelings could help with reflections both at the facilitators and the institution levels.

2.2 Teaching online

Teaching online was a new encounter for a majority of the facilitators and the institution. The facilitators had to teach online using the university platform; *Thuto* or *Sakai* (developed by lecturers in the University's Faculty of Science and Technology and adopted from the University of Cape Town). Both participants, on the one hand, and facilitators on the other, had to learn how to learn and how to facilitate online effectively. The actual teaching, especially for synchronous lessons, took place in the evenings. Most significant is that teaching online entailed embracing the new terminology: synchronous and asynchronous sessions. Bailey and Card [7] purport that using technology when teaching online requires adapting pedagogical practices that are compatible with the technology. According to these authors, online facilitators have to be cognizant of a number of key areas, including creating, developing, and managing their online courses, as well as how to effectively communicate with their students. Another significant message shared by Alman and Tomer [8] is the time since, in their view, time has different patterns. The participants' views about workload refer to time and seeking their views through assessment could reveal the consequences of time on their part.

2.2.1 Asynchronous sessions

Asynchronous sessions entailed assigning participants to engage in the task at their own time. In practice, unless one was able to determine how participants were spending time allocated for asynchronous sessions, it was difficult to measure how the participants were engaged in such sessions regardless of the schedule and readings allocated to them. Reflection-in-action came as a result of low participation in such sessions. A test was through asking participants to share their views on articles read and low participation by some of them. A solution to address the challenge had to be found through engaging in reflection-in-action. Reflection-in-action is described [9] as an interaction with a live problem as it unfolds. In such an incidence, Schön argues that the capacity to reflect-in-action assumes that the problem-solver has the capacity to illustrate their *knowing-in-action*. In real practice, this means hidden or tacit knowledge that practitioners use to deal with particular tasks [9], Hawkrigde, [10]. Reflection-in-action also refers to thinking about what one is doing while doing it; it is

typically stimulated by surprise, which sometimes puzzles the practitioner concerned [11]. Schön [9] further argues that this gives the practitioner a chance to redesign what is being done while it is being done.

In addressing the problem and in preparation for asynchronous lessons, participants were assigned tasks of reading on specified areas in preparation for the different sessions that were to follow. However, an advanced tool for monitoring the use of time during asynchronous sessions could help. In search for potential solutions, it was discovered that there are technological ways of establishing the extent to which participants are engaged in assigned activities during an asynchronous session. This strategy that would use a specific tool is yet to be explored. Exploring the new technologically developed tool using course-specific strategies might be necessary and there has to be a strategy to use for establishing the extent to which participants undertake assigned activities, such as reading an article, and indicating the time used for doing so during an asynchronous session.

2.2.2 Synchronous sessions

An opportunity for meeting participants virtually was during scheduled synchronous sessions. Specifically, the availability of platforms, such as ZOOM, were used to facilitate synchronous sessions. Lessons presentations were carried out during scheduled ZOOM sessions. Participants participated by responding or asking questions and through group work assignments. As an internal facilitator, there were moments of reflection on challenges encountered using the various platforms. These included WIFI service provision, which was unreliable. Schön [12] and Hawkrige [10] describe reflection-on-action as the process that takes place after an event. In such an occurrence, the practitioner explicitly evaluates an action used to solve a particular problem.

According to Fitzgerald [13], this form of reflection refers to the retrospective contemplation of practice undertaken in order to uncover the knowledge used in practical situations, by analyzing and interpreting the information recalled. It is also believed that this kind of reflection not only increase one's knowledge but it also challenges the theories and concepts held by a person [14]. There were moments during which the internet connectivity presented serious problems and did so during some sessions. This meant failing to present some scheduled lessons and making up for the lost time. Yet, participants fully enjoyed synchronous sessions, particularly the break-away sessions, whereby they discussed topics in groups and presented the outcome of their group work in plenary sessions. Going forward and reflecting for-action; questions such as other than using the service provider's Wi-Fi is there any other formal technical facility that the institution can provide for its part-time facilitators? are asked. Reflection-for-action is a concept which, according to Killion and Todnem [15], Grushka et al. [16] was developed from Schön's work. Reflection-for-action is thinking about future actions with the intention of improving or changing practice. The disruption caused by the internet facility could affect good teaching practice.

Good teaching benefits from making professional choices about teaching. It also benefits from having participants' input on one's teaching. Therefore, good teaching in the program could have benefited from designing a tool and asking participants to have input on potential improvements for the program. This missing point impinges on the modules used in the program.

3. Modules

3.1 Module writing

The PGDHE is a new program that, according to the program document [17] is modularized. Therefore, teaching in the PGDHE program necessitated the availability of modules. It was therefore mandatory to develop modules to use in the teaching of courses, such as *Teaching and Learning in Higher Education: PGDHE-502*. Yet, at the initial stage, there were no modules to guide the teaching. Most importantly, the program facilitators had a very short training on developing modules.

Most difficult is that the program facilitators not only lacked experience in teaching online but they also lacked skills for using modules for this mode of teaching. This means that the National University of Lesotho (NUL) did not have a guide for developing a postgraduate program module for an online teaching. However, search for information on writing a module revealed that there are module guides and Rhodes University pamphlets on writing a module. The attractive modules and module guides were of the following universities and institutions: University of the Free State, University of Namibia—Center for Teaching and Learning; Dublin-Ireland University, and an All-Ireland Society for Higher Education Academic Practice Guides (AISHE academic practice guides) by Huntley-Moore and Panter [18].

All the module guides had good practical examples. However, reflecting-in-action, there was a realization that the Ireland AISHE academic practice module and the Technological University Dublin module guides would provide a good guide for drafting the National University of Lesotho module guide for postgraduate programs. Nevertheless, the AISHE academic practice module guide proved to be the best since it entailed topics that seemed familiar to higher education educators.

Therefore, on the bases, of the course outlines, modules were drafted. However, there were numerous challenges encountered in producing such modules. Modularizing programs are not a common activity in the institution. Nevertheless, the use of the module guide for developing the draft module and for teaching the courses proved helpful. It took at least 3 months to draft the module on teaching and learning in higher education. Reflecting on producing this draft module, it can be noted that it required time to develop and have these edited before they could be used for teaching. However, draft modules were adopted by the Center for Teaching and Learning (CTL) and they served as good guides at the initial stages of teaching in the program. A credible module is one that has been professionally edited; yet, these program modules were not. Hence, the need for engaging program participants in assessing the modules.

3.2 Evaluation of the module

Teaching using the draft module provided an opportunity to consider revising and improving the draft module. The plan to engage in reviewing the module means *reflecting-for-action* in the context of module production. Continuing to use the module having not assessed, it has serious implications for the quality of the program. There is a need to engage in ensuring that the modules meet the quality standard for teaching online.

4. Assessment

In teaching in the program, various forms of assessment were used. These included assessing participants during asynchronous and synchronous sessions. Participants were given individual tests, group assignments, individual assignments, and portfolio of evidence, which was used as a final form of assessment.

4.1 Forms of assessment

In order to ensure that participants had studied the recommended reading material/s, they were engaged in various forms of assessment, including chart/discussion forums. Marking the assignments proved challenging.

In online teaching, the idea of group assignment had to be tackled with great caution. The traditional practice of assigning participants a task to discuss in a set could not be followed. Participants had to arrange their virtual meetings. However, while there may have been internet challenges, the group presentation based on virtual group meetings went very well. They learned to prepare PowerPoint presentations and to talk about their papers as opposed to reading their submissions.

Essays were another form of assessment used. Instruction for the first essay was that it should be 360 words and the second be 2000 words respectfully. The third and final essay was a portfolio of evidence, which required 3500 words. Asking participants to follow a word count was a challenge. This meant abandoning the idea of asking participants to present their essays in a certain number of pages. Many participants were not familiar with the idea of word count, which is why some exceeded the stipulated number of words. Yet, this was much easier work on assignment in which participants used word count instead of number of pages.

Three forms of rubrics were used for assessing the participants' assignments: rubric for assessing group work presentations, rubric for assessing chat/discussion response to a question during a synchronous session, rubric for marking an essay, and rubric for marking a portfolio of evidence. These were drawn from the internet and they proved helpful.

4.2 Portfolio of evidence

The participants registered in the program came from a wide range of disciplines. These were law, pharmacy, nursing, teacher education, information technology, accounting, and humanities in the area of linguistics. They were higher education teachers employed in institutions of higher learning in Lesotho. Assigning participants to write a portfolio of evidence as a form of final assessment presented an opportunity for professional learning for both the participants and the facilitators. The participants used the same format in producing the portfolio. It comprised three folios: development/professional growth, discovery, and reflection.

It was through the reflection folio that comments alluding to the need for change were presented. These included sequencing of the courses such that the teaching and learning in higher education course, which in their view can be taught before others due to its significance; there was a need to include virtual teaching practice since it was planned for but could not be implemented; capacity building and consistent training of facilitators; development of tools to assess facilitators' teaching in the program; and the quality of the modules. These broad views are a direct hind for the institution to have assessed the implementation of the program using the first cohort.

5. Conclusion and recommendation

5.1 Conclusion

This chapter begins by highlighting the historical background to the initiation of the PGDHE program at the National University of Lesotho. It has presented lessons learned based on reflecting on the field since the implementation of the PGDHE program. These reflections have revealed that there are numerous lessons emanating from presenting each part of the program. An analysis of the encounters throughout the implementation of the program seems to provide an opportunity for professional development based on the experiences gathered in the field to improve the offering of the program in future. It is important to systematically engage in reflective practice throughout an academic year and consistently develop strategies to address challenges as they emerge.

5.2 Recommendations

- a. The reflections articulated in the various parts of this paper point to the potential for improving the offering of the program. In particular, there is a need for establishing systems, such as having good modules to use for teaching and ensuring that they are edited.
- b. Having intensive professional development for facilitators teaching in the program. They, for purposes of ensuring quality, need to be appraised.
- c. The professional development should cover significant areas, such as teaching online and production of modules.
- d. There is a need to develop a tool that should be used by students to assess facilitators.

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Conflict of interest

Being a member of the staff teaching in the program means I accumulated experience through reflection. I, therefore, do not feel there is any conflict of interest in writing about the program I conceptualized. Instead, I feel there is more that could be done to help improve the program.

Declaration

I declare that the information shared in this chapter is based on my experience working at the National University of Lesotho. Using my PhD thesis to develop, plan, and implement a program is an achievement that I am proud of.

Acronyms and abbreviations


CHE	Council on higher education
MOET	Ministry of Education and Training
PGDHE	Post Graduate Diploma in Higher Education

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Chapter 9

Perspective Chapter: Education Technology (EdTech) and the Online Course Revolution

Alaa Zeyab and Ghaida M. Alayyar

Abstract

Digital technology is revolutionizing education. It has the power to alter the way we approach and deliver education, increase student engagement, and improve the efficiency of both teaching and learning. It can be a more flexible learning option for students with busy schedules or who live in remote areas and help to ensure that all students have the opportunity to succeed. In addition, EdTech in education can also provide students with the flexibility to learn in a way that suits their individual needs. One of the most important advantages of using EdTech to enable teachers to create online courses where students can learn in their own space and at their own pace is that it can help to close the achievement gap. Finally, using EdTech to create online courses can also help to improve student engagement. COVID-19 rapidly accelerated the implementation and acceptance of online education worldwide. This online course revolution is changing the education landscape and providing new opportunities for learners and educators now and in the future.

Keywords: EdTech, online course, digital technology, technological revolution, educational revolution

1. Introduction

The revolution in online education has started as more and more individuals choose to learn online instead of physically attending classes [1]. The Industrial Revolution of the late 1700s and early 1800s, which saw a significant transformation in how people were working due to the automation of many manual tasks, has been reflected by online revolution in twenty-first-century society [2]. Almost all major universities and colleges have launched online course programs for interested students who have already seen the benefits. Learning will undoubtedly take place entirely online in the upcoming years in many places. The most recent and practical information and communication technologies have been developed to accommodate the needs of online learning programs.

Over the last century, the traditional concept of education has experienced significant transformation. The incorporation of technology into education has improved both teaching and learning experiences. Because of the current COVID-19 pandemic,

educational institutions have opted to incorporate more technology into the learning process to support online courses [1]. As a result, tech-savvy students are already using exciting applications and attending online classes to ensure the government's containment measures of social distance and avoidance of gathering areas. This rapidly growing industry is known as education technology (EdTech). The primary goal of EdTech is to make learning more attractive by employing interactive instructional strategies while enhancing the level and quality of education.

2. EdTech definitions

Edtech is short for educational technology. This refers to the use of technology in academic settings, whether that be in the classroom, at home, or elsewhere. EdTech can encompass anything from simple educational tools like flashcards and apps to more complex technologies like online learning platforms and virtual reality simulations [3]. EdTech is used in formal and informal education settings and by learners of all ages [4]. EdTech can support various learning goals, including enhancing student engagement and motivation, improving assessment results, facilitating online learning, increasing access to quality education resources, and supporting blended or online/offline learning programs [4].

An *online course* is an educational program delivered entirely online [5]. Online courses are usually delivered *via* the Internet and may be taught in various formats, including text, audio, video, and interactive multimedia. Some online courses are self-paced, while others are taught in real time, with scheduled class meetings [5]. Colleges, universities, and other educational institutions, such as K-12 schools, continuing education providers, and corporate training programs, may offer online courses. Online courses have several advantages over traditional classroom-based programs. They are more affordable since they do not require the construction or renovation of physical facilities; they are available at any time of day or night and can be delivered to students anywhere in the world. Online courses also offer students various flexibility options, including the ability to complete coursework on their own time schedule or in conjunction with other activities outside of class [5].

The *learning effect* is the tendency for people to learn more effectively when they are given repeated opportunities to practice [6]. This is often seen in school settings, where students who are given multiple opportunities to complete a task tend to perform better than those who have only one chance. The learning effect can also be seen in adults, who often learn new skills more quickly when given multiple chances to practice them [6]. The learning effect is thought to occur because people can learn new information more effectively when required to remember it. When people are given repeated opportunities to learn and use a new skill, they are more likely to retain the information they have learned. This is because the information becomes embedded in their memory as they repeat it multiple times. The learning effect is often seen as an advantage for students and professionals who need to learn new information quickly [6]. By getting repeated opportunities to practice, people can increase their chances of success and improve their ability to understand and remember information.

The *effort effect* is the tendency for people to work harder when they are being paid more. This effect is often used to justify paying people more money for doing a job that is seen as difficult or unpleasant. The theory is that if people are paid more, they will be more likely to put in the extra effort required to do the job well. In many cases, motivating people with other incentives, such as rewards or bonuses, may be

more effective [7]. This bias can lead people to persist in their efforts even when they are not likely to succeed. The effort effect is often studied in decision making, as it can lead people to make suboptimal choices. For example, a person might persist in trying to solve a problem even when it is clear they will not be able to do so successfully [7]. This can lead to wasted time and energy, as well as frustration. The effort effect can also have a negative impact on people's overall performance on a task. For example, if a person is trying to complete a difficult task, they might become discouraged if they see that they are struggling to make progress.

3. Historical review

Educational technology (Edtech) is the process of integrating technology into education to promote various learning environments and opportunities for students to learn using technology for their common tasks. EdTech is a term used to describe the process of integrating a mix of hardware and software to improve the results of students and quality of education, aiming to improve student outcomes and reduce the burden on teachers. EdTech tools range from VR headsets that help students learn certain subjects to data-based platforms that help teachers identify learning habits and create personalized lesson plans for students.

Distance learning has evolved over the last three centuries into what is currently referred to as "online learning." Distance education started in England in the middle of the nineteenth century under the name of the "correspondence courses" that involved sending hard copy documents by mail to students and that were subjected to long time delays, so that distance education was dependent on the delivery systems and tools available at the time: first, the postal system, and later on followed by radio and television course delivery systems through licensed radio and television stations.

As information and communication technologies have advanced, online education has become more feasible technologically, economically, and operationally. Universities offering online programs can reduce infrastructure for classrooms, offices, cafeterias, dorms, and libraries, and increase the number of nontraditional students who are working full time; the advanced state of technology is making this easy to implement. Dziuban, Picciano, Graham, and Moskal [8] describe the evolution of online education in four phases: 1990s (internet-propelled distance education), 2000–2007 (increasing use of learning management systems—LMS), 2008–2012 (growth of massive open online courses—MOOCs), and beyond, with growth of online higher education enrolments outpacing traditional higher education enrolments.

Students in online course experience some concerns: isolation from peers and professors, worries about mastering new technology and software, potential for negative perception of online degrees by employers, and potential for reduced quality of instruction relative to the same courses taught as traditional face-to-face classes.

These concerns were a failure of online programs to meet expectations, which led to the concept of "blended" or "hybrid" programs that surfaced in 1999/2000 and combined face-to-face classes with online classes, hoping to synergize the advantages of both. Online and blended programs incorporate available technologies in offering asynchronous and synchronous/real-time delivery options and tools such as online discussion boards, chat rooms, and video conferencing.

Palvia et al. [9] summarized the requirements to implement online learning that include:

- Infrastructure should be equipped with high bandwidth connectivity.
- Online education quality must be improved and perceived as equal to traditional face-to-face (F2F) classroom-based education.
- Employees need access to continuing education (and it has been realized that the best way to get such education is through some form of online courses).
- It is necessary to establish meaningful standards for online learning concerning curriculum, certifications, student screening, faculty selection, and learning management systems.
- Blended or flipped education can help to maintain the balance between e-education and traditional education.
- There must be an awareness that no one model fits all. What is needed is a right mix of localization, adjustment to cultural diversity, and technology that include LMS in the context of lack of resources and infrastructure in certain parts of the world.

4. The online course revolution

In the last few years, we have seen a revolution in the way that people learn. The online course revolution is underway. More and more people are choosing to take courses online, and the reasons are numerous. There are many advantages to taking courses online, from the comfort of your own home to the ability to learn at your own pace. One of the biggest advantages is the cost. Online courses are often much cheaper than traditional courses since there are no physical materials to purchase or maintenance costs. In addition, many online courses offer discounts for those who enroll early or pay in advance. Another advantage is convenience. You can take classes online at any time of day or night and from anywhere in the world. All you need is an internet connection. This is ideal for busy people who cannot commit to a traditional class schedule. There are also a variety of courses available online. Whether you want to learn about history or take a cooking class, you can find an online system that meets your needs. Moreover, if you have trouble understanding a concept, you can usually find a video or audio explanation online. The online course revolution is related to education technology because it allows for more affordable, flexible, and convenient learning methods. It is estimated that there are now more than one million online courses available, which will increase in the future [10].

There are a few things to keep in mind when taking an online course. First and foremost, set aside enough time to devote to the class [11]. It can be easy to get behind if you are not used to working on coursework outside of a traditional classroom setting. Secondly, be sure to establish a good working relationship with your professor. You may not have face-to-face interaction, but communicating with your instructor is still important, and you can and should ask questions when needed [12]. Third, take advantage of online resources. Many online courses have forums where students can interact and help each other [13]. Finally, be sure to stay organized and keep on top of deadlines. Again, getting behind in an online course can be easy, but if you manage your time well and stay organized, you can succeed.

5. Edtech and the online era

The online era and Edtech have changed how we learn and teach. One of the most significant technological changes is in how we access information and learn new things. In the past, if you wanted to learn something, you would have to go to a library and find a book to read [14]. Alternatively, if you wanted to learn something online, you would have to visit a website and look through the information there. Technology allows us to access information and learn new things in many ways. We can learn about things by watching videos or reading articles online. Additionally, virtual reality experiences, gaming, and interacting with people of other places and cultures are all examples of how Edtech can now be used. These technologies allow students to explore new things and learn about different cultures. They can also help students who have difficulty attending school or have issues with traditional learning methods. This is because these technologies allow students to work on projects and learn at their own pace and in their own style.

6. Edtech business models

Today's elite higher education institutions are pricey and generally for profit. It is now even more challenging to create a quick turnaround and long-lasting infrastructure that can accommodate rising educational demand [15]. However, EdTech has decreased the need for study-related relocation and assisted in saving on lodging costs. Online learning, facilitated by advanced academic tools, has also made learning materials more accessible and inexpensive.

The field of Edtech is home to a variety of business models. eLearning for students preparing for entrance exams is one such effective and appealing strategy. Platforms linking students and universities are also available online for those with the necessary tools [16]. The Kahn Academy is another online model for K-12 through university-level eLearning on many subjects. Degree programs provided by organizations through distance learning or online courses that offer short certificate programs are another EdTech business model approach [17]. Furthermore, gamification has lately gained popularity. Parents might find this business model confusing, but EdTech actors have ingeniously exploited gaming as a teaching tool.

Similarly, there are several additional business models, including knowledge-sharing websites, online discussion boards where insights are shared, and tools for creating instructive movies. Authorities should naturally be concerned about the effects of EdTech, given its fast expansion and widespread acceptance [16]. EdTech companies must follow rules and regulations that are relevant to the education sector.

7. Theory related to EdTech and online courses

One theory related to EdTech and online courses is that of the technology-mediated learning theory [18]. Technology-mediated learning theory posits that technology can mediate and facilitate learning. This theory has been used to explain how online courses can provide an effective and efficient learning experience for students. It suggests that online courses provide a more customized and individualized learning experience than traditional classroom-based instructions. Additionally, online courses allow more collaboration and interaction between students and instructors. Lastly,

online courses might provide a more flexible learning environment, which can benefit students with different learning styles or who have trouble attending traditional classes [18]. Technology-mediated learning theory provides a valuable perspective on how online courses can help students learn effectively and efficiently. While technology-mediated learning theory is relevant to both EdTech and online courses, there are certain limitations to the theory that should be considered when designing or using online courses. Technology-mediated learning theory considers individual differences in learners [18]. This means that different students will likely respond differently to the same type of online course. Therefore, the theory suggests that educators should consider learners' differences since the online instruction is customized and individualized.

Similarly, A theory called online collaborative learning (OCL) was put out by Linda Harasim and emphasizes the advent of digital technology to offer learning settings that promote teamwork and information development [14]. According to Harasim, OCL is a new theory of learning that emphasizes collaborative learning, knowledge creation, and internet use to transform institutional, nonformal, and informal education for the knowledge age [14]. Internet-based and widespread interconnected education has advantages for learning and teaching [14]. Harasim adopts some of Alberto Barabasi's viewpoints on the influence of networks [16]. Idea organizing, idea generating, and intellectual convergence are the three stages of knowledge formation in OCL that occur throughout group discourse.

8. The link between EdTech and online courses

In the twenty-first century, EdTech has been revolutionized by the rise of online courses. By taking advantage of the internet and modern technology, online courses offer a flexible and convenient way to learn. They are also often more affordable than traditional courses. The online course revolution has made learning more accessible than ever before. With online courses, people can learn at their own pace and in their own time. They can also choose from a wide range of courses, which means that there is something for everyone. The online course revolution is transforming education. It is related to EdTech in many ways. For one, online courses are typically more affordable than traditional courses [19]. They are also more convenient, as they can be taken anytime and from anywhere. Additionally, online courses often provide more flexibility in terms of pacing and content than traditional courses. Finally, online courses are often more engaging and interactive than traditional ones [20], as they use multimedia resources and allow for more collaboration between students and instructors. Online courses also offer educators opportunities to improve their skills. Educators can gain new knowledge and understanding of pedagogy, technology, and course design by taking online courses themselves [14].

9. The importance of online courses

Online courses are very important because they can help individuals learn new things and improve their skills. Online courses allow students to learn at their own pace and on their own time schedule [21]. This means that students can take courses when it is convenient for them and learn at their speed. Another reason why online courses are so important is that they can help save money. Online courses do not

require paying for transportation or accommodation. Students can also save money on textbooks and other materials [21]. Finally, online courses are often more flexible than traditional courses. They can provide a better school-life balance that enables students to attend class whenever it is most convenient. This means they can fit around work or family life [21]. If a student has children, for example, they may be able to take the course during the evenings when children are asleep.

Moreover, a variety of programs are available for online learning. Students have a smaller choice of courses in traditional schooling than in online learning [15]. Through online programs, students can acquire additional knowledge beyond their course material and critical career skills. According to Andreyanova et al. [22], online platforms offer countless options and online learning includes many different possibilities.

Students can improve on the knowledge acquired in the classroom by watching videos online on any topic at any time. They may study different aspects from building a website to learning a new language through online programs. Moreover, they have the opportunity to pause and replay online videos over and over to better understand the most challenging concepts.

Although students can learn online by simply watching videos, authors believe that some subjects are better learned in person and others are better learned online. Welding, organic chemistry, and diplomacy can all be studied online; however, they are all better learned in person. Although they might give a solid foundation, online programs should not be the main source of information on these topics. Authors perspective is that I would not want to undergo surgery by an expert who has only taken the course online because that sort of skill is only developed through actual practice. Additionally, I would not want someone who had only completed an online degree to build my house. I want someone with hands-on experiential learning combined with fundamental architectural knowledge. Finally, scientists who have actually worked in laboratories have gained a wealth of real-world information and are better positioned to fill new, breakthrough demands.

10. Why online courses are more effective

The internet has revolutionized the way we learn. It has allowed us to access more information than ever before and the ability to learn at our own pace. Online courses have become more prevalent in recent years, offering a flexible and convenient learning method. There are several reasons why online courses are becoming more effective [21]. One reason is that online courses can be customized to meet the learner's expectations. In the past, courses were often designed to cater to all in a manner that may not have been suitable for everyone. With online courses, students can choose which topics they want to explore and can start and stop the course at any time. This allows them to focus on their interests and avoid boredom or frustration. Another advantage of online courses is that they are accessible from anywhere in the world [21]. This makes them ideal for those unable to attend class in person.

With the ability to study at their own pace in a relaxed setting, eLearning has changed education in learning institutions and for the working class [23]. The eLearning will undoubtedly significantly impact education in the foreseeable future on matters related to the delivery of educational content. As per IBM (International Business Machines), students who enroll in online learning programs benefit more than those who attend traditional face-to-face classroom sessions [16]. Students may study at a

speed that they think is more comfortable in online classes since they have complete control over their education. Compared to traditional classroom settings, students in online courses learn more quickly and retain more knowledge because they have the opportunity to repeat the same concept over and over [23]. They can advance more quickly through the course's known sections but must proceed gradually through the sections that necessitate additional attention over time. Compared to studying in a regular classroom setting, people spend 40–60% less time on the online type of learning [16]. Additionally, most eLearning approaches let students split their course time in any way they see appropriate.

Another area of improved effectiveness lies in online courses employing a range of evaluation instruments. Numerous evaluation options are available with online learning, and teachers may customize these evaluations for specific students or student groups [22]. Educators are not limited to solely utilizing traditional evaluations, such as examinations and quizzes, to ascertain their learners' progress and the extent of their progress [15]. To show their comprehension, students can produce online presentations for the classroom, write essays and peer review processes, participate in group projects synchronously and asynchronously, or generate essays and peer evaluations [24]. It keeps the game exciting and appealing for both learners and their teachers by offering a range of evaluations.

11. How online courses reflect the learning effect and effort effect

Online courses can reflect both the learning and effort effects.

The learning effect is a student's capacity to improve his or her score as the number of context repetitions rises [15]. Alternatively, the learning effect is described as a considerable improvement in cognitive academic achievement that occurs as repeated tests increase until the score reaches stability and stops fluctuating. Online courses are critical in ensuring that the learning effect is realized in many ways. According to Losses et al. [17], one method for students taking online classes is to return to the same subject repeatedly to comprehend it better. Since a teacher must always be present in the traditional classroom to deliver instructions to the students, the learning effect will not be as successful as in the online course program.

Online courses can provide a more flexible learning environment, allowing students to learn at their own pace, and review material as needed [7]. Additionally, online courses can offer a variety of media and resources that can help to engage students and facilitate learning. Finally, online courses can provide feedback and assessment measures to help students gauge their progress and adjust their learning strategies accordingly [7]. All these factors can contribute to a more effective learning experience.

The study of how people taking online courses could approach success or failure with various attitudes is the main topic of Marina Krakovsky's paper, "The Effort Effect" [17]. Krakovsky informs the audience that people view failure and achievement from either an unfavorable or a favorable angle. She explains that while the skill itself is not hereditary, it can be cultivated by adopting a growth mindset [17]. Carol Dweck, a psychology professor, is mentioned by Krakovsky as she contrasts a growth mentality with a closed mindset [17]. For instance, a student taking an online course with a growth mentality would see failure as an opportunity to learn, but someone with a closed mindset would see it as the limit of their capability. Krakovsky created this theory for all demographics, including those pursuing online courses to stimulate

a new feeling of progress in their brains and help them become informed in their perspectives of failure and success.

12. Benefits of online learning for students in higher education

The advantages of online learning for students in higher education are of great concern. Perhaps the most crucial advantage is that it offers greater flexibility in terms of time and location. Students can study at their own pace and in their own time and access course materials from anywhere in the world. They can rewind and replay lectures as often as they need to understand the material. They can also take the time to complete assignments and readings at their convenience [21].

Another benefit is a better balance between school and life. Online learning can improve the school-life balance for many university students while also providing them with more freedom and time to do other things, which they want to do [25]. One should be aware that online courses can be either asynchronous or synchronous. Whether a live lecture or a discussion session, synchronous classes require showing up on time. However, many online courses are asynchronous so that a student may finish them at their own speed and on their own schedule [25]. Students can study around their other commitments, such as work or family. Thus, online learning can be tailored to the individual needs of each student. These conveniences can ease stress levels and assist in managing regular routines [15].

A very important consideration for many students is that online courses are often more affordable than traditional courses. This is because there is no need to pay for travel or lodging expenses.

Finally, online courses can help build a strong foundation in any field of study [21]. They can develop the skills necessary to succeed in a traditional classroom.

Overall, online courses offer many benefits for students. When choosing an online course, students should be sure to consider all the options available in order to find the perfect course for their academic and individual needs to achieve success in their academic careers.

13. How online course benefits reflect on students

Online education places more emphasis on the student. Unlike traditional classrooms, online learning environments offer learners more freedom and personalized learning opportunities [24]. Students who study online can do it whenever and wherever they are most at ease. They are free to study at their speed and in the time frames that work best for them and take breaks, when necessary, without disturbing other students. Students may choose how much information to take in at a time. Moreover, online education provides time for assimilation and reflection. Reviewing what they have learned, how it relates to their prior experience, and the current situation can be done at the learner's leisure [26]. Tailoring teaching to meet individual needs is possible with well-designed online courses. Courses might involve events that support and challenge all learners [24]. Deeper reflection and cooperation are fostered through online learning. Effective learning requires teamwork and reflection [26]. Additionally, online courses offer resources and areas for students to work with their professors and other students. According to Moore et al. [24], online learning allows students to think aloud without fear of criticism or interruption. People who feel

anxious about speaking up or asking questions sometimes find comfort in not being physically present in the classroom. They frequently feel bolder when they know no one in the class can see them [14]. Online conversations generally move at a moderate speed, inspiring more thoughtful replies. This is because students have adequate time to contemplate their answer to a question or how they will engage in a conversation. Additionally, the knowledge that an online chat is recorded usually encourages participants to respond with more restraint [24]. They will think more carefully about their replies and not say something that could be offensive or something that is against the law in their country.

14. Student perspectives on online courses

Most students think that online courses are a great way to learn. They are very convenient and can be taken at any time [27]. Since students are in an online course, there are no distractions [2]. While some students may like the busy halls and background sounds that characterize school life, others may not be as enthusiastic about these distractions [28]. Students in traditional schooling must attend a class every day at the beginning of the sessions to grasp the concepts, but for the online courses, students can pause the instructional video or save it for future reference. Students also like the fact that they can go back and review the material as many times as they need to.

However, students also believe that online courses have downsides. One downside of online courses is that they can be very isolating. Lack of social engagement is one of the downsides of online learning. According to Sharma [23], a significant portion of the college experience involves social contact and relationships, which is essential to every student because students are social beings. This is the occasion and setting to meet new people and develop lifetime friendships. In-person group tasks are eliminated from online programs [26]. These assignments are frequently crucial in helping students improve their capacity to collaborate with others [1]. According to Oksana et al. [1], online classes make it challenging to participate in class debates and learn new viewpoints. They may not be as interactive as traditional courses. This can make it difficult to ask questions or get feedback. Additionally, they may not offer the same level of support available in a physical classroom. Another downside is that online courses can be challenging to follow if the student does not understand the material well. This can make it difficult to retain information and improve skills [27]. Finally, online courses may not be available to everyone. If you cannot access an online course, you may have to find another way to learn the material.

15. How the pandemic has affected opinions of online courses

The COVID-19 pandemic has changed people's opinions toward online courses. The primary delivery mechanism for teaching during the COVID-19 epidemic has changed to online learning. COVID-19 affects people's opinions toward online courses [28]. People prefer to learn online to avoid and reduce the spread of COVID-19. Most individuals believe that as long as the globe is fighting the COVID-19 virus, online education should be prioritized. People are now more open to learning online since it is more convenient and flexible. Additionally, the pandemic has made people more aware of the importance of education and how it can help them in their careers. Therefore, the pandemic has positively influenced attitudes toward the value of

education. However, it is still too early to tell how much the pandemic will change education in the long term [29]. Many people are still resistant to taking courses online, but overall, the trend seems to be heading in a positive direction.

16. Professors' perspectives on online courses

Professors believe that online courses are a valuable addition to the college experience, providing students with greater flexibility and access to courses. However, professors also note that online courses present some challenges, from a need for improved student engagement and motivation, to the potential for cheating and plagiarism. They also believe that online courses require more time and effort from instructors to create a quality learning experience for students [27]. Overall, professors believe that online courses offer significant potential benefits for students and educators but require continued refinement and improvement to meet the needs of all involved.

17. How society perceives online courses

Society has different views of online courses. A few people see online courses as not being as good as traditional courses because they are not in person. Others might view them as more convenient because they can be done at one's own pace and time. Some employers might judge them as inferior to traditional classes but others might consider them as a more convenient option for employees [29]. There is no right or wrong response. It just depends on the individual's preferences. Overall, society sees online courses as an acceptable way to learn new information. However, some people may not be comfortable taking a class online.

18. The future of Edtech

According to GlobalData's "Tech in 2030" research, global EdTech revenues will increase to \$538.5 billion in 2030 from \$226.4 billion in 2022 [28]. Through the normalization of online learning, the disease outbreak fundamentally altered education. Schooling will see a significant technological revolution between now and 2030 [28]. According to Huang [4], New and EdTech-based learning systems will replace outdated textbook- and offline course-based-materials-based educational systems.

19. Status of the online course revolution

Online courses were less common before the revolution in educational technology, but they have grown immensely in popularity since the outbreak of the COVID-19 epidemic. In 2018, pre-Covid, Palvia et al. [9] wrote that the online course revolution was still in its infancy, and new advancements and strategies were constantly being created. Online courses were becoming more widely accepted and were being provided by more universities and academies due to the changes in educational technology [9]. Online courses were first made widely accessible to everyone during this period. More people could now access online courses after the breakthrough in educational technology. The number of online courses is now far greater than before

the COVID-19 epidemic. Online courses are more popular than ever because many work from home, and the variety and quality of these course offerings have increased significantly over time. As more people become aware of the advantages of online learning, this trend is likely to continue.

20. The status of the online course revolution after the education technology revolution

The revolution in online education has been a mixed bag. On the one hand, it has improved access to education for those who might not have been able to pursue it. On the other side, it has also made it simpler for individuals to obtain certifications and degrees without learning much because in many cases, there is less “classroom supervision” than in a face-to-face learning setting. In other words, there are advantages and disadvantages to the revolution in online education.

On the positive side, people who would not have otherwise had the chance to seek higher education now have wider access, thanks to the revolution in online courses [4]. People who live in remote areas or have busy schedules should be especially aware of this. They can learn at their own pace and on their schedule with online classes.

On the negative side, the revolution in online education has made it simpler for individuals to obtain degrees and credentials without actually learning anything [4]. In other words, the revolution in online education has made it easy for individuals to manipulate the system. This is a major issue since it raises the possibility that employers and other parties would not trust applicant’s credentials. Overall, there are advantages and disadvantages to the revolution in online education. To make full use of the opportunities it offers, it is critical to be aware of both the positive and negative aspects.

21. The online course revolution before the COVID-19 pandemic

Before the COVID-19 epidemic, the online course revolution was well underway. Numerous online colleges and universities provided a variety of courses. Many firms embraced the courses and were regarded as a good alternative to traditional institutions [30]. Online courses were considered a more affordable and practical choice for many students. However, there were still some issues with online courses, such as the lack of personal interaction and the potential for cheating.

22. The online course revolution after the COVID-19 pandemic

Due to universities and colleges moving their courses online to continue teaching during the COVID-19 epidemic, there are now many more online courses available [31]. Due to this, there is now a greater variety of online courses, and more well-known colleges and universities are also offering more online courses. The number of students enrolling in online courses has increased along with the number of online courses available. This is probably because online courses provide more flexibility and convenience and because many students cannot attend traditional classes because of the pandemic.

Obviously, the COVID-19 epidemic served as a catalyst for this transition, and the online course revolution is here to stay. Online courses are generally more economical

than traditional courses and provide a flexible and handy way to learn [32]. The number of students enrolling in online courses has increased due to the expansion of their availability, and this trend is anticipated to continue in the years to come.

It is evident that the online course revolution is here to stay. Online courses' advantages, such as flexibility and convenience, have made them more popular than ever. The number of students enrolling in online courses has increased as a result of the expansion of their variety and availability, and it is anticipated that this trend will continue in the years to come.

23. Conclusion


The online course revolution is transforming education. It provides new opportunities for learners and educators alike. The need for online courses has been rising steadily, especially as the world struggles to contain the COVID-19 pandemic and more practical learning technologies are developed. With online courses, learners can access courses from anywhere in the world and at any time. This flexibility is unprecedented and provides new opportunities for learners to access education. For educators, online courses provide new opportunities to reach more learners and tailor instruction to individual learners. In addition, online courses are often more affordable than traditional courses, making them accessible to a wider range of learners. The online course revolution is changing the education landscape and providing new opportunities for learners and educators.

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Creative Writing in Higher Education: A Literature Review of the Marketplace Relationship

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Abstract

Radical changes in digital technology represent a challenge to the marketplace-resistant discipline of creative writing. Prior to any research being conducted on this issue, one needs to obtain a solid understanding of the issues of those working, studying and teaching in the field. This literature review works within specific parameters to examine the relationship of creative writing in higher education to the marketplace as described in the current scholarship in the field. Although there have been no other studies on this subject, a significant body of research exists on the pedagogy and practices of the creative writer and creative writing in higher education. This examination considers stakeholders' views, experiences, teaching goals and marketplace theories, along with some empirical investigations. The review draws from Australian, UK and US experiences and practices.

Keywords: creative writing, marketplace, digital age, technology, students

1. Introduction

While a significant body of research exists on the pedagogy and practices of the creative writer and creative writing in higher education, this literature review is unique in focusing on the student's relationship in creative writing to the marketplace as described in current scholarship by students and educators in the field of creative writing. These stakeholders' views, experiences and teaching goals along with relevant empirical investigations are examined.

The importance of considering this specific context can be understood by considering the core debate of social science research and that is the struggle between agency and structure. Therefore, in the creative writing context, the student is not autonomous in their academic environment [1]. From this perspective, if context influences a student's conception, the environment the student works within at the university therefore must inform the student's relationship to the marketplace. This is of particular significance, as the digital world offers marketplace opportunities not previously available to the creative writer.

This review covers the past 30 years. The most significant reason for choosing this timeframe is that the digital age has had a visible effect on the field of creative writing during this period, and there has been a large amount of discussion around the issue of the marketplace. The establishment in 1996 of the Australasian Association of

Writing Programs (AAWP) *TEXT: Journal of Writing and Writing Courses* as an online resource demonstrates one case of the impact on the field. By 2013, Kohler [2], in the United States, provided a view of the field in relationship to digital developments and suggests categories for organising the digital component of the field. Covid has also had a radical impact on teaching as well as digital publishing. Conducting the review during this timeframe creates a snapshot of the shift in the discussion about the marketplace relationship.

The review begins with a description of the methodology used to locate relevant works. The relevant literature is then examined and discussed.

2. Methodology

To find the literature, I systematically searched OneSearch and EBSCOhost for peer-reviewed articles, journals and books in the field. I also searched JSTOR and Project Muse. Journals that focused on pedagogy were most useful. *TEXT: Journal of Writing and Writing Courses* and *New Writing: The International Journal for the Practice and Theory of Creative Writing* yielded the most significant amounts of relevant information in single locations. In addition, searches were performed through Google and Google Scholar. The ‘snowball’ method was also used to locate pertinent articles by drawing from citations in recent works. The key to managing the large amount of material was to keep the focus on the research question (i.e. What is the relationship of the student in creative writing to the marketplace?). Slight variations of words and phrases produced relevant literature. The situation was complicated to examine. For example, there are different expectations for different study levels, different countries have different approaches, as do different institutions, individual educators and students. Therefore, some literature and studies may have been missed or were not included.

In addition, I drew from a discussion in a private Facebook group that focused on pedagogy in the field. Occasionally, news articles were used. This method of searching may demonstrate a bias towards open-source journals and may also create a bias towards a particular country. The cases that emerged focus on the Australian, UK and US contexts.

After gathering the literature, I coded and sorted to create a conceptual schema. For more on this method, see [3]. What emerged is an overview of the relationship from a range of voices in the field. I recognise that pedagogical approaches change over time, and I have attempted to organise ideas in a time-linear fashion. However, I have made exceptions to emphasise points and because some studies occur over a period of years.

3. Students’ views

Although there is not a large body of empirical research on student expectations about, and conceptions of, creative writing in higher education [4, 5], there are reports and surveys that demonstrate some of the views of students and their experiences of the marketplace and their training. In 1998, a report by Evans and Deller-Evans [6], on their survey of Australian undergraduate and postgraduate creative writing students, showed a difference between undergraduate and postgraduate goals. Postgraduate students had ‘more specific, craft related hopes such as developing their

skills and improving their prospects for publication' [6]. Postgraduate (MA) students expected that they would be 'stretching themselves to the maximum, publishing their work, completing first full-length work within the course, boosting confidence, continuing on to a PhD when possible' [6]. In assessing the study, Kroll [7] determines that some students expect to be paid for their passion. To learn about their reasons for enrolment, Kroll [8] canvassed a small group of students. Her findings show a publishing and a market-focused interest.

Some express concern about postgraduate-level students achieving marketplace outcomes. Hayes [9] indicates there is little discussion or concrete preparation provided to students about the marketplace. In searching for a writing career and publication outcomes, Hayes travelled from Australia to America on a Churchill Fellowship to discover what practical preparation was being offered to students. She found that none of the faculty anticipated writing careers or publication outcomes for their students, and there was little professional guidance. However, Jeremijenko [10] reports that when a student is offered a marketplace-focused experience, the opportunity is appreciated. Jeremijenko travelled from Australia to the United States to examine the MFA experience. She found that the training she received in market preparation to be the most valuable lesson. Neave [11] provides another view of the US situation. In her 2002–2003 student experience as an MFA student, Neave reports relishing the literary market-focused experience. She argues that US programmes do focus towards the publishing industry, with efforts made to support the student in building relationships with agents, publishers and publishing writers. However, Neave concludes that a market focus for creative writing programmes may never happen because their forte is theory and practice. The relationship of marketplace outcomes to assessment is a concern to McKenzie [12], an Australian postgraduate student, who questions if success in the marketplace is being used to determine creative ability. While recognising the liminal nature of the relationship, McKenzie emphasises that assessment sways the outcomes of work being produced within programmes. In the UK context, an MA student in 2007 offered a student's view on the likelihood of making a living in the marketplace as a published writer stating that while some are dreamers aiming for big-fame writing careers, he was not willing to quit his main job [13]. Perhaps some hold both views. Wright [13] concludes from the interviews with students that they want success but know it comes from hard work. They want support and contacts and will pay for quality service.

A large 2009 survey [14] of Australian undergraduates in creative writing programmes sought to learn the reasons for student interest in creative writing, literary writing and literary publishing and concluded there is a lot of interest in reading, publishing and obtaining advice about publishing, but this did not apply to all students. The interpretation of the findings was that students value training and skills gained through study, apart from their interest in literary writing. In further discussion, Brook [15] cautions that the study was small, and therefore, conclusions are hard to draw. Neave's [16] assessment of the report recognises the limitations of the research but finds that some students' views of creative writing programmes are in conflict with what researchers and those in the field value.

The UK-based National Association of Writers in Education (NAWE) provides more insight from students in a collection of case studies that give students' perspectives of their experiences and outcomes. The case studies are commissioned narratives by students of their experiences studying creative writing in the UK context. There are two components to the NAWE study: 'Studying Writing' [17] presents life as a creative writing student, while 'Life after graduation' [18] has the same contributors

reflecting on the past and reporting on their post-graduation experiences. The students described a range of experiences. These graduates are now freelance writers, journalists and teachers. Some are pursuing advanced study. The advice from many of these graduates to aspiring writers is not to give up the day job and to be willing to make compromises. Others hold the belief that this is a realistic view of student experience that takes the focus off the star outcome that some universities and departments use for marketing and advertising publications [19].

In a qualitative study on student learning in creative writing courses in the United Kingdom, Light [5] examines both undergraduate and master's level education. The study focused on 40 students' perspectives of creative writing compared with other academic writing. Light refers to the work of Lea and Street [20] and concludes that student writing issues might be due to differences in academic versus student expectations. The final phase of Light's study considers students' general conceptions of their experience of writing in the higher education context. In addition to other questions, he asked for general views of creative writing, and some of the responses touched on marketplace and audience issues.

From these few studies and limited accounts, it seems that, regardless of other motivations for being in a creative writing programme, students at various levels do want to find a marketplace and publish. Some appear to become aware of the challenges to publish and adjust their expectations accordingly.

4. Teachers' perspectives

The teachers' perspectives of students' views provide additional insight into the complex relationship. The teachers expressed concern that students had illusions regarding publishing and marketplace expectations. In 1994, Haake [21] argued that these marketplace misconceptions are encouraged by American creative writing programmes and are problematic, particularly at the postgraduate level. In 1998, in Australia, Kroll [8] expressed concern for students who want writing careers. She contends that, although most undergraduates do not expect to make money from writing, a few do expect to make money but have no plans on how to achieve this outcome.

Other researchers contend that students are undertaking creative writing courses for non-financial reasons. In a 2000 interview with Brien [22], Gutkind argued that students cannot explain why they are studying. In 2007, in the Australian context, Krauth and Webb [23] emphasised that more students are entering programmes to learn how to write, not to be published authors. Yet, in 2010, in the United Kingdom, Roe [24] contended that being published is the goal for students at the BA and MA level. They want to write and publish novels even if that outcome is a massive challenge. In the same year in the United States, Moxley [25] contended students want success, but most will fail to achieve that outcome.

The view of ambitious students fits with student expectations described by Chapman [26]. He argues that many students seek to publish and make money. However, Chapman does not conclude that the students will fail. Chapman claims that the relationship of creative writing in higher education and aiming for the mass market can work, and it's what students want.

Chapman sees no reason why mass market and literary work cannot both be taught. This view challenges Haake's [21] concern expressed 20 years earlier of false expectations. Chapman's approach requires authors to examine their aesthetic and

question their goals. He states that there still is no quick fix. Rather than perceiving the outcome as failure, this perspective has the student committing to the reality of a long journey to reach a marketplace outcome.

The only empirical study in which teachers' views of students were included was conducted in the United Kingdom. Munden [27] investigates the changing nature of creative writing at 27 universities over the previous 10 years and considers the future of creative writing. Although the marketplace relationship is not the direct focus of his research, the study does offer some insights on this matter. For example, teachers report that student expectations do not align with what is being taught and what teachers can actually do offer to students. The study shows that publishing outcomes do ultimately matter to some in the university, but there is no clarification as to whether or in what way, students are supported to be entrepreneurial or supported in finding marketplace outcomes.

There are other findings in the report from which conclusions might be drawn. The view that students are keen for visiting and published writer interaction could indicate that students are seeking role models, both in creative and academic publishing. Additionally, the study reports that students believe a degree will lead to employment or a published work, but teachers say they do not imply such outcomes when they teach. This discrepancy raises the question as to whether it represents a failure of the programmes. However, it hardly seems a failure in that creative writing programmes continue to enrol and retain students. Alternatively, the issue may be that students' expectations of reaching the marketplace (i.e. being published) are not the goals of the educators, as Munden's [27] study might indicate. Arguably students should be more selective when choosing creative writing programmes. The issue of selectivity is significant enough to motivate Earnshaw [28] to develop *The handbook of creative writing*. Earnshaw argues that there is no one standard for creative writing programmes, and he aims to help students navigate the path. A few universities do offer publishing-focused programmes [29]. However, this is not common for most creative writing programmes.

More questions were raised in 2016 about students' views of the marketplace relationship in Creative Writing Pedagogy [30], a private group on Facebook comprised primarily of creative writing instructors in higher education. Anna Leahy and Stephanie Vanderslice, both leaders in the field in the United States, manage the forum. The conversations offer a useful insight into current views and approaches to pedagogy. In this discussion of the marketplace relationship, Leahy, after reading that creative writing students felt tricked by their programmes and training, asked how teachers can talk to students about the marketplace issues without disheartening them. As a teacher in the field of poetry, Leahy's experience was that neither she nor her students think they will make money from their writing. Vanderslice tells her students that they will need another source of income. This raised two questions from Leahy: Did students believe this? And, what were other instructors telling their students? A handful of educators responded with their own experiences of trying to teach students to be pragmatic. Anecdotally, Leahy found that today's students do not have the skills, experience or understanding about the realities of publishing outcomes. In addition, Leahy wondered if things had changed and if so why students did not now understand the uphill challenge. She wondered if the university model of what a degree means had changed how students viewed their experience.

Some of the terms used by the field offer further insight into the complex nature of the marketplace relationship and the resistances that students must negotiate.

5. What is ‘publishable’?

Interestingly, the idea that students should be creating publishable work is one that is deeply held in the field. However, exactly what publishable means is contested, as can be observed in Munden’s [27] study. A key term of assessment used by educators in the field is that the work created by a student should be of publishable quality. In the US context, the aim of the MFA is to produce students who can create a publishable book-length submission for their final academic assessment [31]. This view is not unique to the United States. In 2000, the AAWP initiated a programme of state-based seminars, the first of which were held in Adelaide and Melbourne. These seminars involved many of the writing teachers in each state, from the TAFE and University sectors. Topics discussed included ‘publishability’ and ‘publishable standard’ [32]. In the United Kingdom in 2013, Cusk [33] reported that work should be ‘of publishable standard’. As the ‘Subject Association for Creative Writing’ in the United Kingdom, the NAWE [34], rather than providing an overall guideline like the Association of Writers & Writing Programs (AWP), presents an outline of what various programmes offer. In this, some courses do state that they aim for publishing outcomes. Others do not indicate whether this is a focus.

Discussion about the term publishable often does not provide clarity as to whether the work will actually be published, and this is a concern to some in the field. In 1999, Dawson [35] argued that a creative component of publishable quality is a work that will withstand the same critical assessment applied to the canon of literature. In 2005, Dawson [36] contended that the postgraduate student’s submission must hold to this standard. This approach does not indicate whether the work will be published. Bourke and Neilsen [37] expressed this concern about unpublished work being assessed and go on to demonstrate that few students at the time of submitting their final projects have achieved this standard or publication. Some seek to address the issue, but there is no one approach. Kroll [38] wrestled with what the term publishable means and challenges the resistance to marketplace preparation. She wants more transparency of the term and proposes either including an assessor from the industry (such as an editor or agent) on an examination committee or having a non-academic who looks for what sells to supply a report to examiners, particularly when the examiner is not well published. Harper [39] considers publishability an out-of-date standard for assessment.

The term continues to be the standard of evaluation, as Boyd [40] reveals when examining the issue of what publishable quality is in creative writing doctorate outcomes from 1993 to 2008 in Australia. Boyd concludes that publishable is still the main method used for evaluation. Her findings also reveal that universities focus on literary creative work that is not as publishable. This further demonstrates a resistance to commercial marketplace outcomes. Boyd seeks to negotiate an alternative in proposing that more popular genres should be given recognition within higher education, and this can be done by reframing the terms used. Krauth [41] notes that Boyd’s study demonstrates the publishable nature of creative work developed in programmes because nearly half of the creative works that Boyd assessed in her research did reach the marketplace in some fashion. This analysis indicates that publishing does matter.

Publishing is not just a measure of what students should aim for; publication is valued and is used as a measurement of programme success. Edmonds [42] considers a shelf of published books displayed at the University of Adelaide as a sign of a high standard of success. However, he is careful to point out that publishing is not the only

outcome from the training and programme. Further, he advises, the current situation is very different to the 1970s when validation came from a few readers. Edmonds argues that in the modern marketplace validation may still be small and localised within academic publishing discourse. He does not want to see a shift to commercialisation for validation. Edmonds [43] also argues the importance of a certain type of narrow market print journal that can provide marketplace outcomes, but does not believe that outcome is necessary for every student. Negotiation of the marketplace can and does come in the form of developing and supporting outlets for publication such as small presses and literary journals and through efforts to recognise and value these publications in the field. Now that many journals are digitally published, this raises questions about the effect on a student's relationship to the marketplace.

Some researchers demonstrate concern about focusing on the idea of publishing and valuing any commodity outcome over the creative act itself. Harper [44] proposes that whether the work is published or publishable is not more valuable than other undertakings in creative practice. Harper is not alone in this view. Others consider that despite the 'publishable' issue, creative writing education is about something else. There are more ways that the field demonstrates resistance to a focus on the marketplace, and these are found in other terms that are used.

6. What is 'marketplace' and what is 'literature'?

Another term that requires consideration is marketplace. Related to this, the term economy often arises. First, what exactly is the marketplace to those working in higher education creative writing? A commonly held belief is that a creative writer in higher education will publish in the literary marketplace. The slippery nature of this term is recognised by Edmonds [43] when he examines ways to engage in the 'so-called' literary marketplace. According to Brier [45], who also recognises that the term is 'elusive', the literary marketplace produces literature and is the context for literature. When Brier [45] considers the term literature, he concludes that finding a definition for the term and a description of a discrete marketplace is difficult. He argues that one of the reasons the distinction arises is because of the post-World War II idea of a market economy which disseminates culture, an idea drawn from scholarly work including Bourdieu's [46] 'The field of cultural production, or: the economic world reversed' and English's [47] *The economy of prestige*. Both works position literature and cultural production in sociological accounts of marketplace and market economy at national and global levels. However, Brier [45] argues the discussion is ongoing. Bourdieu [46] offers a foundation for many theorists in creative writing, and the field also draws from the creative industries in its views of the relationship. Other theorists including the psychologist Csikszentmihalyi are considered useful in negotiating the relationship between author and audience [48, 49]. There is recognition that engaging in the commercial or mass marketplace is a struggle for those in the field of creative writing, as Sheahan-Bright [50] finds when examining children's literature. Mayers [51] refers to this contested relationship as the 'tension between "literary" and "genre fiction"' [50]. He argues that this issue has been increasing. Certainly, changes brought about by the digital marketplace must play a role in this.

Regarding practical pedagogical issues, Mayers [51] recognises that some programmes will still train MFA students for the literary marketplace to varying degrees, but he is opposed to training or producing writers for this end and argues that the aim should be 'experience-based inquiry into the act of writing' [51]. Hergenrader [52]

also recognises the limitations in the digital age of the ‘literary marketplace lore’ [53], along with the issue of genre to which, he argues, students are often more alert than teachers.

Creative writing scholars have used other terms to explore the relationship to the marketplace. Hecq [54] in examining the relationship between the creative writer and ‘the creativity market’ positions creative work produced in the field within the global knowledge-based economy. Importantly, the concerns about being publishable while working within the university are closely examined [55]. In Hecq’s context of the ‘creativity market’, Webb [49] argues that the university can function in the same way as the Greek *agora* (a communal space for political, religious, economic, educational and social interaction) to balance marketplace and creative needs. Other terms used by the field include ‘the marketplace of ideas’ [56], ‘cultural capital’ [57] and the ‘public intellectual’ [36]. A more sustained discussion of the various terms is beyond the scope of this review. However, these examples demonstrate how it could be argued that the terms all represent an ongoing effort by the field to negotiate a relationship to a marketplace and a resistance to engagement with strictly commercial market outcomes.

7. Reasons for resistance

There appear to be good reasons for resistance in the contemporary context that include protecting students, teachers and the boundaries of the field from the vagaries of the marketplace and other external pressures. For example, the challenges of making an income as a writer in Australia due to a small population and a lack of grant support have been demonstrated [58] and discussed [59]. The discussion points to the need for grants; but many writers are unlikely to receive such funding [59]. The capricious marketplace’s influence on education and the limited amount of grants are not the only concerns. Government and political factors exert pressure on aesthetic practice [60]. There is a worry that government policy can apply unproductive influence upon academic outcomes. This useful warning is important when considering the publishing outcomes students should be prepared to achieve within the discipline and in ensuring that the terms of engagement are carefully negotiated. Perry [61] clarifies her preference for ‘creative ecologies’ over ‘creative economy’ to ensure that there is no confusion about economic imperative. To add to the complexity in this environment, over-extended educators must maintain their creative work as well as other demands [62]. Relating to and complicating this is the issue of the transient nature of being a part-time academic [63]. Another issue is that of maintaining disciplinary integrity [64]. In the US context, creative writing often seeks to differentiate itself from English literature and composition writing classes, although in many cases the development of creative writing as a field emerged from, or in relationship to, these areas [65–67]. The variable borders present challenges. As Kroll [64] argues, ongoing discussion is required ‘in the context of volatile institutional and research environments as well as variable student bodies’ [64].

Another example of the challenge of identifying where the boundaries lie is within the areas of creative writing and professional writing that are sometimes lumped into the one discipline. Williamson [68] argues that magazine study is an area that can bridge the gap between creative and professional if approached from a scholarly perspective, although it is a field that has traditionally been part of other disciplines. Not all would agree. Surma [69] explains the differences and warns of the danger

of the marketplace to professional writing, seeking to locate professional writing away from any vocational or professional orientation and closer to her perspective of the unfettered relationship of creative writing. In addition to these resistances, the purposes of creative writing education demonstrate many goals that are not directly about marketplace preparation.

8. A variety of activities

The development of creative writing programmes in higher education has been well examined from an historical perspective [36, 70, 71]; and the goals for creative writing programmes and classes have been discussed extensively in the pedagogy and are identified by each university and instructor. In the contemporary context, as Myer [70] explains, creative writing in higher education in the United States reached maturity as a discipline in the late 1960s and early 1970s ‘when the purpose of its graduate programs (to produce serious writers) was uncoupled from the purpose of its undergraduate courses (to examine writing seriously from within)’ [70].

8.1 For undergraduates

In line with the ‘uncoupled’ approach that Myers [70] describes, the US-based AWP [72] differentiates undergraduate from graduate work and states that the graduate school’s goal is ‘to nurture and expedite the development of a literary artist’ [72]. Undergraduate programmes are ‘mainly to develop a well-rounded student in the liberal arts and humanities, a student who develops a general expertise in literature, in critical reading and in persuasive writing’ [72]. In a succinct summary of the developments, Bennett [73] clarifies that these were the goals of universities and governments, not of the students. In Australia and the United Kingdom, creative writing developed in different ways from the United States. However, in the current context, the idea that the undergraduate programme is not focused on training for a mass marketplace or even training serious literary writers has also been recognised and argued in many programmes in these three countries [74]. For example, for the UK undergraduate, the focus was on reading and writing, as well as developing communication skills for other jobs. The teaching is about learning to think and read [75].

That there is resistance to the marketplace in undergraduate training is clear. Freiman [76] argues that ‘Rather than claiming to teach students to write “publishable” writing (after all, published by whom?), we are teaching them about writing/reading and how language functions in its “worldly” contexts’ [76]. Krauth and Webb [23] note that writing course enrolment in Australia has increased, while the study of literature has decreased. They analyse this as a move away from a passive way of learning to an active way of learning, unique to creative writing classes. However, the idea of ‘learning to read as a writer’ [36, 77–79] is also challenged. Jarvis [77] argues for a ‘more radical, liberated reading praxis, a “writerly reading”’ [77]. He aims to help the field ‘transform from a place in which existing cultural codes are replicated and from which they are promulgated, to a space where the interrogation of cultural codes can take place and new, radical codes can be formed, a locus of dissent’ [77]. Regardless of the debates on approaches, the current strategy for undergraduate training seems to be fairly consistent in that the approach is about teaching reading and writing. According to Radia [80], training is not generally focused on the marketplace. However, at the advanced levels of education, what the training is about is more contested.

8.2 For postgraduates

In higher-level training, there are more expectations and discussion of writers becoming professional. There is concern that it is not possible to produce large numbers of professional writers and that there is a need for other jobs for these students. Hayes [9] considers the practicality of marketplace outcomes for students training as writers and believes that the Australian situation is similar to the US situation. She proposes publishing and journalism as alternatives and encourages student internships as being beneficial to the student, the university and potential employer organisations.

Although the discussion can turn to the idea of vocational training, this is carefully navigated. Edmonds [42] does not want to be trapped by publishing outcome expectations, but sees the teacher as ‘agent/editor’ [42]. He views the workshop as a mini version of the publishing market. Wandor [71] is also careful with the idea of vocational training, describing her approach as ‘professional’; yet she steers away from the Romantic muse [81, 82] and the ideas of being a professional writer. Wander’s focus is on building knowledge through critical reading to learn about literary traditions and improve writing. Brook [83], in considering vocational outcomes in Australian creative writing programmes, argues that ‘Creative writing is not a failed form of vocational training for professional literary careers; rather, it is a form of general literary education in which the figure of “failure” has, at times, played a key pedagogic role in forming personalities’ [83]. Cowan [84] recognises the validity of Myers’ ideas about ‘examining literature from within’ [70], yet recognises a growing vocational focus towards creative industries and the training of research academics. The lack of clarity about the vocational nature complicates the environment the student must navigate.

Another purpose for creative writing arises with the idea of research in higher levels of study. By the end of the 1990s, there had been a move away from creative writing as training for writers and a move towards it being about ‘practice-oriented research’ [28]. In Australia in 2000, Krauth [85] argued for more higher degree research and creative writing PhDs. He wants to see creative writing working in the ‘higher echelons’ of academia where the focus is ‘on research excellence and which, to a significant extent, gives universities their “real” reason to exist’ [85]. Others recognise this direction and see the effort being made to acknowledge creative writing ‘as a form of research’ [86]. More recent discussion in Australia on training by Kroll and Brien [87] focuses on preparing students for ‘life’ in a way that may not be about making a living as a creative writer, even if writing and publishing are part of the outcome. They argue that practice-based research prepares graduates ‘to take part fully in the intellectual, creative, cultural and economic life of our nation’ [87]. The US context is different in this regard with the focus of the MFA being on the creative work, and there is rarely a research component, but there has been some change in this. Donnelly [88] argues that one of the more critical ambitions of creative writing studies is the training of its graduates in teacher preparation. Donnelly also sees the potential for creative writing studies to develop with a focus on research. The Creative Writing Studies Organisation held its first conference in 2016 and established *The Journal of Creative Writing Studies* to help fill this gap in the US context. Even with this new direction, there is a concern about publishing and the marketplace, about what constitutes research outcomes for the creative writer and about new challenges in publishing, both creative and critical [89].

The struggle between creative writing and scholarly expectations increases as more researchers in the field emerge. Programmes may need to recognise that students will piece together their careers. Williamson [90] introduces the idea of students in the creative arts as ‘future protean careerists’. She focuses on ‘the situated nature of writing’ and refers to Carter’s [91] ‘pedagogy of rhetorical dexterity’ in which students learn the ‘code of a community of practice new to them’. Williamson [90] also adopts Woods’ [92] framework for academic writing that does not differentiate between orientations (e.g. creative writing and professional writing). Williamson [90] argues this approach allows students to gain training that helps them make a cognisant transfer as writers to a workplace. A 2015 Curtin University final report [93] from a study of 4360 graduates that included creative writers cites Williamson’s work and argues for training across various areas of writing.

Many educators have contributed new literature and terms as writer-scholars of creative writing practice-led research. Some have focused on identifying new research methods to bring critical research and creative practice together [94]. The educators’ role is also discussed in this environment. Krauth [41] considers the role of supervisor as editor. The questions of whether this implies a preparation for the marketplace and, if so, what is that marketplace and what degree of editorial intervention is required are not easy to answer. Krauth [41] contends that for doctoral candidates, supervisors are the best editors. Manery’s [95] 2016 phenomenological study reveals five different pedagogical identities in educators in the field: ‘Expert Practitioner, Facilitator, Change Agent, Co-Constructor of Knowledge and Vocational Coach.’ All these issues indicate the complex territory that the student negotiates if they are trying to write for the marketplace.

9. Other ideas about training

Additionally, there are many other ideas about what occurs in creative writing education, in which the focus shifts away from the marketplace. These include ideas about creativity, therapy and experience and other non-market-oriented outcomes. The creativity issue is widely debated. Pope [96] discusses creation v. production. Kuhl [97] is concerned about marketplace creativity and weighs up personal therapeutic writing v. literary writing. Freiman [98] discusses the ‘dangers of the myths of creativity’. Rodriguez [99] provides a summary of the many different approaches. Fenza [100] describes the wide range of approaches and goals creative writing covers—from the aesthetic, to the social and political roles the student takes and how students learn about ‘literature from inside their own work, rather than from outside a text; and this has motivated many to gain greater command of rhetoric and communication skills in general’ [99]. Fenza [100] also claims that students ‘analyse psychology and motives, the dynamics of social classes and individual, regional and national beliefs’ [100]. Additionally, students learn to ‘order their lives and their world’ while ‘advancing the art of literature’ and making stories and poems as ‘gifts for readers and listeners’ [100]. Importantly, this engagement is ‘a highly civilised and humane act; and appropriately, academe has accepted the practice and making of the literary arts along with study and scholarship in the literary arts’ [100]. This view is recognised by Harper and Kroll [100]. By including Fenza’s views in their work, they appear to value these goals and outcomes in Australia and the United Kingdom. However, the approaches do not have to preclude preparing for professional outcomes. Brophy [101] has broad experience as an educator and an AAWP attendee and is aware of the significance in Australia of ‘outcome-based education, of professional opportunities and the acquisition of transferable skills for students’ [101].

These, he argues, are ‘central imperatives’ in a large number of creative writing programmes [101]. However, the situation varies from programme to programme and from educator to educator and makes for a challenging space for the student to negotiate.

10. Educators in favour of being market-prepared

Despite these other focuses – or even resistances – there are educators who are concerned about students becoming market-prepared. Kroll [7, 8] seeks to create a consciousness in her students about who will be their customers, about editing and publishing and about the economic concerns of the writer. Manhire [102] confronts the marketplace situation in the Australian context in an address to the 2001 AAWP Conference, in which he describes a course called ‘Creative Writing in the Marketplace’. He begins by giving apologies for his topic, providing an indication of the angst associated the marketplace discussion. Manhire [102] provides opportunities and methods for the discipline to help students become more market-prepared. Fisher [103] raises concerns about a lack of training for creative writers in a plenary address in 2005 at the AAWP 10th Annual Conference. Speaking on ‘The Professional Author; Researching Creativity and Reality’, Fisher argues that writer-artists will become ‘freaks’ without market engagement. He argues that there is more than the mass market to consider and that writing courses should ‘address fundamental issues related to writers making a living—contracts, copyright, legal issues’. Educators must help writers to envision themselves in the marketplace, as part of ‘an industry that survives on market forces’ [103]. Edmonds [43] warns of the dangers of a closed system and stresses the need to be talking about a broader marketplace.

In the United States, Vanderslice [104] is concerned about the concept of not training students to be teachers and publishing writers. Others also challenge those who do not recognise the professional writing outcome expectations of their students. In Australia, Fisher [105] provides insight on his perspective and that of Thebo [19] on the role of the university in preparing students for the marketplace. Fisher [105] finds Thebo’s position of not expecting undergraduate students to become professional writers erroneous. He questions the lack of ‘engagement with writing as a profession or publishing as the principal industry within which professional writers work’ [105]. Fisher [105] does not want to see universities turning out students unprepared to earn a living.

However, according to Vanderslice [104], Thebo has helped her students have more publishing know-how with the development of two courses at Bath Spa University. These are focused on undergraduates, and they initially met with resistance from both colleagues and students. The aim was to help students to develop a professional perspective. Vanderslice argues that such approaches are necessary.

A solution to these differences might be to provide more clarity about exactly what a programme does and where it fits in relationship to other programmes, as Cowan [106] proposes in his strategic plan for the peer review workshop. He argues for various models. One with a market focus might have ‘alternative axes’ that ‘calibrate the extent to which a program is publication- or research-oriented’ [106].

11. Digital future discussion: the effect of technology

Many in the field are aware that digital technology needs to be addressed. Krauth and Webb [23] signal their awareness of the effect of technological changes in making

writing more public and expanding publication opportunities. In the United States, the AWP website now includes goals on new media technology and emphasises the need for research to enhance pedagogical understanding and improve practice [72].

There are many ways that creative writers are engaging with the digital world, one example being digital poetics. Yet, that focus does not consider the sociology of the relationship to the space as a marketplace. There are those in digital poetics looking at the relationship with the creative writing classroom and digital storytelling, but there is not much consideration of the student trying to write for the digital marketplace and what effect that may have on the field. Andrew [107] discusses the possibilities of online teaching and is encouraged by Healey's [108] argument that the 'opposition between cultivated humanism and vulgar marketplace, between impractical creativity and practical profitability, is rapidly disappearing' [109 cited in 108]. Further, Andrew [107] argues for the need to nurture the market for online delivery by 'better understanding the theories and pedagogies of online delivery and its potential for community-building and for workshops' [107]. Others are engaging in this research. Rein [109] explores ways to improve the online classroom situation. Some researchers are focusing on the opportunities afforded by digital publishing. Williams [110] considers the creative writing pedagogy of the future and argues that students should be taught to 'think strategically and rhetorically about where to publish and how to be read' [110]. Williams argues that finding an online audience should be a part of what is taught, whether that is weighing up the quality of online journals and sites or using social media to connect and draw readers. But what are the implications for a student trying to work in this space? Barnard [111] considers her existing skills from previous training in other forms of technology that could also have value in the future. Further, she believes that this approach can be taught to others.

12. Conclusion

The study has examined the complex nature of the creative writing student's relationship to the marketplace as described in current scholarship. The findings indicate that there are students who do want to reach the marketplace and publish and that there are resistances to this outcome, as well as support for achieving this goal. Although there has been resistance to the marketplace relationship for valid reasons that honour the traditions and protect the boundaries of the discipline, there are ongoing negotiations as to what the relationship to the marketplace means. There are many ways to interact with and define the marketplace, and there are educators who do seek to challenge resistance and argue for engaging and preparing students.

Digital technology and new marketplace opportunities raise questions about whether the values, goals and terms used in relation to the marketplace are still valid and if the resistances and areas of engagement can or should be re-negotiated. Further research will provide insight into best practices for teaching about and engaging with the marketplace.

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Perspective Chapter: Fostering Students' Learning Experiences in Higher Education – Reflections from Student-Centered Pedagogy and Course Transformation

Chantal Levesque-Bristol

Abstract

Since 2011, we have engaged in professional development, to foster the creation of autonomy supportive, student-centered, learning environments to enhance students' learning and success. The IMPACT program has been nationally recognized and featured in the Chronicle of Higher Education in 2018 as one of six innovations poised to change classroom culture and the landscape of higher education. The important innovation, discussed in this chapter, is a focus on human potential and motivation to foster students' (and instructors') satisfaction of basic psychological needs. Our work is grounded in self-determination theory (SDT), a theory of human motivation which approaches psychological growth, development, integrity, and wellness from an organismic integration perspective. SDT postulates that humans are naturally curious and strive to connect with people, their environment, with people and their environment by satisfying three basic psychological needs; autonomy, competence, and relatedness. Autonomy supportive instructors meet students' basic needs by acknowledging and understanding students' experiences and perspectives. These instructors create engaging and autonomy supportive learning environments which foster students' learning experiences across many disciplines, including STEM. In fact, the creation of an autonomy supportive environment regardless of the transformation implemented, is the most important and consistent predictor of the motivational and educational outcomes studied.

Keywords: student-centered pedagogy, course transformation, student learning, motivation, learning experience

1. Introduction

Higher Education is facing a crisis. As students and instructors return to in person instruction following the Covid pandemic, the level of student disengagement is concerning. Faculty as well as departmental and college leadership are struggling to find

solutions to the engagement challenges and find ways to engage students and spark interest, in hopes of returning to pre-pandemic level of engagement and motivation. Even students who choose to continue to take online classes out of convenience are not demonstrating the level of engagement that was perceived to be once there. As a faculty developer, my staff and I work with instructors who are coming to the teaching and learning center to find a community of other instructors and professional development staff to brainstorm with and find gold nuggets that can enhance student's learning experiences, motivation, and engagement. How can we foster the creation of learning environments that will engage and motivate students?

In 2006, Derek Bok, in his book, *Our underachieving colleges*, argued that “Colleges and universities, for all the benefits they bring, accomplish far less for their students than they should” [1]. Unfortunately, this feels true even today, maybe even more so today. What does higher education need in order to stay relevant, to be transformed for the benefit of student learning? What sort of innovations are needed? Is the innovation a new tool, a new technique, maybe Artificial Intelligence (AI)? In 2011, Arum and Roska, in their book *Academically Adrift*, using data from the Collegiate Learning Assessment (CLA), reported that almost half of the undergraduate students showed no significant improvement in critical thinking, complex reasoning, or writing during their first two years of college [2]. Listening to instructors talk about student engagement and motivation, it would appear we have not made much progress in the past decade.

Since 2011, at Purdue University, we have engaged in professional development, working with instructors from all colleges, to foster the creation of autonomy supportive, student-centered, and engaging learning environments to enhance students' learning and success. The IMPACT program which stands for Instruction Matters: Purdue Academic Course Transformation, was built to address these challenges. It is a cohort-based faculty development program which features a Faculty Learning Community (FLC) to promote engagement and student-centered learning and teaching. The IMPACT program has been nationally recognized and featured in the *Chronicle of Higher Education* in 2018 as one of six innovations poised to change classroom culture and the landscape of higher education. The important innovation of the IMPACT program is not a tool or a technique, it is a focus on human potential and human motivation and fostering the satisfaction of basic psychological needs of students (and instructors).

Efforts to improve undergraduate education should include a focus on what transpires in classrooms across the entire institution, build upon collaborations among many stakeholders, support the entire instructional community through faculty development built around faculty learning communities, and value teaching and learning as a core mission of an institution of higher education. Conceptualized from its inception as a comprehensive, campus-wide, collaborative effort, between multiple key campus stakeholders (Provost's Office, the Center for Instructional Excellence (CIE), Teaching and Learning Technologies (TLT), Institutional Assessment (IDA + A), and the Evaluation and Learning Research Center (ELRC)), IMPACT aims to empower instructors to create student-centered learning environments by incorporating active and collaborative learning as well as other student-centered teaching and learning practices into the learning environment. Most transformations incorporate a substantial amount of technology, but technology is not the innovation. The use of technology per se is not enough to make a transformation/redesign student-centered. Many transformations and course redesign programs closely adhere to a limited number of redesign models. This was the focus of IMPACT in the beginning, which was modeled against the National Center for Academic Transformation (NCAT) [3].

The close adherence to the NCAT redesign models was perceived as constraining and limiting and discouraged many instructors from engaging in professional development. With IMPACT, we have been able to shift the culture at the institution toward more student-centered practices, and engaging learning environments for students, but providing choices and options to instructors and supporting their motivation. The technologies adopted or the redesign models implemented are simply tools used to create engaging learning environments. They do not drive the success of a redesign or transformation. They are in service of the learning environment, not the focus per se of the innovation. This approach requires us to deeply understand human motivation and the types of environments that can foster students' learning through the satisfaction of basic psychological needs. The way forward in higher education, the innovation, is a commitment to a deep focus on *people* doing the transformation. The *human factor* of course redesign and transformative education. The focus on people, their basic psychological needs, and motivation, is the innovation and the lesson learned from student-centered pedagogy and course transformation.

2. How can we foster students' learning? Through motivation and the creation of autonomy supportive, student-centered learning environments

Academic leaders must pay more attention to quality teaching; how to improve it, value it, foster it, and reward the improvement of it [4]. To realize the needed culture change, classroom initiatives and in general course transformation efforts, must be engaging, relevant, appealing to instructors and be adaptable to a broad range of disciplines in order to influence the majority of students across the institution. It's about engagement and motivation. In order to positively impact student engagement, motivation, learning, performance, and retention, instructors must utilize pedagogies that are authentic and truly transformative, which resonate with their practices and their fields, and focus on the need for deep reflection, and go beyond institutional requirements [5–7]. This speaks to the importance of the people doing the teaching, the entire instructional community. The instructional community is the most important asset in creating environments that foster students' learning experiences.

3. Self-determination theory

To focus on the people in the instructional community means that we pay attention to people's needs and motivation. Self-determination theory (SDT) is a theory of human motivation which approaches psychological growth, development, integrity, and wellness from an organismic integration perspective [8, 9]. SDT postulates that humans are naturally curious, active, social beings who strive to connect with people, their environment, and the world in general. SDT proposes the existence of three basic psychological needs (autonomy, competence, and relatedness) which I will describe later in this chapter. In a healthy state, when environmental conditions are supportive of the basic psychological needs, humans are naturally inclined toward proactive engagement, behavioral self-regulation, and actively internalizing information into a coherent and integrated whole. Under optimal and positive conditions, humans are equipped to deal with difficult environments and can remain oriented toward pro-social altruistic behaviors, kindness, growth, development, cooperation, and overall

well-being. These inclinations manifest in behaviors of exploration and curiosity associated with intrinsic motivation, the development of mutually supportive relationships, and the internalization and integration of social norms, rules, and regulations. The latter is essential for critical processes associated with behaviors and activities that are necessary but not fun, pleasant, or interesting; this is often the case when we think about academic pursuits and in general behaviors that are necessary for the good functioning of society, or external valued goals, or pathways to some desired end.

SDT is functionally important because it empirically examines features of the environments and contexts which would foster or hinder motivation and satisfaction of the needs underlying effective growth, development, self-regulation, engagement, and wellbeing. The focus and integration of the SDT principles and human motivation into course transformation became the thread that tied everything together and enacted a culture shift at Purdue University. It also led to a move away from a focus on course redesign per se and a move toward a focus on professional development. SDT provided us with the theoretical framework to inform the operationalization of active learning and student-centered learning using the basic psychological need.

4. Basic psychological needs

Basic psychological needs are nutrients essential for humans' growth, integrity, thriving, and well-being. The conditions which foster the satisfaction of the basic psychological needs will lead to growth, well-being, creativity, exploration, curiosity, proactive engagement, and optimal self-regulation. These environmental conditions are the building blocks of an autonomy supportive environment.

4.1 Autonomy

Autonomy is the need to self-regulate and be the initiator of one's experiences and actions. When the need for autonomy is met, people feel volitional and experience their actions and behaviors as being in line with their values and beliefs and other parts of themselves. It is important to understand that autonomy does not mean independence, self-reliance, or doing only what one wants to do. Autonomy is about feeling volitional and choiceful. It is about ownership, a feeling of agency, and endorsement of one's actions. In different contexts, people can be autonomously dependent or independent. For example, a person could fully endorse the choice to do something for a friend going through a difficult time, and in doing so feel completely volitional and autonomous. In contrast, the same person could feel conflicted or forced to help a family member and, in that moment, feel constrained and experience their behavior as not integrated or congruent with their values, interests or other behaviors.

4.2 Relatedness

Relatedness is the need to feel connected; to care for, be responsive to, and be connected with others, as well as being cared for, and included by others. It is the need to experience mutually satisfying relationships. The need for relatedness is about belonging and feeling significant among others. It is characterized by a sense of closeness and trust. The need for relatedness, although central for human beings' growth, development, health, and well-being is often neglected when discussing motivation and

achievements in academic pursuits. I believe this is a fundamental gap in our understanding of what makes academic environments engaging and autonomy supportive.

4.3 Competence

Competence, according to SDT is the need to feel effectance and mastery. In SDT, the need for competence is understood as effectance motivation and as such includes the tendency to investigate and want to understand things that matter and are important to us, or in general to engage fully in the environment [10]. Formal education is certainly an important area for the satisfaction of the need for competence for many individuals at different times in their life, and the need for competence in higher education has been heavily discussed, from a variety of theoretical perspectives, as an important component of motivated action [10, 11].

5. Creating autonomy supportive environments

Although it is important to foster all three basic psychological needs when creating student-centered autonomy supportive learning environments, here I want to focus on autonomy and relatedness, the two needs that are often neglected in higher education. In education, great emphasis is often placed on the satisfaction of the need for competence. This is understandable given the context. But for optimal outcomes, for healthy functioning, the need for autonomy and relatedness will also be fostered. What we have found in our own research is that to create environments that are autonomy supportive in higher education, and to build competencies, these competencies have to be developed in an environment that also supports the needs for autonomy and relatedness [12, 13].

Basic psychological needs can be easily thwarted in environments that are not optimal. The need for competence is easily thwarted in environments that are too difficult or challenging, or where negative feedback is pervasive or when under persistent person focused criticism and social comparison. Persistent social comparison or person focused criticism will also thwart the need for autonomy and relatedness. These conditions, unfortunately, are often found in competitive environments such as higher education in STEM fields, such as math and engineering. Autonomy supportive environments are associated with factors that foster the satisfaction of the three needs and associated with subsequent positive outcomes, whereas controlling environments hinder the fulfillment of the three needs [14–17].

Research suggests that clusters of behaviors are typically demonstrated by autonomy supportive instructors. Autonomy supportive instructors tend to acknowledge and understand students' experiences and perspectives broadly, listen more, attend to students' interests, make fewer directives, resist giving students answers too quickly and are more responsive to students' questions and comments, as well as give them an opportunity to talk and express themselves [18]. These behaviors help instructors notice when students are struggling, or need extra support, which also fosters students' need for relatedness and competence. Autonomy supportive instructors also provide choices and options to students whenever possible, which could be as simple as letting the students choose their topic for a given assignment or giving them the option of demonstrating their knowledge through a presentation or a project. It could be to let students have the option to take a final exam or count one of the regular semester exams for more points. Instructors that are autonomy supportive make

time for students' independent work, and encourage as well as acknowledge signs of efforts, improvement, and mastery. They provide frequent and timely feedback and offer hints that foster progress when students are stuck, without overly directing their learning or immediately providing the answers. The feedback that they provide is informational, which means that it provides essential information to students to guide the improvement of their performance, master and develop skills, foster growth and a general sense of direction and competence.

In contrast, educators that are more controlling tend to make more demands, give more controlling directives, use directive types of questions as a way to control the flow of the conversation, and make frequent use of controlling language such as “should” and “have to”. They tend to monopolize the learning material, provide students too little time to work independently on solving problems, and instead tell students the answers without giving them an opportunity to formulate their own. The feedback that they provide tends to be vague, pressuring, and is not informational, which means it does not provide opportunities for improvement, development, mastery, development, and growth, and in turn does not foster well-being [19].

Out of the list of behavioral markers described above, arguably one of the easiest and most meaningful to foster autonomy support is to provide choices and options to students, and to understand, acknowledge and take their perspective into consideration as they engage in a task. A meta-analysis reviewing 41 studies involving participants of different ages and for a variety of behaviors, demonstrated that the provision of choice enhances the need for autonomy, as well as effort, task performance, and perceived competence [20, 21]. The provision of choice also led the students to perceive the course as more valuable [22]. Even though the provision of choice in a variety of learning environments is associated with a host of positive outcomes, often instructors, especially in introductory required classes, feel compelled or obligated because of accreditation requirements, to teach a certain content in a specific way to ensure that the students will be prepared to succeed in the following course in the sequence or meet requirements. In these cases, provision of choices and options may not be possible, and supporting students' autonomy has to focus on other factors such as listening to students' perspective, giving students and opportunity to talk and being responsive to their comments and questions, encouraging students' effort and very importantly providing a meaningful rationale for the required and often difficult or boring academic work.

More recently, SDT researchers have extended this work by examining behaviors that would be associated not only with autonomy support, but also relatedness support and competence support, operationalized as the provision of structure [23]. In this work, the behaviors of being enthusiastic and eager and putting effort and energy into the class session were associated with relatedness support; the behaviors of giving clear instructions, offering the student a rationale for tasks, and providing positive feedback, were found to be associated with competence support (structure). Importantly, this work also demonstrated that the provision of a strong and meaningful rationale not only fosters the need for autonomy, but also provides competence support through the provision of structure [23]. It is often necessary for students to follow requirements and work within a structure for attainment of optimal outcomes. Understanding why this is necessary through the provision of a rationale is very important to foster self-determined motivation.

In higher education, choices are often limited because of accreditation requirements or course sequencing which puts pressure on instructors to cover certain material in certain courses. Therefore, the power of a meaningful rationale, to create environments that are autonomy supportive, cannot be understated in our work with

faculty in higher education. When provision of choices and options for independent work is not possible, then the power of a meaningful and strong rationale is extremely important and fosters the internalization of the reasons for learning and in turn put more effort into their learning [24, 25].

In our recent research work around satisfaction of basic needs in higher education, we have taken a special interest in exploring the relative importance of the basic psychological needs, and how their intersection would influence motivational outcomes, learning outcomes and academic performance in higher education [26]. When instructors are first exposed to the importance of the basic psychological needs of autonomy, competence, and relatedness, they often wonder what it truly means to foster the basic psychological needs, especially the need for autonomy and relatedness. Research and experiences have provided several examples for the satisfaction for the need for autonomy, as I have discussed in this chapter. However, there is a lack of research examining the need for relatedness especially in higher education. Recent work around IMPACT has focused on the potential multidimensional nature of relatedness and the distinction between relatedness between the students themselves and the relatedness between the students and the instructor. One of the questions we have been asking is whether one aspect of relatedness is more important than the other in higher education. To answer this question, researchers in our lab have been conducting work to formally differentiate the two components of relatedness [27]. They created items to separately examine the connection students experience with their peers and their instructors. Results show that considering the potential multidimensional nature of relatedness is important. The extent to which students reported feeling connected with their instructor was most predictive of student interest and enjoyment in the course as well as self-reported effort. In contrast, peer relatedness was not significantly associated with any of the outcome variables.

Other novel and emerging work in SDT is specifically examining the intersection between autonomy supportive and culturally responsive environments. Early research shows that environments that are autonomy supportive can also be culturally responsive, inclusive, and respect the diversity of all students in the classroom and their lived experiences [28]. This work builds on research examining the psychosocial factors which influence the creation of positive learning environments including but not limited to teacher support, student support, and autonomy support [29–31].

This research has demonstrated and isolated the influence of four constructs fostering autonomy-supportive, culturally responsive learning environments: inclusiveness, cultural inclusion, diverse language and diverse pedagogy [28]. An autonomy-supportive learning environment which is also inclusive would fully include the students, allow them to communicate in their own language, be flexible, and adopt an open, warm, and curious attitude toward diversity and differences, which would allow instructors to gain a deep insight into the lived experiences and motives of their students.

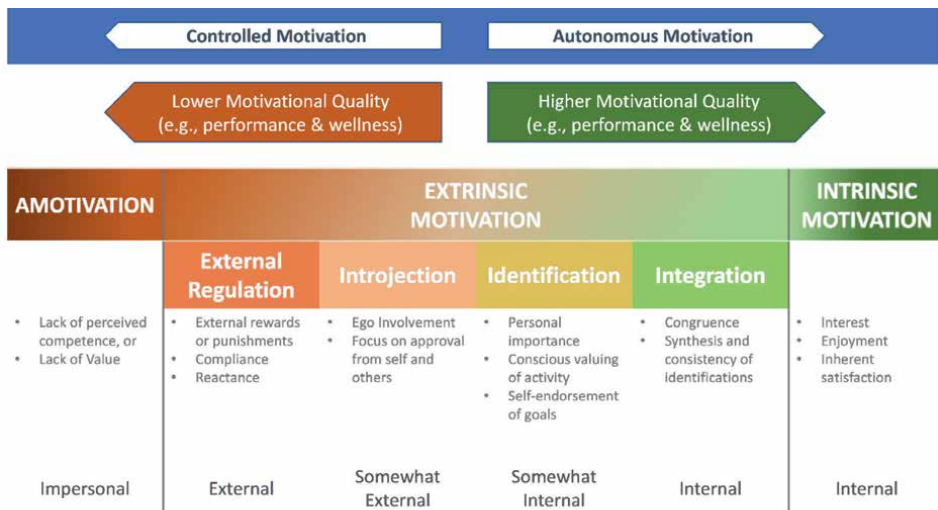
6. Effects of autonomy supportive environments: Fosters self-determined motivation

When basic psychological needs are met, and autonomy supportive environments are created, it fosters an increase in self-determined motivation or autonomous motivation. In general, the behaviors of autonomy supportive teachers are positively associated with students' autonomous motivation whereas the behaviors of controlling teachers are all negatively correlated with students' autonomous motivation [18, 32].

SDT proposes the existence of 6 different types of motivation organized on a continuum based on their underlying level of self-determination from least self-determined (amotivation) to most self-determined (intrinsic motivation). In between these two forms of motivation are four different types of extrinsic motivation, and those are the ones I would like to specifically focus on in this chapter. These extrinsic forms of motivation vary in their underlying level of self-determined or autonomous motivation. Some forms of extrinsic motivations are self-determined, volitional or autonomous, while other forms of extrinsic motivation are non-self-determined, coerced, or controlled. Although all forms of extrinsic motivations underlie behaviors that are instrumental or serve as a means to an end, some of them are more internalized or self-determined than others. This means that the quality of the extrinsic motivation can vary and affect outcomes very differently (see **Figure 1**).

6.1 Non-self-determined types of extrinsic motivation

Under the category of non-self-determined (controlled) extrinsic motivations, we find two types of extrinsic motivations: external regulation and introjected regulation. In general, when motivated by these forms of controlled motivations people feel pressured to act, either externally or internally. Extrinsic motivation that is regulated by external regulation underlies behaviors that are under external controls. This type of motivation is what people often refer to as simply extrinsic motivation. When extrinsically motivated, people engage in behaviors to obtain an external reward, to comply with an external demand, or avoid a negative outcome or punishment. In contrast, extrinsic motivation that is regulated by introjected regulation underlies behaviors that are under *internal* controls as opposed to *external* controls. These internal controls are nonetheless experienced as pressuring. Often this type of motivation is referred to as introjected motivation or introjection. Under introjection, people engage in behaviors out of guilt, shame, or other forms of internal pressures,



Adapted from Ryan, R. M., & Deci, E. L. (2000) American Psychologist; © 2017 Center for Self-Determination Theory

Figure 1.
Continuum of motivation.

emotions, or compulsions. Ego-involvement, or contingent self-esteem is a good example of values and beliefs that are taken in, but that are not fully integrated or internalized by the self. In these cases, people experience these values as foreign to them, as alien to the self, and not integrated with other aspects of themselves. It is as if the behaviors have been “swallowed whole” and not “digested” and are exerting pressure on the self to compel people to act in certain ways they do not fully endorse.

6.2 Self-determined types of extrinsic motivation

Under the category of self-determined (autonomous) extrinsic motivations, are extrinsic motivations that are regulated by identification and integration. In general, when motivated by these forms of autonomous motivations people feel like their behaviors are aligned with their true sense of self and they feel a sense of agency in engaging in the behaviors. Extrinsic motivation that is regulated by identification underlies behaviors that are personally valued, relevant, and important. Often, this type of motivation is simply referred to as identified motivation or identification. Identification is a type of motivation that underlies behaviors that are consciously endorsed and valued. Therefore, people who mostly behave out of identified motivation perceive their behaviors as personally important to them and are able to clearly articulate the reasons why they engage in those behaviors. Personally accepting the value of a behavior would allow people to feel volitional in carrying it out. Extrinsic motivation that is regulated by integration underlies behavior that is integrated with other parts of the self or other behaviors. Often, this type of motivation is simply referred to as integrated motivation or integration. Integration is an active and transformational process which requires introspection and deep reflection. This process allows people to bring behaviors that could be introjected into alignment and congruence with the self and other values toward integration.

7. Fostering students' learning experience through professional development

Our role as professional developers is to help instructors design courses that are autonomy supportive and student-centered, and that will enhance students' learning experiences. We help instructors create these learning environments that will meet students' basic psychological needs and foster self-determined, autonomous motivation, in order to foster growth, development, and well-being. We are not simply teaching the mind of the students; we are teaching the whole student and need to focus on students' growth and well-being in addition to academic goals and pursuits.

It is important to note that there is still a lack of research using SDT motivation principles to understand learning environments in higher education. The work emanating from our research lab and coming from our work with IMPACT is contributing to this body of knowledge and builds on the large amount of research conducted during the pre-college years. In conducting this research and growing the IMPACT program over the years, we have found that it is possible to come along side and teach college instructors how to become more autonomy supportive and create these autonomy-supportive learning environments for their students.

These learning environments created by instructors and perceived as autonomy supportive by college students across many disciplines, including STEM, are associated with greater satisfaction of basic psychological needs, self-determined

motivation, well-being, and in turn higher levels of achievement as measured by course grades (GPA) and higher levels of perceived learning as assessed by the Student Assessment of Learning Gains (SALG) [33]. In fact, the creation of an autonomy supportive environment regardless of the transformation implemented, is the most important and consistent predictor of the motivational and educational outcomes studied, including basic psychological needs, student motivation and engagement, perceived learning attainment and learning transfer, as well as actual performance as measured by grades [12, 29, 34–39].

In recent years, especially during the Covid pandemic, the importance and prevalence of online learning has risen. In addition to the necessities of online learning created by the pandemic, online learning provides access to higher education to students who otherwise would not be able to benefit from education. Our research work in this area suggests that the teaching and learning motivational model based in SDT is applicable to the online learning environments with similar results then those found across in-person environments [8, 9, 36, 40, 41].

8. What are we teaching during professional development?

In our professional development program IMPACT, and other professional development workshops we offer to instructors, we generally emphasize the applications of SDT principles and specifically the satisfaction of the basic psychological needs of autonomy, competence, and relatedness. This allows us to shift our professional development approach from a mostly prescriptive course redesign model philosophy to a more flexible, autonomy-supportive model of professional development. In working with instructors, we also focus on supporting their basic psychological needs, emphasizing autonomy and choice in designing the learning environment and building a relationship of trust where instructors feel like they belong, as we work to transform the learning environment for the students. The community that is created during the professional development program provides a space to regularly exchange ideas, share challenges and successes with other instructors and developers who are experiencing very similar things in their classrooms. This cultivates and fosters an authentic sense of belonging and trust. An additional benefit of this approach is that it allowed us to successfully scale the IMPACT program from 12 courses in 2012 to 60 courses a year and over 600 courses transformed to date and as many instructors involved across all colleges at Purdue who have together reached 91 percent of the students enrolled at Purdue University [42].

In essence and at the core of what we do during professional development with instructors, is to focus on an innovative way of thinking about and approach teaching and learning; to focus on people; *people* teaching and *people* learning. In our work with instructors, we focus on the “why”; why are we engaging in course transformation, instead of focusing on the “what” or the use of tools, models, and technologies. When focusing on the “Why” we emphasize the reasons for our work; we do what we do because of the students. We work to create learning environments that are autonomy-supportive, student-centered, and that will foster motivation, engagement, and learning in our students. Our work is about helping instructors understand the importance of creating autonomy supportive, student-centered learning environments for all students. This is the nature of our work as educators. We need to aim to support all the students entering our classrooms and come along on their learning journey. This does not mean or imply that we become less rigorous or make

the curriculum easier or foster grade inflation. It is about nurturing the talent of all students, supporting their motivation for learning by fostering the satisfaction of their basic psychological needs, and in the process fostering the attainment of related motivational and educational outcomes [42].

In contrast, when focusing on the “what” of redesign, and specific models and tools, faculty report feeling restrained, constrained, and limited by the lack of flexibility and the imposition of certain redesign models for their transformation. This is especially true for instructors in the social sciences who tend to make use of narratives and stories to engage students with their experiences as disciplinary experts. When the structure of a professional development program is too constraining, instructors perceive that the value of their work on creative assignments and activities is being diminished in favor of cookie-cutter redesign models. It is experienced as a loss of autonomy and agency. Allowing faculty to explore and sample different tools and strategies and combine them together in a flexible way, under the guidance of our support team of instructional developers, re-establish instructors' autonomy, volition, and agency, therefore supporting their basic psychological needs, which in turn enhances their commitment, engagement, and effort toward professional development. Being more flexible and autonomy supportive with instructors allows them to clarify their own transformation goals while also allowing the support team members to draw from their particular expertise to foster successful transformations.

This approach in working with instructors creates a shift in their way of thinking about their teaching. In supporting instructors' basic psychological needs, it allows them to explore their pedagogical practices deeply, safely, and intentionally. It teaches them a set of habits of mind around teaching and learning, and fosters a process of inquiry and reflection which frequently brings to mind questions like “how can I support my students' basic psychological needs?” and “how will this assignment be perceived by students?” or “will this activity or assignment foster the need for competence while also supporting the students' needs for autonomy and relatedness?” or “am I creating an environment that is autonomy supportive, inclusive, and equitable so all my students can succeed and feel like they belong?” and “which voices are heard in my syllabus, course content, assignments?” It is a sort of metacognitive and “meta-affective” exercise encouraging instructors to think about what will get their students involved by reflecting on the types of environments that contribute to motivation and engagement. When faculty fellows realize and deeply understand that students are humans just like them, and therefore guided by the same motivation principles which contribute to engagement, well-being, and growth, they start to think, feel, and act differently in regard to their teaching [42].

Through this type of professional development, faculty fellows learn to apply teaching and learning principles based in SDT, in new contexts, situations, and courses they are teaching, not only the course they initially intended to redesign. This shift has led instructors to apply and transfer the skills and insights they acquire during the professional development program to hundreds of other courses they are also teaching. We refer to those as “influenced courses”. Everyone on the team is involved in a deep process of reflection, applying the principles presented in the sessions to their experiences in the classroom, outside of the classroom, and facilitating the FLC. It also provides a renewed emphasis on student engagement and student-centered learning. Throughout our discussions, we strive to bring it back to the student and the student experience. This emphasis on student engagement and student learning as a primary goal of educators also contributes to enhance the focus on mastery and competency, and de-prioritize grades and DFW rates as the only or most important measure of student success.

9. De-prioritizing grades and high stakes evaluation is good for student engagement and learning

SDT has a lot to say about the emphasis on grades and high stakes evaluations as a way to motivate students. Although grades and evaluations are ubiquitous in school and most certainly in post-secondary education, their effect on intrinsic motivation and engagement has been shown to be consistently deleterious when used as a motivator of behavior [43]. In education, grades are perceived to be the ultimate reward and incentive and are a universal feature of classrooms all around the country and most of the industrialized world. In school, almost everything is evaluated and graded, and normative comparisons are made with grades as a way to compare students against one another. This social comparison with grades is very pervasive especially in normative grading practices. Although it is often accepted in higher education that grades and other academic rewards serve as great motivators of student behavior, the overwhelming research evidence instead suggest that grades consistently act to reduce intrinsic motivation and internalization, and to be a poor motivational strategy [43].

Educators and school administrators assume that rewards and grades serve as an incentive that will direct behavior in a certain way toward certain outcomes. In fact, this is exactly why grades tend to be perceived as controlling and reduce intrinsic motivation, self-determined motivation, and internalization [9, 43]. Their main function tends to be perceived as a way to control behaviors and shift the perceived locus of causality of the behavior toward external incentives as opposed to internalized and self-directed behaviors. In fact, there is very little empirical evidence or theoretical support suggesting that grades and evaluations have any positive effect on motivation, engagement, and competence [9, 43].

Even though the research evidence supporting the negative impact of grades on motivation is compelling, grades and persistence rates are nonetheless often included as outcome variables in models testing the effect of autonomy supportive environments on educational outcomes. Among the education community, for better or worse, grades are considered a proxy of academic performance and often an outcome variable of interest. In addition, grades, retention, and persistence rates are also common variables required in studies funded by large federal grants, such as those from the Department of Education (DoE) or the National Science Foundation (NSF). In our own research work based on the IMPACT program, we have often included grades as an outcome variable for the reasons mentioned above. What we tend to find is that the effect of autonomy supportive environments and satisfaction of the basic psychological needs on course or semester grade is often small, although positive and significant in the IMPACT very large data sets [12, 36].

Rewards in general and grades specifically carry two distinct functional meanings or significance; one is informational and the other one is controlling. The informational aspect of grades provides competence-relevant feedback to students and can foster improvements in performance through the provision of clear informational feedback, which provides guidance to students. The professional development program IMPACT fosters the use of informational feedback and encourages instructors to think about grades and other forms of evaluations and assessments as a way to provide information to students to foster their academic growth, development, and learning. In some instances, instructors have adopted pedagogical strategies where they do not assign formal grades to students, but instead focus on a developmental process where students are guided to reflect and evaluate their own performance

against their own standards, established in collaboration with the instructors. This emerging assessment strategy, referred to as “ungrading”, is very much aligned with the motivational principles of SDT and has been recently discussed in peer reviewed journals and at national conferences [44, 45]. It emphasizes student learning rather than sorting and judging students. It is focused on student self-evaluation and use of metacognition to assess their own performance and growth. The students assigned themselves a grade at the end of the term, which the instructor has the right to change as appropriate. However, instructors who have been using the practice for several years report that students grade themselves incredibly fairly, sometimes too harshly, and if anything, instructors have had to raise students assigned grades not lower them at the end of the term [45].

Most of the time, however, grades are perceived to be controlling and a way to rank students and place them in categories, with no information on how to improve. Without the informational feedback, grades provide a normative rank about one's standing in relation to other students. They serve a strong social comparison function and often pressure students to do better than someone else, or to perform in a certain way under certain arbitrary conditions. This focus emphasizes the controlling aspect and meaning of the grade and deter students from being interested in learning [9, 43]. These effects are seen in longitudinal naturalistic settings examining the negative impact of grading on outcomes in subsequent years and in controlled laboratory environments [46, 47]. Results showed that the students who studied with the goal of taking a test, reported lower levels of self-determined motivation as well as worse performance on the actual test compared to the students who studied with the goal of teaching the material to other students. This can be explained because the students who studied in order to take a test, mostly experienced the controlling aspect of the grading practice, focused on passing the test, and felt pressured and controlled by the experience. In contrast, the students who focused on teaching the material to others, experienced more of the informational aspect of the activity, and the opportunity to relate the material and actively use the material in an interaction with other students. This condition fostered an autonomy supportive environment through the satisfaction of the need for autonomy, competence, and relatedness [46].

One of the most interesting impacts of professional development programs aimed at fostering basic psychological needs and motivation such as the IMPACT program, is the culture shift that occurs once a critical mass of instructors take part in the professional development and begin to experience the benefits of the changes in their pedagogical practices. Instructors talk to other instructors about what they are learning in the program and how they are applying the principles to the courses and the changes they are noticing in their students. Instructors report increased level of engagement in their students, as well as enhanced critical thinking and problem-solving skills, from implementing the motivational principles and creating learning environments that are autonomy supportive and engaging through meeting their students' basic psychological needs. Over the years, instructors have reported on their impressions of the IMPACT professional development program through interviews and focus groups. In the early years of IMPACT, tenured faculty would talk about how good IMPACT was, but they would not recommend instructors to engage with professional development like this too early in their career, because of the greater need to focus on research. In recent years, this narrative has shifted. Tenured faculty are now saying that instead of discouraging early career instructors from participating in IMPACT, everyone should


participate in professional development like this in their first year as instructors. Talk about a culture shift! Emphasizing motivational principles and focusing on people, instructors, and students, as agents of change, and supporting their basic psychological needs, is enacting a shift in the teaching and learning culture and pedagogical practices. It is imperative that we continue to spread this work so that a shift in higher education can occur [42].

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Factors Influencing Information Literacy of University Students

Danica Dolničar and Bojana Boh Podgornik

Abstract

During the COVID-19 pandemic, effective use of information and communication technology (ICT), access to data sources, and critical evaluation of new information were essential for successful distance learning. University students need both information literacy (IL) and scientific literacy (SL) to learn and conduct research. This study examined the level of IL of 561 undergraduate and graduate students. We investigated the impact of scientific literacy (SL), ICT use, psychological/learning characteristics, and demographic parameters on student IL. The effects of a credit-bearing IL course were studied on 151 students, comparing three teaching methods. The average IL test performance of 67.6% did not differ significantly by student gender or natural/social science orientation. Of the IL topics, students were least proficient in legal/ethical issues, followed by information searching. Students' knowledge of IL and SL was comparable and decreased with cognitive level. While ownership of ICT devices and ICT-rich courses had no effect on the level of IL, confidence in using the Internet correlated significantly with IL. Also, IL correlated positively with students' self-concepts about learning and problem-solving, as well as their self-efficacy, but motivation played a smaller role. The credit-bearing IL study course was most effective when active learning methods were used.

Keywords: university students, information literacy, scientific literacy, information and communication technology, psychological characteristics, learning

1. Introduction

The COVID-19 pandemic brought many challenges, including those in the field of education, where most learning was switched to the online format almost overnight [1, 2]. Moreover, the COVID -19 information crisis was indicative of the more general problem of information overload in academic research. To improve information retrieval capabilities, students and researchers needed to improve their information retrieval skills and the systems they used [3].

The success of transition to online learning has been conditioned by multiple factors. Adequate access to *information and communication technology* (ICT) for both students and teachers was the first prerequisite to embark on online learning [4]. That could be hindered by slow/intermittent internet connections and incompatible or outdated devices and software.

The next requirement was related to proficiency of ICT use. A collective of skills, knowledge, and attitudes, labeled as *digital competence*, enabled students to effectively, efficiently, and ethically collaborate, solve problems, and manage information [5]. The Digital Competence Framework for Citizens (DigComp 2.2) provides a common understanding of what digital competence is; gives examples of knowledge, skills, and attitudes that help citizens engage confidently, critically, and safely with digital technologies; and proposes that the framework be modeled after the Digital Accessibility Guidelines [6]. Today's students, the generation of so-called digital natives due to being born in the digital age, are expected to be digitally competent and handle ICT tools and applications in a natural way [7, 8]. However, that is not always the case, as some studies show [9].

In addition to access to ICT and digital literacy, other skills are crucial to navigating the vast online information landscape: knowing how to find, evaluate, process, and use information. Those are some key characteristics of the *information literacy* (IL). While the ICT and digital literacies focus primarily on skills associated with various digital technologies, IL is defined as an intellectual framework for understanding, finding, evaluating, and using information [10]. Different frameworks and sets of standards of IL are in use in various countries and at various education levels. Some of the most known standards and frameworks to be applied at the university level are shown in **Table 1**.

At the university level in Slovenia, the ACRL standards/framework were adopted and translated into Slovenian language. At the basic level, the standards define IL by describing five key characteristics of an information literate student, who should be able to:

- determine the extent of information needed;
- access the needed information effectively and efficiently;
- evaluate information and its sources critically, and incorporate selected information into one's knowledge base and value system;
- use information effectively to accomplish a specific purpose; and

Year	Author/Institution	Framework name	Source
1990	Eisenberg & Berkovitz	<i>Big Six</i>	[11]
1997	Bruce	<i>Seven Faces of Information Literacy in Higher Education</i>	[12]
2000	ACRL	<i>Information Literacy Competency Standards for Higher Education</i>	[10]
2002	JISC	<i>The Big Blue report: information skills for students</i>	[13]
2004	Bundy/ANZIIL	<i>Australian and New Zealand information literacy framework</i>	[14]
2008	Catts & Lau/ UNESCO	<i>Six Skills</i>	[15]
2011	SCONUL	<i>Seven Pillars of Information Skills</i>	[16]
2016	ACRL	<i>Framework for Information Literacy for Higher Education</i>	[17]

Table 1.
List of IL standards and frameworks.

- understand the economic, legal, and social issues associated with the use of information, and access and use information ethically and legally.

Studies have shown that during the COVID-19 pandemic, IL had a positive effect on students' intention to use digital technologies for learning, performance expectancy, effort expectancy, habit, and hedonic motivation [18]. IL was critical not only for students but also for educators. There was a recognized need for more IL instruction for students and teachers [19, 20]. Learning success also depends on the teaching methods. Active learning methods in teaching IL were previously developed both for an online setting [21] and for large enrolment courses [22]. The appropriate use of technology for a chosen method plays a crucial role, and the applicability goes beyond the COVID-19 era.

IL and related skills are important both for the students involved in the formal learning process as well as in the daily lives of informed and responsible citizens. Studies show that digital natives are not automatically information literate [23]. Individuals with a lower level of IL, who do not possess the ability to critically evaluate information, are more susceptible to misinformation and fake news, for example, on the topics of climate change and vaccine safety. A study [24] reported that information literacy, which emphasized users' ability to find verified and reliable information, was positively associated with fake news identification, while digital and media literacy showed no significant relationship. During the COVID-19 pandemic, the harmful consequences of spreading misinformation due to insufficient levels of IL became even more evident than in the past [25, 26].

Not only was the ability to judge the veracity of information by its source vital but also was the ability to find reliable and verified scientific information, accomplished with suitable information searching skills and access to credible information sources [27]. Scientific databases, where most factual information can be found, are usually subject to copyright restrictions and are not freely available to citizens, and sometimes, this even holds true for mainstream media that are tasked with informing the public [28]. University students usually have licensed access to reliable scientific databases. However, many students view the process of searching for information as laborious [29]. It is therefore critical that students be supported in developing information literacy skills, including the use of reliable scientific databases with advanced search techniques. Research [3] has established that the search skills require dedicated education and training for all three main types of searches that researchers perform: lookup searches conducted with a clear goal in mind; exploratory searches to better understand the nature of a topic; and systematic searching with the goal to identify all relevant information sources in a transparent and reproducible manner. These three types must be performed with different search methods, using search systems with specific functionalities.

IL is not a closed set of abilities, but it is related to *other abilities and characteristics of students*. A close connection exists between IL and digital literacy, as represented in DigComp framework [6] with five competence areas, which combine elements of ICT literacy and IL. There are also parallels between scientific literacy and IL [30]. Some studies have investigated the factors that can influence students' IL. A study by [31] found that the student's IL was significantly influenced by both individual subjective factors, such as information processing learning style, and external objective factors, such as social media content consumption and content creation behaviors. While no significant difference in the level of IL was found between genders, IL differed significantly between fields of study and between students with different levels of academic

achievement. In contrast, when self-reporting, boys tend to overestimate their ICT literacies, whereas girls appear to underestimate their capabilities [32]. One study [33] examined the relationship between IL and social media competence. The results showed that university students' IL and ability to use information technology to solve problems, as well as their sense of responsible behavior in cyberspace, were the most important factors in predicting students' social media competence. The implication is that enhancing university students' IL will have a positive impact on university students' social media behavior. Other research [34] examined how two emotional constructs (emotional intelligence and dispositional affect) and two cognitive constructs (motivation and coping skills) were related to students' IL. The results of correlation and regression analyses showed that emotional intelligence and motivation significantly predicted students' IL outcomes. Another study [35] studied the predictors of medical students' IL self-efficacy skills. Results suggested that emotional intelligence subconstructs (appraising own emotions, appraising others' emotions, and using emotions) had a statistically significant positive impact on students' IL self-efficacy.

2. Aims and scope of the study

In this chapter, we present and discuss the IL as measured in a group of 561 undergraduate and graduate university students, aiming to answer the following research questions:

RQ1: What is the level of IL among students? How is it affected by demographic parameters, such as gender, type of study major, and study year?

RQ2: In which content areas of IL are students successful, and in which areas should they be given more emphasis in their education?

RQ3: Is there a relationship between students' IL and their scientific literacy? Are students' abilities to master higher levels of cognition (understanding and applying knowledge) comparable between the two literacies?

RQ4: Does software use, ownership of ICT devices, number of ICT-rich courses, and confidence in using the Internet affect students' level of IL?

RQ5: How is IL influenced by various psychological/learning parameters, such as self-concept about learning and problem-solving, general self-efficacy, use of metacognitive learning strategies, internal motivation, and autonomous and controlled external motivation?

RQ6: To what extent does a study course with IL content contribute to improving students' information literacy? How do the teaching methods affect the outcomes?

RQ7: How much of the IL could be explained by demographic parameters, scientific literacy, ICT use, and psychological/learning parameters of students? Which parameters affect IL levels the most?

3. Methods

3.1 Research instruments

Four tests and questionnaires were applied in our study: an IL test, a scientific literacy test, a questionnaire on ICT use, and a questionnaire on psychological/learning leanings of participants. Additionally, a teaching intervention, namely a dedicated IL course, was implemented, using three different teaching methods.

3.1.1 Information literacy test (ILT)

A multiple-choice knowledge test [36] was used, comprising 40 multiple choice items with four options and one correct, yielding a point per item. For analysis purposes, ILT items were divided into subscales by five ACRL 2000 information literacy standards (A1—information needs identification, A2—information search, A3—information evaluation, A4—information use, A5—ethical/legal issues) [10]. Similarly, ILT items were classified into one of the three cognitive categories (B1—remembering, B2—understanding, B3—applying), simplified from the Bloom's Taxonomy [37].

3.1.2 Scientific literacy test (SLT)

A mixed-type knowledge test was applied, consisting of six problem-based tasks related to popular science topics, totaling 23 items with as many points. The problems were selected from the PISA 2006 science survey [38]. While some of the items were multiple-choice, others were open ended and had to be evaluated manually. SLT items were also assigned one of the three cognitive categories previously described (B1—remembering, B2—understanding, B3—applying).

3.1.3 Questionnaire on ICT use

We used a 35-item scale with four subscales. The first two aimed to measure software (ICT-S, 16 items) and hardware use (ICT-H, 4 items) on a 5-point Likert scale, reflecting frequency of use (never, less than once a week, multiple times a week, almost every day, multiple times a day). The third subscale (ICT-C, 5 items) inquired about the number of ICT-rich study courses students were enrolled in. Confidence of Internet use (ICT-I, 10 items) was surveyed in the fourth segment on a 5-point Likert scale, based on the degree of agreement with given statements.

3.1.4 Questionnaire on psychological/learning factors

A 70-item questionnaire on a 5-point Likert scale (based on the agreement level) was utilized to measure components of psychological/learning leanings of individuals [39]. Questionnaire items were compiled from Self-description questionnaire III (SDQ, [40]), Generalized self-efficacy scale (GSE, [41]), and the Academic motivation questionnaire [42]. The seven subscales applied were self-concept about learning (SC-L, 10 items), self-concept about problem-solving (SC-P, 10 items), self-efficacy (SE, 10 items), use of metacognitive learning strategies (LS, 15 items), internal motivation (IM, 13 items), autonomous external motivation (EM-A, 6 items), and controlled external motivation (EM-C, 6 items).

Reliability of the four instruments, exhibited as Cronbach α on the testing sample, is shown in **Table 2**.

3.1.5 Dedicated IL course

Impact of the study course with 45 contact hours, conducted in one semester and bearing 3 credit points, was also explored in this research. The course content was in line with the five ACRL IL standards [10]: information need identification, information search, information evaluation, information use, and legal/ethical issues. Three different teaching methods were applied in the course.

Scale	Description	Items	Cronbach α
Literacy test			
IL	Information literacy	40	0.724
SL	Scientific literacy	23	0.608
ICT use			
ICT-S	Software use	16	0.728
ICT-H	Hardware possession	4	0.411
ICT-C	Number of ICT rich courses	5	0.667
ICT-I	Internet confidence	10	0.822
Psychological/learning factors			
SC-L	Self-concept about learning	10	0.805
SC-P	Self-concept about problem-solving	10	0.765
SE	Self-efficacy	10	0.853
LS	Metacognitive learning strategies	15	0.683
IM	Internal motivation	13	0.844
EM-A	Autonomous external motivation	6	0.716
EM-C	Controlled external motivation	6	0.653

Table 2.
Size and reliability of research instruments.

- In the *lecture-based* group, traditional lectures were given, following the sequence of chapters from the curriculum. In the hands-on computer lab, students worked on predefined database search exercises, but on individual topics.
- In the *project-based* learning group, students worked on individual project topics with the goal of producing a review article. They went through the research steps of specifying information need, formulating queries and database searching, and evaluating and synthesizing search results. Lectures were given as organized support for project work.
- In the *problem-based* group, students had the goal of solving a selected complex problem from their field of study. The main problem was broken down into subproblems. Lectures were delivered mainly as directed interventions, explanations, instructions, or answers to students' questions to facilitate the problem-solving process. Students worked in small groups, and the hands-on work followed the tasks and group dynamics in solving the problem. Final reports were presented and discussed in the form of student conference.

3.2 Participants and procedure

The testing group comprised 561 university students of two universities and one independent higher education school in Slovenia. Composition of the group by gender, study year, and type of study major is shown in **Table 3**.

All 561 students took the IL test before taking any IL-dedicated classes. At the same time, they also took the SL test and both ICT and psychological questionnaires.

Parameter	Value	Students	%
Gender	Male	190	33.9
	Female	371	66.1
Type of study major	Natural sciences	397	70.8
	Social sciences	164	29.2
Study year	1	291	51.9
	2	125	22.3
	3–4	82	14.6
	5–6	63	11.2

Table 3.
Testing group composition by demographic parameters.

Of the 561 students, 151 later took a credit-bearing IL course, described in the instruments section. This group of students took the IL test again as a post-test, so that the change in their IL skills could be studied in comparison to the test results before the course (pre-test). The 151 students were divided into three groups based on the teaching method used in the course: lecture-based (52 students), project-based (52 students), and problem-based (47 students) learning.

The online survey system 1 ka (1 ka.si) was applied for testing, which took place at university locations, in presence of a professor. Before testing, an introductory protocol was administered, providing explanation of the study goals and assurances of anonymity and voluntary, emphasizing participation. There was no time limit for completing the tests and questionnaires.

3.3 Analyses

Reliability in terms of Cronbach alpha was calculated for IL and SL tests, 4 ICT, and 7 psychological/learning subscales. IL score means were analyzed, both total scores and partial scores, corresponding to the five IL content categories and three cognitive categories. Differences in IL levels between the pre-test and the post-test were measured with paired t-tests. Differences in IL between teaching methods and differences in IL between demographic parameters (gender, type of study major, study year) were investigated using two-sample t-tests. SL score means were analyzed for total scores and cognitive categories. Means were also calculated for ICT subscales as well as psychological subscales. Pearson's correlation coefficients were calculated between IL and SL, their content/cognitive subscales, and ICT and psychological subscales. Multiple linear regression was applied to predict the IL level from other parameters: SL, demographic parameters, ICT, and psychological/learning parameters. All data collected were analyzed using Microsoft Excel.

4. Results and discussion

4.1 IL and demographics

RQ1: What is the level of IL among students? How is it affected by demographic parameters, such as gender, type of study major, and study year?

Statistic	Value (%)
Mean	67.63
Standard error	0.52
Median	67.50
Mode	65
Standard deviation	12.37
Sample variance	153.10
Kurtosis	0.41
Skewness	-0.48
Range	80
Minimum	20
Maximum	100
Count	561
Confidence Level (95.0%)	1.0261

Table 4.
Descriptive statistics of the ILT score (N = 561).

In the ILT test, students achieved a moderately high mean level of IL at 67.63% (**Table 4**). The lowest value was 20% and the highest 100%. Histogram shows a normal-like distribution of ILT scores (**Figure 1**).

The influence of demographic parameters on ILT scores was studied next (**Figure 2**). No statistically significant difference in IL level was found between male and female students or between the main two types of study majors (natural sciences and social sciences). There was only a 1% difference between groups in both demographic categories. Significant difference was observed only between the year 2 and years 3–4 students (6% difference). This could indicate that students did not have enough opportunity to practice their IL skills in the first two years, probably due to the curriculum with the traditional basic courses, while in the later years, with the specific elective courses, students were more likely to develop the IL skills due to the nature of the assignments and active learning. The lack of a difference

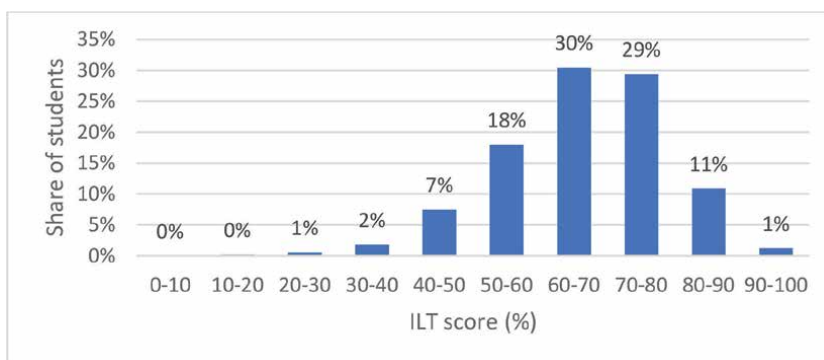


Figure 1.
ILT score distribution (N = 561).

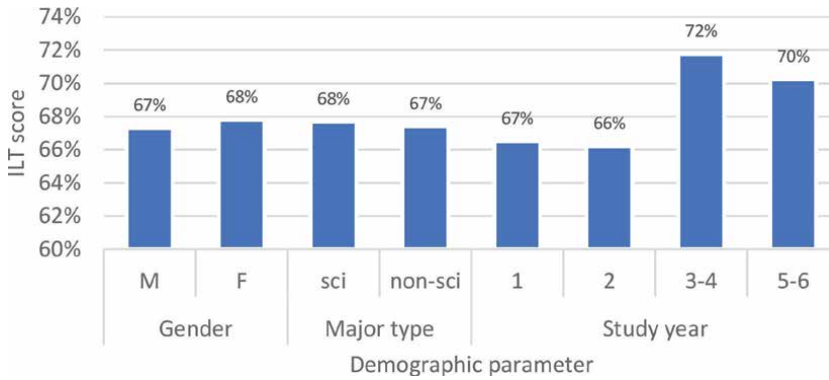


Figure 2. ILT score means according to demographic parameters (M—male, F—female; sci—natural sciences, non-sci—social sciences; N = 561).

between natural science and social science majors could mean that both groups had courses in their curricula that facilitated the development of IL. Pearson’s correlation between study year and IL was 0.14, which is statistically significant but small. The negligible improvement in IL between academic years 1 and 2 and the dominance of general courses in year 1 suggest that more IL needs to be introduced in the second year, whether through a special IL course or through the existing courses.

4.2 IL content

RQ2: In which content areas of IL are students successful, and in which areas should they be given more emphasis in their education?

Partial ILT scores based on content categories were investigated (**Figure 3**). The lowest mean was achieved in the content category of legal and ethical use of information (A5—55%), followed by information search (A2—65%) and information need identification (A1—69%). Students were more successful in information use (A4—73%) but especially in information evaluation (A3—83%). These results suggest that during IL courses, more emphasis should be put on ethical, legal, and socio-economic aspects of information use, as well as on advanced database searching techniques.

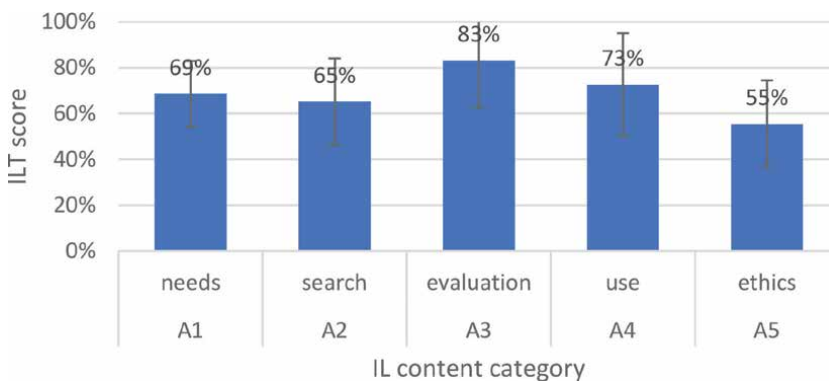


Figure 3. ILT score means according to IL content categories (whiskers represent SD; N = 561).

Lack of information searching skills can hinder students' research work, on one hand, as well as affects citizens' ability to verify information when confronted with dubious claims either in social media or in other information sources that may seem legitimate at first glance. On the other hand, the high level of competence in evaluating information may indicate that university students are not as susceptible to deliberate misinformation as the general population and that students are relatively good at applying criteria to evaluate the credibility of information sources.

Achievements in different IL content categories were interconnected with Pearson's correlations among categories ranging from 0.21 to 0.39. The lowest value was achieved between information use and the two weakest IL categories, namely information search and ethical issues.

When proficiency in individual IL content categories was studied in light of demographics, it turned out that female students performed significantly better in information evaluation than males, while social science majors performed better in ethical issues than natural science majors. The biggest difference among lower and higher year students was achieved in ethical issues (8% difference) and information use (10% difference), but students were closer in information evaluation (3% difference) and information search (5%).

4.3 IL and scientific literacy

RQ3: Is there a relationship between students' IL and their scientific literacy? Are students' abilities to master higher levels of cognition (understanding and applying knowledge) comparable between the two literacies?

On the SLT knowledge test, students achieved very similar total proficiency levels to the ILT test (mean 67.63% on ILT vs. 67.02% on SLT). Score distribution was similar as well. The two scores correlated significantly, with Pearson's correlation of 0.44.

IL and SL scores were evaluated on a cognitive subscale. Results showed a similar level of IL on the cognitive level of remembering (B1) and understanding (B2), but students were less successful in knowledge application (B3) (**Figure 4**). Their SL proficiency decreased more with each cognitive level.

In terms of demographics, no differences were observed between genders in IL or SL. As expected, natural science students were significantly better in SL than social science students, (understanding—B2; 72% vs. 66%, and applying—B3; 48% vs.

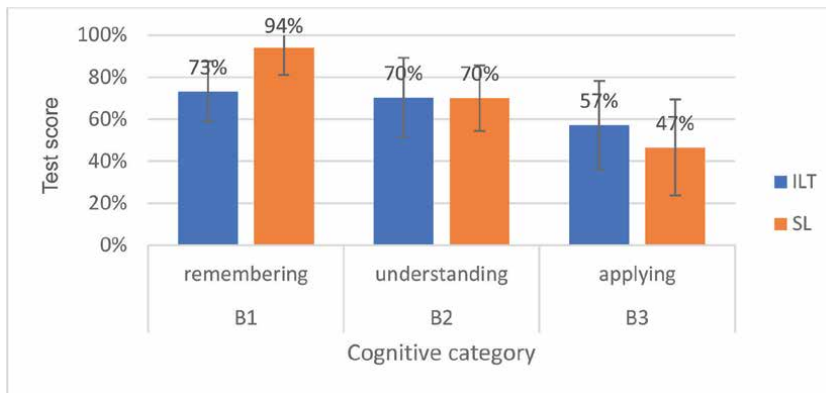


Figure 4. Comparison of ILT and SLT score means according to cognitive categories (whiskers represent SD; N = 561).

Parameter	ICT-S	ICT-H	ICT-C	ICT-I
Pearson's <i>r</i>	0.08	0.01	-0.04	0.19

Table 5.
 Pearson's correlation of ICT scales with ILT score (*N* = 561).

43%). Differences among study years 2 and 3–4 were observed mostly in the lowest two cognitive categories, but not in knowledge application.

4.4 IL and ICT

RQ4: Does software use, ownership of ICT devices, number of ICT-rich courses, and confidence using the Internet affect students' level of IL?

Results showed no correlation between ILT score and device ownership (ICT-H, **Table 5**), nor between ILT and number of ICT-rich study courses (ICT-C). Correlation with software use (ICT-S) was slightly higher, but the highest and statistically significant correlation was with confidence using the internet (ICT-I), reaching 0.19.

ICT parameters were interrelated: software use correlated with hardware possession and internet confidence ($r = 0.38$), while hardware possession also correlated with internet confidence ($r = 0.19$).

Analysis by demographic parameters showed that male students used software more often, possessed more devices, and were more confident using the internet than females, despite female students taking more ICT-rich courses. Social sciences majors used software more often, possessed more devices, and were more confident using the internet than natural sciences majors. Significant increase in software use and internet confidence was observed from year 2 to years 3–4.

4.5 IL and psychological leanings

RQ5: How is IL influenced by various psychological/learning parameters, such as self-concept about learning and problem-solving, general self-efficacy, use of metacognitive learning strategies, internal motivation, and autonomous and controlled external motivation?

Three of the seven psychological scales correlated significantly with the ILT score (**Table 6**): self-concept about learning (SC-L) and problem-solving (SC-P) as well as self-efficacy (SE). This result was expected as the abilities to learn, solve problems, and be efficient are more likely to lead to success. With low correlation, the use of metacognitive learning strategies (LS) was not found as an important factor. When students did not understand the material, they asked their classmates rather than a teacher for help.

Motivation played a smaller role (**Table 6**). Internal motivation (IM) and autonomous external motivation (EM-A) correlated only slightly with the ILT score. Internally motivated students highly rated their interest in and understanding of the field of study. In the external autonomous scale, students most acknowledged

Parameter	SC-L	SC-P	SE	LS	IM	EM-A	EM-C
Pearson's <i>r</i>	0.26	0.24	0.22	0.07	0.12	0.11	-0.08

Table 6.
 Pearson's correlation of psychological/learning scales with ILT score (*N* = 561).

the value of learning for their future—their employment prospects and professional development. Controlled external motivation (EM-C) did not correlate well with ILT. Item analysis of this scale showed that most students did not consider it important to make an impression on the teacher, parents, or their peers but that they nevertheless relied on the teacher’s authority and were motivated by good grades.

All psychological parameters correlated rather heavily among themselves. For example, the strongest link was found between self-concept about learning and internal motivation, and another link between self-concept about problem-solving and self-efficacy (both $r = 0.67$). In other correlations related to IL, three of the psychological parameters correlated significantly to student confidence using the internet (scale ICT-I), namely self-concept about problem-solving ($r = 0.29$), self-efficacy ($r = 0.31$), and internal motivation ($r = 0.33$).

Regarding demographic parameters, female students scored significantly higher in self-concept about learning and using metacognitive learning strategies, while male students scored higher in self-concept about problem-solving. The type of study major played no role in the psychological parameters, but year of study did in all, except in problem-solving. The problem-solving ability seems to be a personal characteristic rather than an acquired skill.

4.6 IL study course and teaching methods

RQ6: To what extent does a study course with IL content contribute to improving students’ information literacy? How do the teaching methods affect the outcomes?

Results are shown for the subgroup of 151 students who were enrolled in an information literacy course and took the ILT test before (pre-test) and after the course (post-test). Students’ mean IL level improved significantly from 65% on the pre-test to 80% on the post-test (Figure 5). Significant improvement was achieved in all IL content categories, but it was the highest in information use (A4—25%), information search (A2—19%), and ethical issues (A5—17%). The lowest increase was observed in information evaluation (A3—10%) due to the fact that the pre-test level was already high. When it came to cognitive categories, the largest increase was obtained in the highest category of applying (B3—22%) and the lowest in understanding (B2—11%).

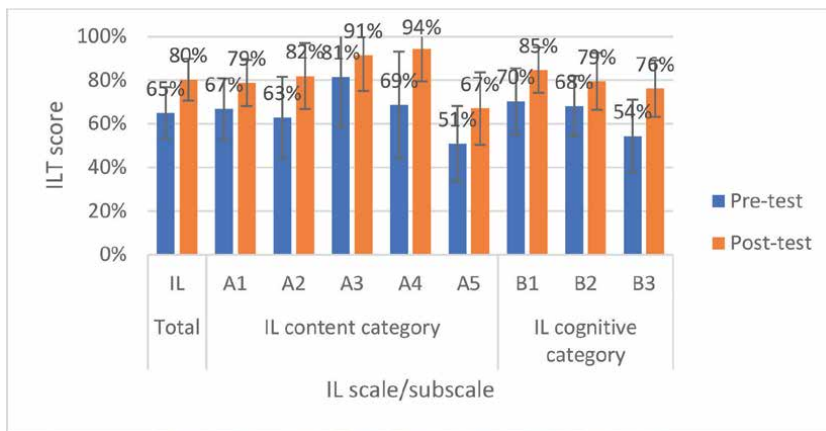


Figure 5. Comparison of ILT scores on the pre-test and post-test for total IL, five content and three cognitive categories ($N = 151$).

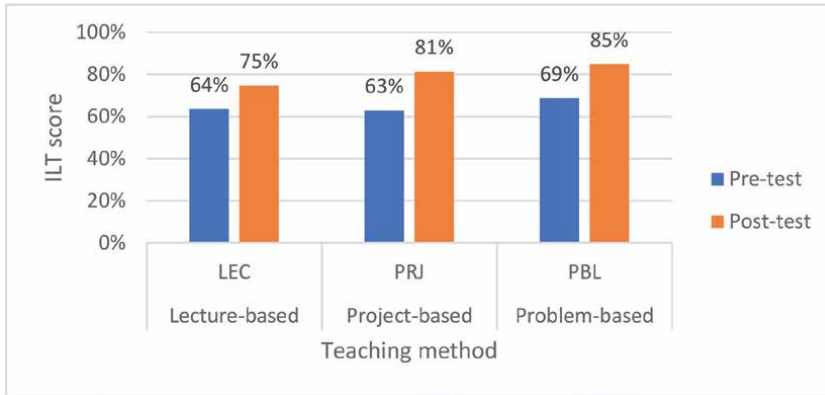


Figure 6. ILT score means for three teaching methods ($N_{LEC} = 52$, $N_{PRJ} = 52$, $N_{PBL} = 47$) on the pre-test and post-test.

Students were divided into three groups, based on the teaching method applied in the course: traditional lectures (52 students), project-based learning (52 students), and problem-based learning (47 students). Improvement in total IL according to the teaching method is shown in **Figure 6**. The biggest improvement was achieved in project-based learning group (PRJ—18%), followed by the problem-based group (PBL—16%). The traditional lecture group (LEC) improved for 11%, suggesting that the active teaching methods were more successful and could be recommended for university IL study courses.

Figure 7 shows the pre-test scores and progress achieved on the post-test for each of the three teaching methods in every IL content categories. The biggest improvement for all three teaching methods was achieved in the IL category of information use (A4; 15–42%), followed by information search (A2; 13–26%) and legal/ethical issues (A5; 13–18%). The lowest progress was obtained in the category of information evaluation (A3; 5–13%) and identification of information needs (A1; 10–15%). Both groups using active teaching methods (project- and problem-based learning)

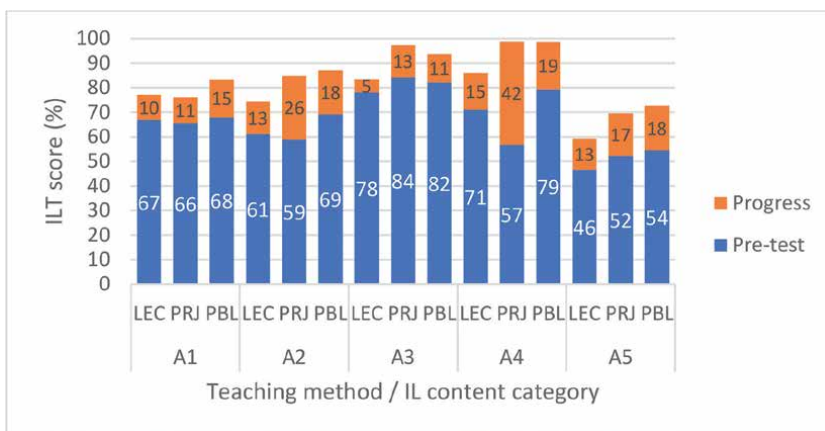


Figure 7. ILT scores on the pre-test and the progress achieved on the post-test for three teaching methods ($N_{LEC} = 52$, $N_{PRJ} = 52$, $N_{PBL} = 47$) and IL content categories.

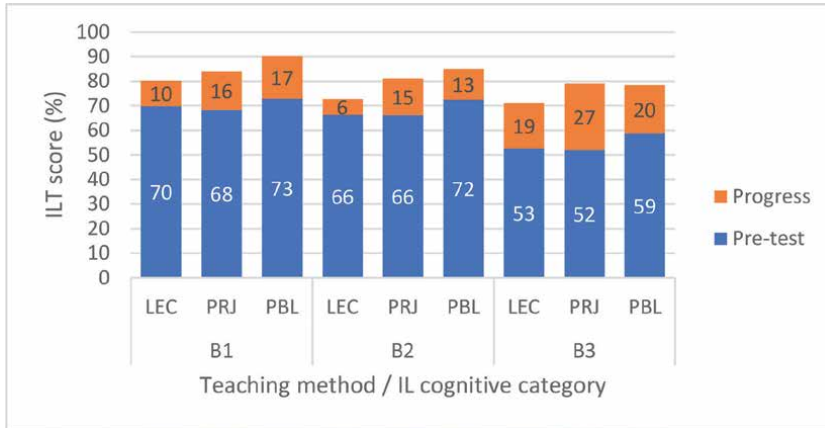


Figure 8. *ILT scores on the pre-test and the progress achieved on the post-test for teaching methods ($N_{LEC} = 52$, $N_{PRJ} = 52$, $N_{PBL} = 47$) and IL cognitive categories.*

achieved similar post-test proficiency in all five content categories, which was above that of the traditional lecture group.

Another look at improvements across the cognitive categories (**Figure 8**) shows the highest increase for all three teaching methods in the highest category of applying knowledge (B3; 19–27%), followed by the lowest category of remembering (B1; 10–17%), while improvement was the lowest in the category of understanding (B2; 6–15%). The two active learning methods outperformed the lecture-based approach in most cases.

4.7 Factors influencing IL

RQ7: How much of the IL could be explained by demographic parameters, scientific literacy, ICT use, and psychological/learning parameters of students? Which parameters affect IL level the most?

In an attempt to develop a model for prediction of the IL level, taking into account the following independent variables (3 demographic parameters, SL, 4 ICT scales, and 7 psychological/learning subscales), we applied multiple linear regression on the test results of all participants (561). The model accounted for 29% of the variance in IL; $F(15, 545) = 15.06$, $p < 0.001$, $R^2 = 0.293$. As shown in **Table 7**, predictors with a significant zero-order correlation with IL (scientific literacy SL, confidence on the internet ICT-I, and self-concept about learning SC-L) had a significant partial effect in the full model. Contributions to IL variance, calculated by partitioning R^2 by multiplying beta values with zero-order correlations, were 16.6% (SL), 2.8% (ICT-I), and 3.5% (SC-L).

Number of ICT-rich courses had a significant negative effect in the model, but since its zero-order correlation with IL was 0, it played a suppressor role, strengthening the effect of other parameters. The application of metacognitive learning strategies (LS) also had a negative influence in the model, which was in line with its small (albeit non-significant) correlation with the ILT.

Predictor	Unstand. coeff.		Stand. coeff.	t	Sig.	95.0% Confid. Inter. for B		Correlations	
	B	Std. err.	beta			Lower	Upper	Zero-order	Partial
(Constant)	0.177	0.065		2.740	0.006	0.050	0.304		
Gender	0.012	0.012	0.046	1.012	0.312	-0.011	0.036	0.017	0.043
Major	0.005	0.012	0.017	0.379	0.705	-0.020	0.029	-0.011	0.016
Year	0.005	0.003	0.059	1.433	0.153	-0.002	0.012	0.137	0.061
SL	0.363	0.034	0.402	10.579	0.000	0.296	0.431	0.445	0.413
ICT-S	-0.003	0.013	-0.009	-0.219	0.826	-0.029	0.023	0.085	-0.009
ICT-H	0.006	0.009	0.028	0.682	0.495	-0.011	0.023	0.013	0.029
ICT-C	-0.005	0.002	-0.081	-2.148	0.032	-0.009	0.000	-0.035	-0.092
ICT-I	0.033	0.008	0.166	3.969	0.000	0.017	0.049	0.194	0.168
SC-L	0.048	0.012	0.208	3.971	0.000	0.024	0.072	0.261	0.168
SC-P	0.020	0.012	0.087	1.695	0.091	-0.003	0.043	0.244	0.072
SE	0.011	0.013	0.047	0.841	0.401	-0.014	0.036	0.220	0.036
LS	-0.029	0.0140	-0.104	-2.089	0.037	-0.057	-0.002	0.072	-0.089
IM	-0.026	0.015	-0.115	-1.819	0.069	-0.055	0.002	0.122	-0.078
EM-A	0.010	0.012	0.044	0.834	0.404	-0.013	0.033	0.106	0.036
EM-C	-0.005	0.008	-0.025	-0.632	0.528	-0.020	0.010	-0.081	-0.027

Table 7.
 Predictors of IL (statistically significant predictors are bolded; N = 561).

5. Conclusions

Previous studies have shown that during the COVID-19 pandemic, students' access to information and communication technologies, ICT skills, and IL were critical to their shift to online distance education and to overcoming multiple chaotic information problems.

In this study, we took a closer look at university students' IL and investigated the factors affecting students' IL. Based on the results measured in a group of 561 students using IL and SL tests as well as questionnaires on students' ICT use and psychological/learning characteristics, we came to the following conclusions:

RQ1. According to the results of the IL test, students are reasonably well information literate, and the IL does not differ by student gender or natural/social science orientation.

- Students achieved a moderately high mean level of IL, 67.63%, with a normal-like distribution of scores.
- No statistically significant difference in IL level was found between male and female students or between natural science and social science majoring students.

RQ2. Students are not equally skilled in all content areas of IL.

- Students were most successful in information evaluation (83%) and information use (73%).
- Most IL deficits were found in legal and ethical use of information (55%) followed by information search (65%). Therefore, more emphasis should be placed on those topics in higher education.

RQ3. There is a relationship between IL and students' scientific literacy. In both areas, students have comparable skills and achieved similar results on three cognitive levels.

- Students scored similarly on the IL and SL tests, with a similar distribution of total scores and similar performance on the cognitive levels of remembering, understanding, and knowledge application.
- Females and males were equally successful - no gender differences were found in IL or SL test scores.

RQ4. Ownership of ICT devices and ICT-rich courses do not necessarily lead to higher levels of IL among university students. However, there is a significant correlation between IL and students' confidence using the internet.

- The highest statistically significant correlation was found between IL and confidence using the internet; a lower correlation was found between IL and use of software, while no correlation was found between ILT score and ownership of ICT devices or number of ICT-rich courses.
- Male students owned more ICT devices, used software more often, and were more confident in using the internet than female students.

RQ5. Information literacy is influenced by some psychological parameters.

- Significant correlations were found between IL and self-concept of learning, self-concept about problem-solving, and self-efficacy.
- Motivation played a minor role; internal motivation and autonomous external motivation correlated only slightly with IL test scores, while controlled external motivation did not correlate at all with IL scores.

RQ6. An efficient way to reach a higher level of students' IL is to introduce a credit-bearing study course that covers all the major subject areas of IL, preferably with the use of active teaching methods.

- The study course significantly contributed to a higher level of students' IL (the average IL level improved from 65% on the pre-test to 80% on the post-test).
- Improvement was made in all IL content categories but most notably in the areas of information use, information search, and ethical issues, where students initially had the most difficulty.

- All three teaching methods (lecture-based, project-based, and problem-based learning) were successful in teaching IL.
- Active teaching methods slightly outperformed the traditional lecture-based approach.
- The positive contribution of active learning was the greatest in the knowledge application cognitive category.

RQ7. Students' IL can be partially explained by scientific literacy, ICT, and psychological parameters.

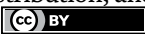
- Of the 15 potential predictors of IL, which were included in a model to predict the level of IL, students' scientific literacy, their confidence in using the internet, and their self-concept about learning had a significant effect.
- The model explained 29% of the variance in IL.

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Section 3

Goals and Challenges
of Online Learning

Exploring Teachers and Students Perceptions of Online Teaching in Montenegro: What Have We Learned?

Milena Kavarić

Abstract

The pandemic year 2020 has led to significant changes in all areas of life. Education was no exception. Due to the closure of schools and universities during the lockdown, educational systems worldwide had to be switched overnight, from face-to-face to a completely virtual education model without prior preparation. The study conducted in Montenegro, based on interviews and a survey, collected data on the basis of which it provided an insight into how the teaching staff of Montenegrin universities coped with the newly created circumstances. The aim of this primary research is to determine the challenges faced by teachers and students in the Montenegrin higher education system regarding their implementation of online teaching during the COVID-19 pandemic in 2020. It focuses on the digital competence of the teaching staff, challenges in applying digital technology, opinions regarding online assessments and students' experiences with online learning. Despite the presented challenges all teachers experienced, the research confirmed that this was a unique experience that brought new opportunities and contributed to improving the teachers' ability to use new technologies. It is to be expected that this unfortunate situation will trigger the development of various mechanisms for modernizing the way of providing knowledge in the future.

Keywords: higher education, online teaching, digital literacy, technological challenges, online assessments, student engagement, student experience, academic integrity, quality assurance

1. Introduction

Even before the outbreak of the pandemic, Internet Distance Learning Platforms (DLS) were used in all universities of Montenegro. Learning materials on the platforms included various educational content—powerpoint presentations, work plans, documents, notes, etc. which students could explore at their own discretion and at their own pace. The platforms were intended primarily for students who, due to their employment, were not able to follow live lectures.

With the lockdown in the spring of 2020, all the universities were forced to switch to full online model, which ensured the continuity of most educational activities. Therefore, the DLS platforms completely revived and became available to all students.

However, as the lockdown continued, they were found insufficient to enable learning to take place, thus it became necessary for teachers to provide live lectures via video conferencing platforms. Thus the Montenegrin universities introduced synchronous, real-time online classes with teaching personnel and students working together in the same session [1] using virtual meeting platforms, such as Zoom, Microsoft Teams or Viber.

In Montenegro, there were two types of interaction in online education: Synchronous and Asynchronous.

Synchronous courses are live online courses that are conducted in a live learning environment creating a platform for students and teachers to interact in the same session together [2]. Students are required to log in and participate in class at a specific time each week. Live learning environments give students the chance to ask questions and get answers in real-time as if they were raising their hands in a lecture room. They can submit questions for teachers during their lecturing which increases the scope of learning because students can be exposed to different viewpoints. Real-time interaction may spark a debate or discussion, taking the level of depth of a topic further than the teacher's original presentation would. Maintaining a sense of community and personal connection with a teacher is a big motivational factor for students to attend class each day, which rarely happens in an asynchronous course format.

Asynchronous courses are made up of prebuilt course components (materials, presentations, lectures, notes, curriculum), posted on platforms allowing students to complete them at the time and pace of their choosing, and do not include a live video lecture component. While this style of learning is convenient and seems empowering, there are many risks to asynchronous courses. Students cannot contact their teachers very quickly—certainly not in real-time, and because of that they can feel very isolated. Teachers also typically simply do no more than assign readings and homework questions. Without the oversight and consistent encouragement of the teacher, students have to hold themselves accountable for their progress. In time their continued effort weakens and engagement stays low.

The universities of Montenegro used previously known university platforms for asynchronous online teaching (18.3% response rate), while for synchronous online teaching, they used external tools for video conference calls, the most common of which were Zoom (73.3% response rate), Microsoft Teams (18.3% response rate), Viber (1.7% response rate) and Google meet (0.8% response rate), while a total of 5.8% of the respondents used other tools to teach online classes.

Whether synchronous or asynchronous, new ways of teaching have expanded the boundaries of learning beyond physical lecture theaters [3].

2. Methodology

2.1 Research question

Teaching and learning using a synchronous and asynchronous online environment has become increasingly widespread across the education sector, even if teachers did not properly feel capable to do so. Our study seeks to explore the challenges of teaching and learning online encountered by high education institutions in Montenegro

in the context of the Covid-19 lockdown. The research refers to the period from the complete lockdown on March 16, 2020 to July 15, 2020 when the academic year was officially over.

Based on the collected data, we focused on two main research questions.

Research question 1—what are the challenges and opportunities of online teaching in Montenegro and its possible impact on traditional teaching as a step towards its modernization.

Research question 2—Challenges and opportunities of online examination and potential changes that need to be made.

First, we analyzed the extent to which teachers used online teaching, both synchronous and asynchronous. Second, we analyzed how, in their opinion, they were digitally competent for providing knowledge online, as well as how technologically equipped they were. In addition to online classes, one part of the questions from the questionnaire also referred to online testing, i.e. use of online tests during the examination. Then, we analyzed the attitudes of students related to online teaching and learning, their comments and their objections.

2.2 Participants

The Montenegrin higher education system consists of one large, public university, the University of Montenegro, and a group of three private universities.

The main target group was the teaching staff of all universities in Montenegro. All professors, teaching professors and teaching assistants from the existing four universities were contacted online and asked to fill out the online questionnaire “Challenges and opportunities of online teaching in Montenegro” developed in Google Forms. The questionnaire was filled out by 120 teachers ($n = 120$), which is a representative sample. The respondents were employed at the University of Montenegro (44.2%), the Mediterranean University (35.8%), the University of Donja Gorica (15%) and the University of the Adriatic (5%). The respondents consisted of full professors (12.5%), associate professors (18.5%), assistant professors (22%), teaching assistants (21.1%) and other staff (2.4%). Of the total respondents, 77 (64.1%) were female and 43 (35.9%) were male. Respondents had 5–10 years of experience (17.9%), 10–15 years of experience (34.2%) and more than 20 years of experience (17.1%).

Semi-structured individual interviews were also conducted with 16 interested professors of various academic titles who volunteered to participate in the research.

Additionally, six interviews were conducted with Student Representatives of their generation as the most affected category in online classes, from different faculties and years of study.

In addition, student statements were used from the students’ forum on the faculty’s internet platforms where they left their comments related to online teaching. A total of 356 different comments were left on the platform of the two universities of Montenegro.

Consent was sought from all participants and they voluntarily responded to the invitation to participate in this study. During the presentation of the findings, numbers were used for the professors and student participants.

2.3 Research design and data collection methods

Three different methods of data collection were used: an online questionnaire, input on university platforms, and semi-structured interviews.

The online quantitative and qualitative questionnaire was developed in Google Forms and distributed to teaching personnel via email or phone. The questionnaire contained 24 multiple-choice and rated questions (using a Likert scale). The aim of the first four questions was to collect general data related to this study's set variables (gender, university name, teaching experience and professional role).

The second part of the questionnaire consisted of 20 questions, where the respondents, using a Likert rating scale with a range from 1 (do not agree at all) to 5 (completely agree) and with the help of multiple answer choices, expressed their views related to: the biggest challenges that they had faced during online teaching and testing, their level of digital competence, technical equipment, student engagement during online teaching and exams. The questionnaire was anonymous, since some questions directly assessed the work of the university where they were employed, thus avoiding subjectivity in the answers. All study participants provided informed consent before participation, and the study design was approved by the appropriate ethics review board.

As a means of examining students' insights into their online experience, students were asked to leave their comments on questions posted on online platforms at two of the four universities. This method proved to be a useful tool for students to share their thoughts about the online teaching process, as a total of 356 students shared their experiences about online learning on their universities' platforms. Students were asked to reflect on their experience in terms of the challenges they encountered, the benefits they felt, their motivation for learning in this way, and to compare online teaching with face-to-face teaching.

The final method used was the semi-structured interview, which is considered an essential source for gathering direct insight into the participants' experiences. Teachers who expressed their willingness to participate through interviews were asked to reflect on the role of digitization in education, their experience in terms of digital and technical readiness for teaching and testing online during Covid-19, any support they received from their faculty as well as to express their opinion regarding the comparison of online teaching and the traditional face-to-face approach.

Sixteen academic teachers of various titles participated in a semi-structured interview conducted via Zoom with three members of the research team. Each member of the research team asked questions designed to probe the challenges and opportunities of online teaching and learning. The interviews lasted up to 30 minutes. All interviews were audio- and video-recorded and re-watched to ensure the accuracy of the quotes used to represent the theme.

2.4 Data analysis

The study used mixed methods, as both quantitative and qualitative data were collected with the aim of understanding the phenomenon through the perspectives of the participants. On the one hand, quantitative data allowed researchers to obtain more objective, numerical data, while qualitative data provided more detailed information about the context, thus creating a real picture of the study and a more thorough understanding of the situation in its natural environment.

Quantitative data processing was performed using SPSS statistical software. The chi-square, Mann-Whitney, and Kruskal-Wallis tests were used for the purpose of hypothesis testing. The quality of the data was checked using the Kolmogorov-Smirnov test for normality as well as by cross-tabulation and correlation.

2.5 Findings

The key findings indicate that all the teachers experienced challenging moments while delivering lectures online, but they were also able to identify advantages in such a stressful context.

The analysis of the quantitative data particularly shows three factors that hindered the teaching experience of the participants.

The most common disadvantage of this experience was the lack of direct interaction with students [4]. In most cases, the teachers acted as the only link between the students. This lack of connection can have the effect of causing great anxiety and causing students' motivation levels to drop [5].

Another challenge faced by the teachers during this unforeseen teaching scenario included the digital literacy of the teachers and aversion to technology and this way of teaching. For this reason, this new teaching setting is, according to the participants, more difficult and tiring than the classroom environment.

In addition, the participants reported that working from home is also problematic considering all the possible distractions in the household, i.e. they did not have the necessary resources to conduct online classes, such as a suitable internet connection or a laptop with a working camera and microphone. The lack of appropriate technological devices limited their participation in the online lecture. Adapting to this scenario for some of them meant spending money on new technological devices that were not completely affordable but were absolutely necessary. Some received help from their university, but this type of help appears to have been rare.

The results of the study show the need for a modernized approach to pedagogies on educational technologies and media that is driven by research-informed analysis. As well as greater involvement of competent institutions towards better technical equipment for teaching staff and students.

3. Discussion

3.1 Digital competence of teachers in Montenegro

An analysis of quantitative and qualitative data summarizing the experiences of university teachers and students regarding online teaching and its comparison with traditional teaching shows that an important factor of difference that the respondents recognized during this process was the fact that they had to learn how to work with applications for synchronized online teaching, which they were not previously familiar with. Asynchronous teaching was more or less known and practiced at the universities of Montenegro because all universities already had their universities' online platforms and trained the teaching staff to upload materials on them. On the other hand, synchronous online teaching implied familiarity with applications such as e.g. Zoom or Microsoft Teams, which were new to many teachers. At Montenegrin universities, due to the sudden transition to a live teaching environment, there was no organized training for teachers to use these applications, but they found support for their use on YouTube guides (32.5%) as well as from the IT service of their faculties (27.8%). Those methods of self-teacher training were apparently sufficient in the given circumstances because 73.3% of teachers stated that they used Zoom to hold synchronous online classes.

In support of the successful transition of Montenegrin teachers to online teaching is the fact that all respondents with 15 years of service (whose participation in

this study is 43.6%) rated their digital competence with an average score of 3.9 and a modal score of 4. If we compare the results of the respondents with years of service of 15 years and more (with participation in the survey of 25.6%), we see that they also rated themselves with high marks. The average grade for answering this question is 3.73 with a modal score of 4, which indicates that teachers, nationally, are quite confident in their digital competence. However, the linear regression shows that there is a significant number at the level of significance 1 ($p = 0.054$, $B = -0.273$). The regression equation shows that by changing the level of the independent variable (length of service) for one unit (year), teaching staff attitudes about their digital competence reduced by 0.273%. The same result was recorded in the answers of the respondents since the average grade for teaching staff with a shorter work experience is higher by 0.17% than for the respondents with a longer work experience. The obtained results show that the confidence in the skills needed to perform synchronous online teaching decreases with years of service.

Therefore, it seems that senior teachers with longer tenure needed additional digital training. This is a field that needs to be worked on in the future, in a way that, for example, universities become more involved and periodically organize teachers' training programs for online teaching and the use of all distance learning tools [6]. In support of this need is the fact that almost a third of the total teaching staff (30%) believed that they did not have the necessary technological and pedagogical skills to support synchronous online teaching, and 26.7% of the total sample of teaching staff this was a decisive factor for giving up synchronous online classes and staying at the level of using simpler forms of asynchronous online communication with students (communication via Viber, e-mail, via DLS platforms of the university). Of those, 15.5% of teachers used only e-mail as a means of communication.

3.2 Teachers' opinions on the quality of knowledge provided through online teaching

Teaching practice taught at the teacher-training faculties in Montenegro is quite conservative, promoting teacher-centred methodologies, and has been rigidly followed for the last decades. Therefore, it is not surprising that the vast majority of our teachers (67.4%) had no experience with synchronous online teaching before Covid-19. In addition, a large number of teachers (43.3%) believe that in this way students cannot be taught the skills needed to apply the knowledge delivered in this way in practice.

With a question with a scalar answer on the Likert scale from 1 to 5, on which 1 represents the lowest and 5 the highest grade, we asked the teachers about their views towards the quality of knowledge achieved online in regard to delivering lectures in the lecture theater and obtained answer whose modal score is 2, and the mean value is 2.55. Similarly, the respondents answered the question about their perception of the usability of the knowledge acquired online and its application in the form of skills on the labour market. This answer has a modal score of 2 and a mean value of 2.90.

In addition to the qualitative, there was no uniformity in the transfer of knowledge in the quantitative sense either. Thus, more than a third of the total teaching staff (32.5%) believe that they held fewer classes than they would have held live at the university according to the schedule, and for 30.8% of the teaching staff, the classes lasted less than it would have lasted at the university. In addition, 29.2% of the respondents reduced the scope of the material, while 32.5% slightly reduced the material due to the new online teaching circumstances. In this regard, interviewee

10 (full-time professor) stated in a semi-structured interview that “he is aware that in these conditions online teaching is the only solution, but that it is not nearly the same as face to face teaching and cannot have nearly the same effects.” Also, “It’s not like when you’re in the lecture theatre and you catch a student’s eye and it gives you an extra impulse to continue the lecture” (interviewee 15, full-time professor). “It is very impersonal” (interviewee 3, full-time professor). Through a qualitative analysis of the responses collected through interviews with teachers, the prevailing view is that face-to-face teaching is “real teaching” and that teachers can only be active participants in the teaching process in real-time. That is why 70.3% of the surveyed professors believe that synchronous teaching via Zoom is the closest to traditional face-to-face teaching.

It is devastating that among a certain number of interviewed teachers, there was not even the slightest enthusiasm for acquiring new knowledge and for advancement in this field, but the prevailing desire was to “wait for the extraordinary circumstance to pass” and for “things to return to normal and then continue with teaching” (13.4%). We have to bear in mind that the research was conducted in the initial phase of online teaching, so changes in teachers’ attitudes are possible in the later course of online teaching. Certainly, by including education on the digital competence of teaching staff and promoting online teaching, it will affect the reduction of the negative attitude towards this new form of teaching.

3.3 Students’ experiences and their engagement in online classes

The teacher’s negative attitude towards the online experience is automatically transferred to the target group of students who are just forming their stance towards the new way of teaching and learning online. A teacher who has an aversion to online teaching is unlikely to be capable of guiding and supporting students in a Covid scenario. This is supported by the fact that 38.1% of teaching staff believe that online teaching does not sufficiently stimulate the cognitive motivation of students. The results of the students’ activity and participation in online teaching than in person at the lecture theaters measured on a Likert scale had a mean value of 2.65 and a modal score of 3. Such an attitude seems to be shared by students who on university platforms characterized certain teachers’ online methods as a method of education that is “unacceptable”, “unheard” and “this is not a real learning experience”. Also, “We have neither heard nor seen the professor for 3 months. Through Student Representative we found out what needs to be learned for the final exam. It’s absurd.” A significant number of students stated on the platform that they had “difficulties in understanding the teaching content” and “lack of explanation and teaching” by certain teachers. Among students, this lack of direct connection can have an effect in a way that causes the level of motivation to decline. Many students showed poor persistence in online learning, which severely limited their learning effectiveness [7]. “Truly, in the beginning it was interesting for everyone. Everyone wanted to get to know this new way of monitoring classes. However, as time went on, class attendance decreased”, (interviewee 5, Student Representative). “Although the closing of the university was intended to protect students, for many it began to mean a ‘holiday from learning’” (interviewee 3, Student Representative).

On the other hand, as the main advantages of online classes, students cited “the possibility of organizing learning at their own pace”, “more relaxed work from home”, “shorter duration of classes”, “more free time”, “reduced volume of material” and “more clarifications and support from teachers”.

The analysis also showed different engagement of students depending on teachers' seniority. Regarding students' cognitive activity and engagement in online classes as measured by the intensity of the student-teacher discussion during the class, the Kruskal-Wallis test revealed a statistically significant relationship between the variables of teachers' experience and student engagement (significant at $p = 0.038$). This test confirmed that, according to the respondents, students were the most active in the online classes given by teachers who had 10–15 years of experience. This data could be linked to a higher assessment of the digital literacy of teachers with up to 15 years of work experience, but also to the fact that this group of teachers were usually teaching assistants who engaged with students in case studies and practice sessions, unlike full-time professors, who focused mostly on delivering lectures.

Thus, for example, interviewee 7 (teaching assistant) stated that, in order to keep the students' motivation at the same level, every week after the online classes, he assigned homework that included the material covered for the given study week and required the students to do the homework and send it to mail. In this way, he motivated students outside of online classes. According to interviewee 7, "in this way it is possible to effectively combine online learning and independent learning".

Interviewee 4 (teaching assistant) had an even more demanding approach. He believed that "insufficient preparation for lectures leads to limited participation in discussions in online classes and thus to insufficient depth of discussion". To address such problems in online classes, he required students to read subject-specific literature and submit brief observations and ambiguities based on reading key materials prior to class. In this way, he was able to make adjustments to the teaching contents before the class and adjust the online teaching to the student's requirements. In this way, "students will not learn fragmented and superficial knowledge, but will experience 'deep learning' during the discussion and be active rather than passive participants". For students, issues such as interest, motivation and engagement are directly connected to learner success [7].

This could be the beginning of student-centred learning in Montenegro, which international organizations for education have been calling for many years [8]. Namely, Montenegrin higher education has used the teacher-centred approach for a long time, which is quite conservative, narrowly focused on lecturing and over-emphasis on building knowledge, and not enough on developing understanding, skills and attitudes [9]. For many years there was a lack of efficient governance structures to serious attempts to introduce innovative approaches, bringing in the latest methods and ideas from the rest of Europe [10]. Covid-19 has brought some examples of good and innovative practices in the area of student-centred learning (e.g. interactive learning, use of case studies, research-based and problem-based learning, etc. [11]). As of now, the situation is favorable for such a leap forward, to conserve the innovations acquired during the Covid-19 period at the same time as the Montenegrin national system is undergoing reform [12].

3.4 Access to technologies as a challenge for online teaching in Montenegro

Technology is of primary importance for online teaching, which, in addition to digital literacy, is a prerequisite for its successful performance. To follow online classes, both teachers and students need access to online communication tools. In the case of teachers, the following stood out as the main obstacles in the technical sense:

1. Disturbances regarding access to devices (e.g. computers, tablets and telephones). Although 90.5% of teachers have a computer at home, 27.1% of the

teaching staff share their computers with family members, and only 2.5% received a computer from their employer. The same could be noticed from the interview... “The situation at home is not the most suitable for carrying out all teaching tasks”, (interviewee 6. teaching assistant).

2. Interference in the Internet connection. In Montenegro, high-speed Internet access is generally more limited than in the European Union. Internet speed that meets the prerequisites for e-learning is defined as a speed of 10 or more Mbps [13]. However, it should be noted that 10 Mbps is lower than the standard considered acceptable in the US (25 Mbps) or the EU (30 Mbps). In that sense, 55% of teaching staff stated that interruptions of online classes due to a poor Internet connection and other technical problems were frequent. “There were problems with internet connection and internet signal. Some teachers handled it better than others”, (interviewee 2, associate professor).

Similar challenges existed for students. The student on the platform stated that he “shares a room and a computer with his brother who goes to school” and that “it was very often physically challenging to follow classes in such an environment.” To the question from the Questionnaire, “Have students contacted you because of the inability to attend classes due to technical problems and interference in the Internet signal?”, 56.5% of the respondents answered in the affirmative. The lack of appropriate technological devices limited students’ participation in online classes. Adapting to this scenario for many “actors” meant spending money on new technological devices that were not completely affordable, but were absolutely necessary. A small number of teachers (2.5%) received help from their university, but it seems that this kind of help for students was and remains a utopia. Despite the public promises and announcements of the state, until the submission of this chapter, there were no official public activities in this direction.

The new way of delivering knowledge discriminates in a way because for a virtual class, you need either a good laptop or a mobile phone with good internet, so that separates the participants because not everyone has this (technological tool and good internet). Students with no or low socio-economic power to afford broadband connection are most vulnerable to fall behind or encounter additional challenges to meet up with others in online learning. This puts in the foreground the material possibilities of students, not their mental capacities, and brings to the fore the class differences between them, but also the differences between developed and developing countries [14].

Greater involvement of state authorities and competent university authorities as autonomous units in providing technological equipment for both students and teachers is a basic prerequisite for digital literacy and inclusion in modern online study courses.

3.5 Knowledge assessment in an online environment

According to the Montenegrin Law on Higher Education, within the structure of the total number of points for a course, 50% of the assessments must be provided by knowledge testing activities during a semester (usually via test examinations and a seminar paper) and 50% must be via a final (oral) exam. According to the current law, it is allowed to hold semester tests online, but there is no article that would enable the final exam to be conducted online. On the contrary, Article 85 of the Law stipulates that the final exam must be “held on the premises of the institution”. Still, only

26% of professors who were enthusiastic about the new way of examining used the right to assign the semester test online.

The online assessment was conducted in a synchronous and asynchronous environment. Assessment in a synchronous environment was conducted in a virtual Zoom classroom (33% of teachers) in such a way that the teacher can visually follow the students while they do the test, on paper or on the computer. Asynchronous environment interaction does not take place in real-time but can be via the university's online platform, such as taking a course on the Moodle platform (62% of teachers). Assessment methods such as open-ended short answer questions, true-false questions, multiple-choice and fill-in-the-blank questions were appropriate for use in an asynchronous environment to assess the knowledge and competence of students during Covid-19.

For specific subjects where it was not possible to arrange the tests online, the knowledge assessment was organized after the opening of the faculty premises. Interviewee 13, an associate professor from the Faculty of Science, stated that "it was not possible to organize a knowledge test for all subjects due to the specificity and evaluation of clinical skills, so for them the examination took place after the lockdown measures had been eased" (in July 2020). The interviewee 9, associate professor, from the Faculty of Civil Engineering also says that their "tests mainly consist of written calculation-graphic tasks in combination with an oral knowledge assessment, and for most subjects it was not possible to organize high-quality, authoritative and valid knowledge tests of this type, except in the classical way, in the lecture theatre—when the conditions are met".

On the other hand, at Faculties of Social Sciences where theoretical knowledge is more valued, interviewee 8, an associate professor, says that "the method of examination through the Moodle platform is very objective, and that he regrets not having used it on a larger scale before." When asked if it was necessary to slightly lower the examination criteria for the "Covid generation", he points out that "in this way, all the obligations that they have foreseen are fulfilled and that there was no reason to reduce the scope of the material nor the criteria for online tests".

However, 29.2% of respondents who decided to reduce the amount of material in the curriculum due to the new online teaching circumstances, significantly reduced the material for the exam, or 32.5% of teachers who had slightly reduced the material, clearly disagree with this statement.

So, it seems that teachers "were making some necessary adjustments in assessment" during Covid-19 [4]. The reduction in the scope of the assigned material may have had an effect on the higher passing rate on the tests that the students took online. Namely, 27.5% of respondents stated in the Questionnaire that the passing rate on online tests was significantly higher, that is, 18.3% said that it was slightly higher. Only 10% of respondents thought that the passing rate was the same as last year or even lower according to 3.3%.

Considering that according to 70.9% of teachers who conducted the online examination, there was a strong possibility for the examinee to use illegal material during the exam and therefore cheat, online tests cast doubt on principles of integrity, equity, fairness and ethics. This could be an area for further research.

Taking into account the results of this research, the question arises whether Montenegro is ready to amend the Law on Higher Education in terms of enabling taking the final exam online. If we consider that in the Law on Higher Education, there is already the possibility of taking tests online and that the working group that is currently working on amendments to the Law has initiated the inclusion in the Law the institute of an online class (which is still not known in the Law), then the logical

sequence of events, would have been the inclusion of the institute of online exam. This would significantly ease the position of a certain group of students such as: persons with special needs, foreign students, students who due to participation in the Summer Work and Travel program very often miss the Summer exam deadlines and in Covid-19 scenario, perhaps the most relevant—students who are in self-isolation and infected. However, according to the interviewee 1, vice-rector for teaching at the Mediterranean University, Montenegro is still not ready for that novelty. Because, “in order to be able to organize an online final exam, first of all, distance learning programs must be accredited by the Accreditation Board. This has not yet been implemented in Montenegro, and it would be necessary to establish conditions for the accreditation of such programs. Then, institutions must have adequate equipment, technological tools such as video and audio recording surveillance and personnel digitally trained to work with such tools. It is equipment and software that would enable objectivity of examination and transparent verification of knowledge. Currently, with our equipment and our software, it is very difficult to provide fair conditions for online testing, because simply, it is difficult to prevent a student from using illegal means”.

4. Conclusion

This work has demonstrated specific factors in the field of digital education of Montenegrin teachers that influence the successful overcoming of new challenges that have arisen during online teaching caused by the Covid-19 crisis. Based on a combination of alternative research methods: self-reported questionnaire, interviews and self-expressed comments, we reached conclusions about how the higher education institutions of Montenegro coped with the new circumstances and whether they managed to adapt to the new way of teaching.

The findings suggest that, despite the emerging opportunities to discover and learn new technologies, the challenges faced by teachers were not negligible and required attention. The lack of previous experiences in the field of teachers' digital education, the lack of readiness by educational institutions and the possible lack of technical equipment for both teachers and students, contributed to making this experience more challenging. This study also shed light on the disparity regarding the online teaching experiences of the teachers, as some of them had regular contact with students through largely synchronous teaching, while others lost complete contact with students.

The first conclusion that emerges is that the biggest disadvantage of online teaching is the lack of direct interaction between teachers and students [15]. The live learning environment offers a sense of community, keeps students engaged and focused, and allows for live debates and discussions. Therefore, it is not surprising that, what the vast majority of teaching staff agreed on (73.3%), synchronous teaching in a virtual classroom with the help of the Zoom application is the most similar to face-to-face in-person classes. That is the option most conducive to students' learning and progression and provides the most similar experience of pre-Covid classes that can successfully replace the direct interaction of teachers with students.

The study then showed that the crucial factors that influence the success or failure of online teaching during Covid-19 are the digital competence of teachers and digital technology resources.

Although the digital literacy of the teaching staff in Montenegro is at a satisfactory level, the third of the teaching staff who did not do well in synchronous online teaching is not to be overlooked. The majority of teaching staff evaluated their digital

abilities with relatively high marks. However, the research showed a lower self-assessment by the elder generation of teachers with 15 years of experience or more. Therefore, more activity in the field of digital literacy is needed to help teachers understand the goals and ways of providing online teaching activities, and also to improve their personal attitude towards online teaching. The progress of online classes and the effectiveness of learning depend to a large extent on the teachers and their motivation to animate students to actively attend online classes but also to learn outside of class.

Satisfaction with the quality of knowledge obtained through online teaching in Montenegro was evaluated by the surveyed teaching staff with a grade of 3.14. The satisfaction with the quality of online teaching among students showed the prevailing attitude that they are more dissatisfied than satisfied. An analysis of the frequency of complaints on university platforms found that students cited disadvantages twice as often as advantages of online teaching, which indicates a critical attitude of students towards this form of teaching and certain difficulties in the implementation of this new form of teaching. However, opinions posted by students on the university's online platforms should be taken with extreme caution, given that they were gathered based on free answers to imprecisely posed questions, which ultimately influenced the way the participants responded.

The technological devices of teachers and students are mentioned as one of the most important preconditions for online teaching. Bearing in mind that the pandemic prevented access to university equipment, teaching staff and students were directed to their own technical means. The dependency of online learning on technological devices and the provision of the equipment was a big challenge for institutions, faculty and learners. Students with outdated technological devices found it hard to meet some technical requirements of online learning. It becomes undeniable that students with a low socio-economic background definitely find it more difficult to migrate to online learning. If the Covid-19 crisis has made anything clear, it is that we lack the necessary infrastructure and institutional activities to support online teaching. The research also showed extremely weak university support for its teaching staff in this domain, because out of four universities, only one university dealt with the technical equipment of its staff during the pandemic, with only 2.5% of the teaching staff from that university stating that they received it from the university to use a computer during the Covid-19 crisis.

As the research was conducted in the first wave of the epidemic, when the emphasis was on the establishment of an online teaching and learning system, evaluation and assessment were in the background. In Montenegro, the assessment system is almost exclusively formative, fact and knowledge-based and rewards good memorization skills. There is a lack of professionals with up-to-date assessment skills. Any curriculum and textbook reform effort would also have to include changing assessment practice, as well. Today, the communicative methodology has significantly changed the way of examination. Students are expected to talk with the teachers and come to their own conclusions. Therefore, in the future, it would be useful to investigate summative assessment, not only in online testing but also in the traditional mode of testing.

Regarding the assessment of knowledge in online conditions, half of the teachers did not even dare to assess knowledge online, while the braver half expressed numerous doubts about the regularity of this form of examination. Those doubts were increased by the significantly higher pass rate of students at the examinations held in this way (27.5% of the respondents stated that the pass rate for the online examinations was significantly higher, while 18.3% said it was slightly higher). We can thus conclude that the system of knowledge assessment using asynchronous assessment methods via online platforms involves numerous questions of reliability in the results,

and therefore challenges in terms of fairness and integrity. Subject literature [16] and subject research indicate greater opportunities for academic disrespect than the classic face-to-face examination. Therefore, special strategies and educational perspectives are necessary in order to properly respond to these challenges. It is necessary to develop methods and software that online educators can apply to prevent cheating and plagiarism in the online environment. This opens another area for future research—how to develop academic integrity in an online environment.

Despite the challenges presented by the study, the participants suggested that this was nevertheless a unique experience that would contribute to their further education and the way of providing knowledge in the future. Namely, 55% of the teachers who had less than 20 years of experience agreed that this experience was a “good opportunity for learning” and “an incentive to get out of the comfort zone” and “improve ability to use new technologies”. Many interviewed teachers also reported a “sense of innovation as they developed new technological skills.” As much as it was “disruptive”, it was a “catalyst for change and innovation”. Despite the challenges of online teaching, “countless opportunities” have emerged. For example, interviewee 13, an associate professor, claims: “I have carefully searched for several ways to make my lessons more engaging for my students and I have found a number of ways to create teaching materials and help my students.” Also, interviewee 11, full professor, concludes that “We must see this experience as a key opportunity to challenge ourselves and learn new things, because we do not know when we will face another pandemic”. Interviewee 12, assistant professor, also stated “if it wasn’t for this experience, I wouldn’t have learned any advanced technology; I would only know the basics”. Thus, this Covid-19 scenario provided an opportunity for students and teachers to experiment with modern, new technologies in the teaching/learning process.

The effects of Covid-19 on modern education are already visible, and as we can only expect a strengthening of the importance of technology in all types of education, this must be included in the next Education Policy Development Strategy of Montenegro. There is a great opportunity for educational change and renewal in Montenegro at the moment. In particular, it should be noted that the more frequent occurrences of student-centred methods of teaching conditioned by the Covid-19 crisis represent the first steps for abandoning the long-overdue teacher-centred method. Educational programs for information and communication technology (ICT) must urgently develop strategies for meaningful and enriching learning experiences. Also, teacher degrees must pave the way for the inclusion of ICT literacy in their curricula not only for teachers’ technical communication literacy but also for their future teaching careers [17]. Future work also needs to be undertaken on improving the training support to prepare teachers to teach online. Faculty support teams play a critical role in the learning experiences of students by helping faculty members develop digital competence and online learning experiences. As such, institutions must rethink the way instructional support units do their work, at least during a crisis.

The world is changing, and the causes of interruptions to education are not limited to pandemics. Wars, local conflicts, natural disasters such as wildfires, hurricanes, the polar vortex and other types of natural disasters are issues that should be kept on future agendas as potential sources of interruption. Having said that, there likely will be future public health and safety concerns, and in recent years, faculties could have been closed due to numerous reasons. Thus, the possible need for online teaching must become part of a faculty member’s skill set, as well as professional development programming for any personnel involved in the instructional mission of universities to be better prepared for future needs to implement ICT.


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Perspective Chapter: The Learning Management System of 2028 and How We Start Planning for This Now

Michael David Sankey and Stephen James Marshall

Abstract

It has been said for years that, in the near future the Learning Management System (LMS) will become a thing of the past. Some suggest this should already be the case, but it has not been possible to break our institutional dependence on this technology. In the meantime, institutions have developed sophisticated networks of tools, largely built off the back of LTIs and xAPIs to seamlessly make the LMS a pervasive convenor of learning. These tools include media streaming, virtual classrooms, collaboration tools, plagiarism checking, ePortfolio, voice interaction, peer-review/learning, brainstorming, H5Ps and the list goes on. All that is left for the traditional LMS to do is to mediate these tools, house and collate assessment and scaffold the different learning scenarios. Admittedly it also helps the institution link to other organizational tools such as student management and curriculum management systems. This chapter looks at the future implications and examines a range of views from technology enhanced learning professionals from across the sector. The views being canvased may provide institutions with a framework to help them consider their future directions and how the evolving technology landscape may see newer ways of using emerging technologies to better support or student cohorts.

Keywords: technology enhanced learning (TEL), learning management system (LMS), virtual learning environment (VLE), higher education, artificial intelligence

1. Introduction

It has been proposed and mused over for more than 15 years now that, in the near future the Learning Management System (LMS) or Virtual Learning Environment (VLE), if you are in the UK, will become a thing of the past. Or in other words, “Is the LMS dying?” [1, 2]. Even back in 2007, Stiles [1] was suggesting that the VLE “has become fixed in an orthodoxy based on traditional educational approaches” (p. 31). However, the LMS seems to have proved itself to be more resilient than this, as institutions and LMS vendors have developed quite sophisticated networks of tools, largely built off the back of LTIs (learning tools interoperability) and xAPIs (experience

application program interface) interfaces that somewhat seamlessly, but increasingly make the LMS a more pervasive convenor of learning. This is similar to what we experience with our mobile devices (phones and tablets), that have a core functionality, but then rely on apps (independent applications) to enhance their functionality. This then frees up the device from having to house a full range of application that may never be used by the user. I will return to this point later.

But for the LMS, as we know it today, for those conversant with contemporary technology trends, particularly around the management of online experiences, suggest this is because “The LMS is not a digital classroom, it is a digital bookshelf: resources for consumption and not creation” [3]. That is, the advanced functionalities that the LMS can provide, when linked with other cloud-based tools, are not really being used to their full advantage, and when this is done it usually comes with large price tag for those institutions employing this approach. That is because the functionality that is required does not reside in the one tool, rather in the combination of online tools that must all be licensed separately. Countering, but also aligned with this are some early, but discernible trends that we see emerging, based off more enterprise-based systems approaches, and that is a shift towards the notion of productivity platforms to help mediate learning. This is very similar to what large corporations use to help their staff become more productive and is based around seamless integration and pervasive communications.

This chapter will first explore some of the history of the LMS and consider how it has evolved to where it is today. It will propose that we do not have to be constrained by our traditional approaches to learning, rather that today’s technology provides new opportunities that have not previously existed for the higher education sector. This is particularly important, as this sits in that important nexus between school and work, and we need to take advantage of these affordances as we prepare our graduates for the workforce and more particularly, the future of work.

Based on current literature, it is hoped that the following discussions will provide institutions with a framework in which to consider their future directions and how the evolving landscape of learning and teaching may see newer ways of thinking around emerging technologies and the role they may play in this dynamic space to better support or student cohorts.

2. A contemporary technology enhanced learning ecology

To exemplify the premise that the LMS/VLE is now a more sophisticated networks of tools, the following illustration (**Figure 1**) suggests that the LMS/VLE on its own cannot support an institutions approach to learning and teaching, rather it is part of a complex ecosystem of interconnected technologies providing a range of services to faculty, students, and universities. Common connections include systems operating content management, including copyright compliance; visual media recording and delivery; assessment and feedback processes; student records management; collaboration tools; social media; and student services and support. Interestingly, and more recently, the technology that is making significant inroads into academic practices have been the advent of productivity and communication tools, such as Office 365 Teams, Slack and Trello, and most importantly, since COVID is the use of environments that facilitate the use of synchronous video collaboration such as Zoom and Teams [4]. Beyond this, there is the vast array of general and educational tools and services available from hundreds of vendors that are able to be used by staff and

A Contemporary Technology Enhanced Learning (TEL) Ecology

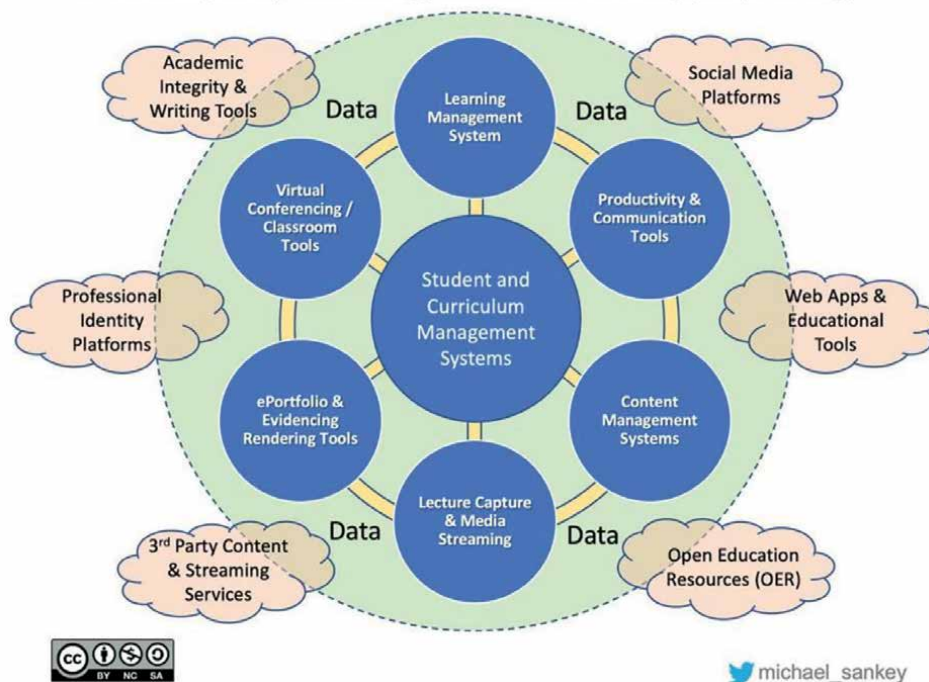


Figure 1.
The ecology of tools used for technology enhanced learning.

students for learning activities and assessment. These tools include media streaming and lecture recording platforms, virtual classrooms, collaboration tools, plagiarism checking, ePortfolio, voice interaction, peer-review/learning, brainstorming, H5Ps and the list goes on.

Brown [5] similarly considers the complexity of the evolution of university learning environments. The functionality they identify includes the LMS within a web of systems enabling course material delivery, content discovery and creation, data warehousing, analytics, dashboards, student advising, student progress monitoring, assessment, adaptive learning, social networking, and competency-based learning. All of these needing to address a complex array of requirements including accessibility and universal design, collaboration, personalization, and interoperability. Really, all that is left for the traditional LMS to do is to mediate these tools, house and collate assessment and scaffold the different learning scenarios.

3. A changing digital ecology

It is interesting to note the shifts that have occurred in both the technology that sit beneath the LMS and the evolving teaching practices that have emerged that are illustrated in **Figure 2**. In the early 2000's, as the LMS began to come into its own [6], we saw these systems largely as a piece of software to be hosted on an institutional server and later-on an institutional cloud, that would like other software's to be updated from time to time, as the discretion of the institution. This has evolved over

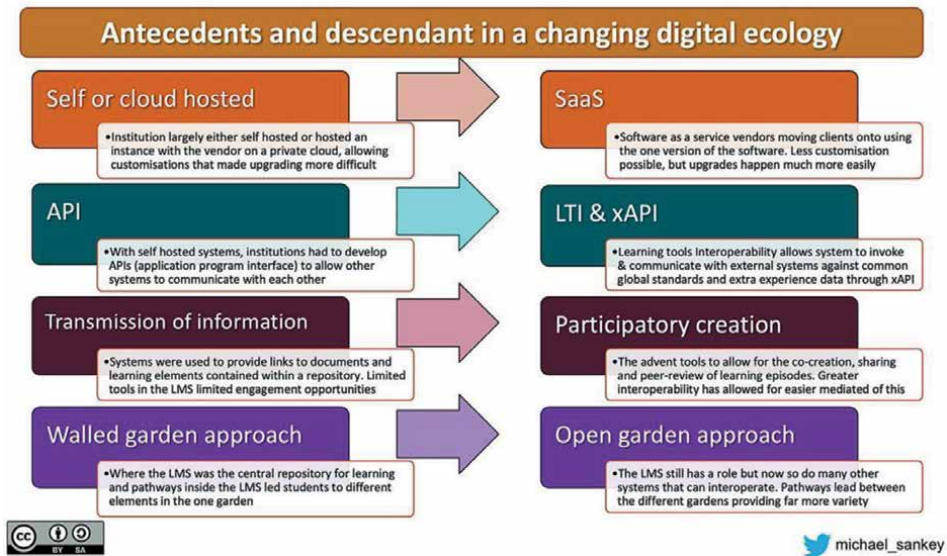


Figure 2.
The antecedents and descendants of the TEL ecology.

recent years (and is still evolving) to a model where the LMS vendor hosts the institutional LMS on their own server and provides this as a service to the institution. This is known as a Software as a Service (SaaS) model of delivery and is quickly becoming the predominant model within western higher education institutions [7].

Aligned with this shift has been the need for these SaaS systems to allow other technologies to communicate and interoperate with them. Previously, if an institution wanted to link to another system to share information it had to use an application programming interface (API). These APIs were and still are bits of computer code largely written by programmers within the institution, or by the LMS provider, under direction or auspices of the institution. However, with the LMS vendor taking on responsibility for these interfaces there was a need to evolve to some more common standards, so as not to support lots of bespoke institutional software applications. This led to the development of global standards for learning tools interoperability (LTI) and what became known as experience application programming interfaces (xAPI).

Not surprisingly, one of the criticisms of the LMS has been that it has not allowed for a replication of what could be done in the classroom in the virtual space. This was certainly true in earlier versions of the LMS where it was seen to be simply a place to link to files and recordings (transmission model of education) and then have students asynchronously participate in discussion forums. Notwithstanding, some people still use it in this way, even though the LMS has evolved significantly, largely due to what was discussed in the previous paragraph and the affordances that this has allowed through the linking to more interactive tools. What this new functionality has enabled is for teachers to engage students with far more participatory work, through just-in-time, synchronous and quasi-synchronous interactions [8]. This is linked with new forms of pedagogies that have been developed in tandem to the affordances that the new technologies provide. Though one could argue equally that the new technologies have evolved due to the increased demand to teach in more collaborative ways [9]. However, that is a debate for another paper.

The final shift to occur has been that of the freeing up of the learning space to embrace external sources. Where previously the learning environment was very controlled (a walled garden) and only the materials the institution provided their students would be considered appropriate (the textbook, the list of readings, with supplementary materials from the library) we have seen almost the reverse occur. We now expect our student to source materials from the big bad world and interact with others to co-create their learning [10] through a variety of Heutagogical and Paragogical approaches [11]. Kind of like what happens in the real world.

If this is the case, the question then becomes, is the LMS still the best way to mediate these newer forms of pedagogy into the future.

4. Considering a future state

Unlike school-based (K-12) systems that run subjects over an entire year, built on an agreed curriculum, the use of the LMS in a University is largely based around a semester model that sections off discreet subjects into blocks or 12–14 week, and that are led by a lecturer who may not ever interface with a particular student again for the entirety of their studies. This approach lends itself to what is described as a ‘building blocks’ approach, rather than it being focused on the student learning journey. What the LMS does is try to add some consistency to this experience, particularly in relation to collaboration and assessment tools, but then leaves core learning and teaching processes largely unchanged, as simply providing content that supports the assessment [12–14].

However, as we have seen, the role of the LMS has been changing and is now seen as a tool supporting user and the management of their learning across a range of contexts, as a more expansive concept of the system. Whereas the traditional LMS was conceived as a tool to support the administration of a campus-based university education, the next generation is much more concerned with the management of and access to information and the mediation of content from across associated platforms and used as a way to authenticate these users [15]. These features relate more to contemporary learning design practices based around the ‘experience’ that are then supported by the more rudimentary provision of basic communication and assessment tools.

This need to provide more interoperability largely evolved due to the perceived pedagogical limitations of the traditional aspects of online education that had its roots in the correspondence model of distance education [16], and this provided the impetus to find mechanisms to provide additional tools to be integrated into the LMS as supplementary features. Examples include the integration of tools/functionality such as:

- Turnitin (or similar academic integrity tools) for assessment of written work,
- Readings and content repositories for the management of copyright materials and inclusion of other library resources,
- Lecture capture systems and streaming media services that can be used by students and teachers alike.
- Peer-review and group work tools.

- ePortfolios and evidence rendering functionality to support placements and work-integrated learning.
- More recent AI-based writing assistance tools.

However, these additions to the LMS, in reality are somewhat limited as they tend to ignore more work-based learning applications. That is, those tools that students may be exposed to in the workplace and use on a daily basis. Most of the above functions are implemented by linking to external systems, with the LMS operating simply as a portal for identity management and as a channel for information interchange (such as assessment information). This essentially means that the pedagogical functions of LMS, despite the recent gains we have made, remain somewhat passive and aligned to a transmission pedagogy that is increasingly questionable in a more information dense and connected world subject to rapid changes. As a consequence, institutions are starting to experiment with the use of, what are known as, productivity tools (as seen in **Figure 1** at about 2 o'clock). These are collaboration-based systems such as Office 365 Teams, Slack and Trello, that are now extensively used in modern workplaces, and this linked with an institutional perspective on wanting to embrace more active learning pedagogies, there is an increasing attention to the potential of these systems [17].

While there are many online tools used to promote engagement that associate themselves with the LMS, the most common and persistent native feature of the LMS is the online discussion forum, which began to emerge the late 90s. This is the default tool for discussions in the LMS platforms and one of its mainstays. Even today, the online forum is still the most commonly used tool for class discussions and announcements for online courses and now hybrid courses [8]. However, over the COVID lock-down years, in which face to face classes were forced to move online, we have seen teachers adopting a combination of synchronous and asynchronous approaches to ensure some continuity for their classes. One of these has been using the workplace productivity tool, Microsoft Teams (Teams). Although Teams has largely been created to service the business community since its launch in 2017 [18], educational value and use, and the research into its use, although only very recent, the results thus far are encouraging [19].

Some recent, but early studies using student evaluation data of their perceptions of using Teams has found that they largely like it, and have found it easy to use and useful [20]. In formal learning contexts, Teams has been found to be superior to social networking sites [21], supportive of student–student and student-teacher interactions [22] and for some better than their universities LMS for chat, video conferencing and screen sharing and content creation [23]. On the negative side, some student surveys have found it difficult to keep track of assessment items in Teams, and that it is not as good as the LMS for the presentation and organization of course content [23]. So far, and it is early days yet, the negative findings are far outweighed by the positives. However, it was seen that during the enforced COVID lockdown periods, students did respond in positive ways to a use of Teams as an alternative way to connect with each other.

Importantly many teachers have equally enjoyed using Teams. One teacher commented that it was a 'a great tool' [24], another reported that she had 'a good laugh together' with her students and that the student feedback was 'overwhelmingly positive' [25]. Surveys of teachers have indicated that using Teams was 'user-friendly' and an effective way to promote networks with their students [26], and interestingly,

it was also seen to improved staff morale [27] and was ‘very good’ for the grading of student assignments, student-teacher interactions and classroom organization [28]. As mentioned, this is still very early days, however, based on some of these early findings, Teams, or more generally the notion of using a productivity tool, has been a well-liked and an effective option for handling the transition to online. For example, the use of Slack is also preferred by other institutions for the same purpose [29].

Supporting this view, at least from the Australasian perspective, in a workshop held in April 2021 with 32 university leaders in the area technology enhanced learning, participants undertook an online survey and held discussions on virtual collaboration and groupwork in online learning and assessment. When asked which tools could be better utilized in learning and teaching, they identified the potential of Teams, reporting numerous benefits such as its currency in the world of work, proximity to other Office 365 applications and its potential for ‘conversation-centric’ collaboration [30]. This is largely because TEAMS is first and foremost a tool for collaboration, which is in contrast to the LMS, which is content centric. This hints at a different type of teaching approach that can be afforded by TEAMS to what more traditional LMS users are familiar with. Martin and Tapp [31] in their report of using Teams to teach a law subject, argue that Teams promotes a social constructivist approach to collaborative learning. They also acknowledge that this is still early days in this work, but they did find that the unique affordances of Teams and the fact that it is a technology that many graduates will encounter in their first job begs the question, could Teams promote a more effective and relevant teaching and learning experience than the solidly entrenched LMS?

Interestingly, not only are these tools used in the workplace but are also being used in K-12 ahead of using an LMS, and as early as elementary school [32]. So, we find ourselves in a situation where students are using Teams at school and they are using it in the workplace, but not so much at university. By extension, we also do not see a lot of use of LMSs in the workplace, at least not the ones that are used by universities. We also do not see workplaces using things like discussion forums, but we do see them using productivity tools. But ironically, we also hear universities wax lyrical that they are preparing their students for the workplace. Based on this, one could suggest that it may be a good idea for universities to use the tools that the workplace uses as part of their teaching.

Figure 3 seeks to illustrate this point and suggests that universities should seek to work students towards the use of the tools they will be using with in the workplace,

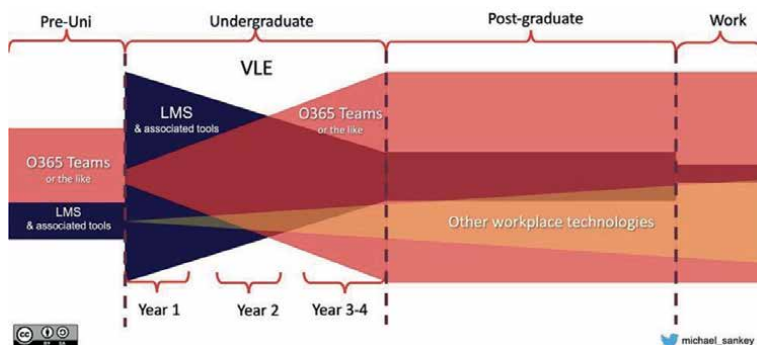


Figure 3.
O365 Teams usage from pre-university through to world of work.

as part of their teaching. We prepare our students with the discipline knowledge they need, but often fail to prepare them with the practical skills they need to be productive in the workplace from day one. Interestingly, could this also flag the possibility that students could be considered productive in and through their studies?

From this point on we should consider that the LMS as a term, may then include the notion of productivity, and that when it is signaled in the literature, that there is a need to consider greater collaboration and partnerships between themselves and their students. This points to the need to increase the deployment of systems designed to use the cloud, artificial intelligence, improved analytics, and increased use of models drawn from social media and gaming [33, 34] all of which are being well used in the workplace.

Increasing, mobile access to systems that may mediate learning, whether that be an LMS or a productivity tool will be essential moving forward, to enable active learning, social and gamified learning and microlearning are recognized as a key feature of both modern learning and teaching and the workplace [35]. Other ideas from the game space include badges and other social features aimed at building and sustaining communities of learning, are increasingly mainstream features of these systems [36].

5. The role of artificial intelligence (AI) in learning management

Linked with the shift of university systems to cloud-based platforms and to SaaS (illustrated in **Figure 2**) is the increased ability for these platforms to introduce more cognitive services, such as artificial intelligence (AI) to assist both staff and students in the practice of teaching and learning. AI has the potential to move the learning management, on whatever platform one uses, from a teacher-focused institutional infrastructure to the “exoskeleton of the mind” [12]. This is not a new concept but it is one that is only now becoming possible due to the rise in the ability to process large data-laden problems using the concentrated computing resources of multiple systems working in parallel (supercomputing). This is seen very clearly in the recent advent of ChatGPT from Open AI, but more generally across a plethora of AI based systems now available to students and educators alike [37].

The beauty of these cloud-based and SaaS systems is that they have ready access to major data sources across institutions to allow AI features to be used in a wide variety of ways [38]. This leads us then to the prospect of artificial intelligence-enhanced learning management systems, or expert systems that are integrated into the design of a platform for on-line learning [39]. Such a system has the potential to enable adaptive/personalized learning, learning supports [40], dynamically link to the achievement of learning outcomes, and direct engagement with learners through intelligent tutoring [41].

In the same way, AI driven adaptive learning systems that draw on user data are seen to have the ability to adapt to students’ learning strategies, to sequence tasks based on a student’s demonstrated abilities, and provide preprogrammed feedback where appropriate [40]. More recently, we have seen the rise of AI chatbots, a feature that is now heavily deployed in major businesses, but for education, where answers to complex questions are often more nuanced, the uptake has been slower. Recently we have seen this technology deployed in conjunction with Microsoft Teams, most notably by David Kellermann from the University of New South Wales. Kellerman uses large student datasets collected within Teams to make individual student predictions associated with future exam performance. This is used to then provide personalized

study packs for every student in his course. As a result of this initiative Kellermann witnessed the pass rate for his course jump from 65–85% [42].

Probably the most challenging of the recent AI developments for institutions is the recent release of ChatGPT, based on the OpenAI GPT-3 network, that has made significant strides forward in providing not just chat functionality, but informed semantic reasoning as part of this. At the time of writing this chapter it is very early days as to describe the potential affordances to higher education of this tool, but they will be significant. Not the least as to how the LMS or tools like Teams may look to work with this and similar tools.

6. Organizational considerations

All of these advancements will clearly influence the ongoing development of the LMS, or whatever comes after the LMS. But even if an institution were to move much of what it does towards something like a productivity tool, these tools are still controlled by a vendor. However, while all of these areas of active development reflect important new capabilities for universities, teachers and learners, they are all still essentially sustaining the same operational, business and pedagogical model that was defined by early iterations of the LMS. Increasingly, with the need to employ many and varied systems around the LMS, as seen in **Figure 1**, there are huge cost implications for institutions, not just in the cost of these systems but also in relation to the human costs of maintaining the complexity and in sustaining the capability to change.

Organizationally the reality of the future LMS is a complex web of systems integrated locally with others operated by a range of vendors (as seen in **Figure 1**). University systems have evolved from single functional products deployed locally, into interconnected services that enact business functions using complex information architectures. Increasingly these have moved from locally hosted servers to unbundled services operated in remotely located computing hubs operated by companies like Amazon and Microsoft. This is more than a shift of hardware to the virtual cloud environment or outsourcing of complex technical functions, with many vendors moving from hosted software solutions to SaaS, to maintain more control over their product. It reflects a desire to have systems that sustain current activities but also allow for rapid shifts in focus, scale and context without the historical constraints of sunk investment in traditionally constructed systems, reflecting a more ecological [43] understanding of the university.

The characteristics of ‘platforms’ also align well to the dominant models of university change and operation, as the pressure to do more with technology to replace human interaction increases. This shift suggests the possibility of a further leap in our conception of the LMS designed to encourage agility, responsiveness and diversity of learning models, pedagogies and contexts, while still retaining coherence, sustainability and management of the whole – a platform rather than merely a system. A platform that can in essence observe, integrate and frame learning so as to:

- Connect people both inside and outside the organization;
- Placing an emphasis on different resources and the exchange of knowledge;
- Creating value through platform interactions;

- Able to streamline existing offerings as well as enable new ones; and
- Creating and sustaining an environment for collaboration by all users [44].

At the end of the day, the platforms that allow or learning management systems to thrive are an ecology of tools and help us to conceive new ways of operating and enhance how they influence organizational change. This ecology of systems potentially shifts the power hierarchies at play here to ones of engagement and productivity, thereby looking to increase the efficiency of educational activities to enabling more rapid and contextualized learning to occur [45]. Rather than the institution considering a supplier model for the learning platform, the nexus of control moves towards a vendor where the systems architecture modules delivering a data driven standardized service. The new conception opens the door for greater interoperability with collaboration and productivity platforms offered by Microsoft, Google and others without losing strategic control of the future models of education operated by the university.

7. Conclusion

Globally, there has been a massive shift in different models deployed by higher education providers to deliver what is seemingly a seamless experience for their students over the last two decades. However, the complex ecosystem that has evolved largely employs a complex web of commercial educational service providers [46]. The aspirations, however, of our institutions to harness technology and to partner with companies to create platforms for university education provide us opportunities to reconsider the educational fundamentals to be addressed by institutions who are increasingly working in the virtual space. This has largely been facilitated by the shift to vendor platforms based in the cloud that now link to large data sets that can enhance the capacity to provide more personalized learning experiences. As companies like Microsoft have demonstrated, modern productivity platforms can rapidly redefine the expectations being placed on education. These players that have significant market dominance and control over their partners who willingly operate within their ecosystems need to be considered, not necessarily with suspicion, but certainly with caution.

So what will the learning management system of 2028 look like? It is a space that enables our students to participate in education with the knowledge that the system will assist them where needed. It will provide them with the tools they need to be ready for the world of work and this is handled in such away as to be seamless and connected to their peers. It is a system that enables our teachers to choose a suite of tools that will match the expectation of the employers they are preparing their students to engage with. It is a system that is intelligent, in that it learns, extends and supports the aspirations of those who use it in a personalized way.

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Perspective Chapter: Gamification – Pros and Cons

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Abstract

After the CoVid-19 pandemic lockdown occurred (2020–2021), there have been crucial changes in teaching-learning methodologies, mainly because of the emergency online education format, due to the high demand for online education formats. Long hours of learning in front of a screen besides the stressful environment surrounding the pandemic make it difficult to keep learning motivation high, which shows the need for an urgent change in instructional design. This change includes using interactive and participative methodologies for tackling the anxiety produced by the global health crisis. In this frame, gamification tools have emerged worldwide entailing significant benefits to education. Nevertheless, the overuse of technology can lead to several problems including physiological complications among other things, myopia, diabetes, and coronary disease risk (because of sedentariness) and even addiction. Finally, research proves that an adequate frame around technology use and games inclusion in learning can help diminish or even avoid social problems such as addiction and the resulting concentration problems. Furthermore, in the case of active video gaming, it might be advisable for alleviating sedentary habit-related diseases. Therefore, it is important to reflect on the use of games and its objectives for obtaining the best results from powerful strategic motivators.

Keywords: motivation, gamification, CoVid-19, learning methodology, online teaching

1. Introduction

Several factors have caused changes in education in the last few years. CoVid-19 pandemic has been the reason for important changes in education, forcing an urgent shift to virtual education as never before. The resulting lockdown entailed, among other consequences, a significant increase in loneliness and, as a result, stress-related behaviors and cognition [1]. Beyond these serious facts, students have been exposed to additional stressors including economy-related challenges such as access to technology and learning conditions [2]. These last ones include user-unfriendly requirements of online education, under-stimulation, low perceived control over tasks [3], reduced learning time, and inadequate methodological design for online teaching, among others [4]. In such a frame, gamification played an important role in improving educational design. Gamification is not entirely new since the term was already minted by game designer Nick Pelling in 2002, with a later ubiquitous interest in the 2010s.

The definition is then applied to “the use of game-based elements in nongame contexts to encourage users to perform desired behavior” [5] (p. 158).

Results have shown that gamification is a motivational, innovative, and engaging strategy for teaching learning not only in one but also in several different areas [6] even if the conditions of the pandemic lead to burnout [7] and anxiety [8].

When speaking about management, [9] mentions several reasons for resistance to change. These reasons include not understanding the objectives of such a change, disagreement with the new directions of enterprises, or merely anxiety about the consequences of change in their jobs. These considerations can help to understand why teachers had not massively included gamification in instructional design before the pandemic. Nevertheless, several arguments prove that gamification can considerably improve learning quality and students’ motivation.

Supporting this last argument, there are a number of articles verifying the effectiveness of serious games as learning instruments for understanding scientific conceptions since they have been related to positive performances in the field [10]. As a key aspect of design, challenging content is advised as well as recognition of content-related benefits [11].

Nonetheless, there are serious objections worth considering. Such objections are related to game addiction [12–16] and underline the importance of balance since even the best tools can have little or no impact when not framed in the right design. Together with these objections, video games are currently linked to sedentariness and consequently to obesity and other negative health conditions, with the exception of active video games [17].

2. A never-seen-before scenario: CoVid-19 pandemic

The World Health Organization (WHO) declared the Coronavirus disease (CoVid-19) on March 11, 2020, with more than 47 million confirmed cases by the end of April 2021. Even if Ecuador was not one of the countries with the highest number of confirmed cases, it was severely impacted. Still more, besides the impact on the health system, socioeconomic, equity, and ethical dimensions were reported [18].

Because of the aforementioned pandemic, several mobility restrictions were implemented worldwide, and our country was not the exception. As a result, a worse self-reported mental health was verified, which led to the recommendation of health promotion measures to mitigate the effects of confinement on mental health, particularly in youngsters and women, the most touched populations according to research [19].

As another consequence of this confinement, economic activities were affected. For instance, the tourist sector—an important source of revenue in Ecuador—reported falling occupancy rates, reduced pay, mass layoffs, and shutdown [20]. Research has found that pandemic stress is directly related to ill family members and kids involved in online learning [21].

Naturally, the pandemic itself had an impact on the population’s mental health, specifically through a high level of distress as a direct consequence of news [22] not to mention domestic violence and multiple domains of abuse needing adequate prevention problems [23].

In this complex context, adequate methodologies, frameworks, and tools have been used to overcome education affectation since everyday learning should not be interrupted. Then, the educational process would be allowed to continue at their regular pace, reflecting even an improved performance and a positive mindset. According to

this research, the CoVid-19 pandemic scenario indirectly contributed to taking advantage of the huge amount of courses, video lectures, learning tips, and mentoring material available through online tools for a more efficient learning process. At the same time, people's productivity and usefulness increased as an additional consequence [24].

3. Novelty

When analyzing the efficacy of gamification, the first argument is novelty since neuroscientific research shows how it plays a role in dopamine production. According to the studies, dopamine production is linked to motivational aspects and could lead to consolidation in long-term memory [25]. Additionally, novelty seeking—closely related to increased exploratory activity and intense excitement in response to novelty and active avoidance of monotony and frustration—is also associated with variation in dopamine levels [26]. This argument is backed by additional research, where novelty and surprise are placed among the most important primary factors of interest, exploratory or avoidance behaviors, and learning [27].

Exploring other contexts, biological causes of intelligence of memory problems have been linked to genetic origins. Particularly dealing with novelty seeking but also to predisposition to higher education, academic achievement, nature of peer relations, and behavioral problems lying behind school dropping [26].

Novel exploration is defined as a fundamental adaptation mechanism. Novelty impacts reward processing and consequently decision-making and operant conditioning. Their research analyzes the role of novelty in reward-based learning. They claim that novel stimuli have an impact on learning speed and additionally, the extent of such effect is linked to behavior and personality [28].

Considering a different point of view, novelty detection and novelty processing have been scoured back to the hippocampus and the amygdala, which lead to weighing the role of brain health on the learning process [29].

4. Gamification and motivation

Identifying Motivation-Related Strategies for the linked elements (performance significance, mastery orientation, interest, self-respect, among others) for creating adequate recommendations will significantly contribute to scaffolding students' self-regulation as well as their motivation to learn [30]. In the context of the CoVid-19 Pandemic, the use of strategies for raising motivation responded to an intuitive attempt to improve learning conditions. The theoretical support for such measures comes with the recommendations of increasing students' satisfaction with online classes and preserving their mental health [31].

Some related studies show how games use themselves is not a solution for increasing motivation. Cultural and situational factors play a role in games' effectiveness [32] along with voluntary participation, which significantly increases motivation although the use of games is appreciated even if participation is not voluntary [33] although other studies mention a correlation with improved academic performance even when participation is not voluntary [34]. Anyway, the inclusion of games would have a positive effect on intrinsic need satisfaction [35].

Significant increase in motivation when using gamification has been found (specifically, when using the Kahoot application), even with some limitations with regard

to the sample profile and the course topic, something observed in more than half the population [36]. Students have also reported strengthening in the interactive nature of the classes and even faster knowledge absorption due to game inclusion [37].

Similarly, to the use of these applications, the implementation of points, badges, and leaderboards, used to include gamification in the classroom, is reported to increase motivation and active participation by means of positive competition. For instance, Quiz games and similar techniques as mentioned as a usual component of learning settings [38]. An additional advantage is the acknowledgment of individual achievements. Hence, the use of gamification elements in a traditional class would strengthen students' motivation and for increasing their participation consequently improving the quality of the learning and the productivity of the entire process [39].

As proof of the efficiency of electronic video games, it is reported their impact is even a complement to physical pain relief. In this sense, the findings are associated with a psychosocial model of pain in patients undergoing cancer treatment [40].

5. Serious game and learning

The ability of video games to raise engagement, motivation, and challenge has entailed both teachers and psychologists to search to design games for entertainment, of course, but also for educating [41]. Pursuing such a goal, several different models have been developed.

Among these models is Digital Games-Based Learning (DGBL) where a conscious selection of the game will be done for further completion of the lacking content. This selection should consider breadth in content but also depth. Additionally, it is important to analyze who would provide this additional content and why. A final consideration is mentioned: Even with the advantages of Digital Games for raising motivation, commitment, and participation, is it worth the huge amount of work for analyzing the suitable game, designing a complete framework, and completing its content for providing an effective learning tool [42]?

Furthermore, related research argues that serious games have exploited a limited set of game elements (e.g., badges, points, and leaderboards), suggests going deeper, and exploring the use of arcade features, reporting to be more engaging than traditional approaches. The use of arcade game elements significantly increased knowledge about correct behaviors [43].

In the same way, serious games have been proven to be an efficient mechanism for making technology users more aware of their vulnerability to cyber-attacks with an increase in understanding and knowledge [44]. This aspect might not be directly related to learning outcomes but is definitely important for improving technology-related behavior.

Finally, serious games' more complex nature comes from their aim to plan instructional elements for a fun, engaging, and educational experience besides maintaining control of the several elements for a fun game as any other entertainment game. Therefore, this complex learning tool can indeed contribute to increasing self-efficacy by showing players their ability to succeed [45].

6. Cooperation, emotional competencies, and gamification

The challenges of current society need people to develop specific skills in order to be functional individuals. Current scientific evidence partially explains mental

disorders in terms of a lack of cooperation-related skills and the inability to be aware of the position of others [46]. At the same time, current social challenges become important stressors and can eventually trigger anxiety disorders, obsessive-compulsive disorders, and trauma and stressor-related disorders, which could eventually benefit from better thought processing and/or improved human interpersonal relationships according to [47]. In order to get such interpersonal improvement, relationships of self-awareness, self-regulation empathy, and social skills might play a role as they actually do on academic performance in the context of cooperative learning [48].

Video games are reported to foster highly necessary skills related to both collaborative learning and strategic thinking. The feature of video games' design requiring players to collaborate and communicate with each other for progressing is a powerful exercise to strengthen collaborative skills and problem-solving even when there is no educational aim [49]. In the same way, when dealing with professional development in a wider context, gamification inclusion in training has been reported to have an impact on cooperation, autonomy, and personalization [50].

As another example of the usefulness of games in education, Game Object Model (GOM) has been developed and, even if the challenging technical conception and complexity of design are admitted, so are their ability to facilitate conceptualization and assessment [51].

7. Games and physical health

Physical literacy (a certain degree of fitness, behaviors, knowledge, and skill related to physical activity) can undoubtedly be affected by the game practice. Some research concludes that the degree of physical activity can indeed play an important role when dealing with important diseases such as coronary heart disease, type 2 diabetes, and breast and colon cancers. In this way, compared with other factors of poor health, physical inactivity and smoking or obesity would have a similar impact [52]. Besides, sedentary activities during adolescence have been correlated with suicidal behavior [53].

Quotidian activities nowadays include video gaming, which is mainly associated with sedentariness. This way, video game practice becomes a problem because of obvious consequences and links to eyestrain, myopia, obesity, and related diseases, which can already be tackled by several advised interventions for improving people's health, particularly for children and adolescents [54]. The aforementioned vision complications got increased by extended computer or digital device use, resulting from digital reading during virtual classes [55].

It is important to emphasize that gamification is not implicitly depending on the use of screens. New development in technology has also explored audio interaction and content that can be transferred through intelligent virtual assistants (IVAs) with considerable advantages since they are mainly independent to screen use even if in some cases they can be complementary to augmented reality technologies [56].

Even if video gaming is not exactly the same as television watching, in terms of sedentariness, they are virtually very close. Considering this fact, important research finding an increased risk for low bone mineral content in male adolescents who watched television more than 3 hours per day [57] acquires even more importance since now, both of the activities contribute to increasing negative health effects.

Specifically dealing with non-transmissible diseases such as coronary heart disease and diabetes, important recommendations point to physical activities' regular practice in order to decrease the incident rates [58]. Besides, after surgical

revascularization, remaining high rates of low-density cholesterol and low rates of high-density cholesterol are associated with long-term cardiac death [59].

Focusing on another scope, overexposure to screens can in fact have a serious impact on young children. Emotional problems, anxious/depressive symptoms, somatic complaints, social withdrawal symptoms, attention problems, and aggressive behaviors have been reported in young children spending more time on touch screen devices [60].

In a more serious context, suicidal ideation is mentioned to come to fruition into actual attempts within a year, which highlights the importance of addressing poor physical activity, since it is a factor for more likely suicidal ideation [53].

As alternatives, sports video gaming and active game practice come on stage. Sports video gaming support on physical activity has been highlighted based on similar domains of activity even if the awareness of physical activity importance has not been verified [61]. What is more, active game practice, active virtual reality games specifically, has been reported to provoke moderate-to-vigorous physical activity without increases of motion sickness [62] even if in some cases experts have advised cardiac patients against its practice, due to important demands on anaerobic metabolism [63].

8. The importance of instructional design

Research has revealed gamification is not effective per se. Its success would instead be linked to the effective design of gamified interventions, mainly including serious games and game-based learning. There is then, an increasing number of literature analyzing the theoretical foundations behind gamification in a number of contexts, mainly considering motivation, behavior, and learning theories. This literature deals with fragmented context albeit a synthesis of them may lead to a portrayal of basic principles for gamification design [64].

Gamification design's most effective elements then include competitive game elements and digital feedback. This way, constructive implementation of gamification is proven to lead to high-order skills development [50]. Additional research has also stood up the fact of game elements such as rewards, competition level, and other related elements do not automatically raise engagement and motivation. In lieu, psychological theories need to be involved in granting quality outcomes. Among these theories, self-determination and goal-setting theory would be outlined together with a user-centered design perspective [5].

Combining all these elements, suitable teaching training not only in gamification but also in other trendy methodologies such as flipped classroom, adaptive learning, inquiry-based learning, and more will allow the implementation of multiple digital pedagogies in an interdisciplinary approach aiming to make things easier for granting the students comfort ensuring this way their engagement in the learning process [65].

Beyond educational research, gamification design is even reaching the manufacturing sector because of its high success rates, which has been replicated even if such replication is not yet clearly explained by the use of gamification as a technique or as a new and novel tool [66].

9. Game-related addictions

It is also important to mention the serious implications linked to the abuse of games. Research has shown Internet Addiction Disorder, Internet Gaming Disorder,

and Mobile Phone Addiction in children as well as some evidence linking it to Attention Deficit Hyperactivity Disorder [12].

Along the same line, several types of behaviors and impulse control disorders have been already mentioned [13]. Among them, the most closely related to game addiction would be cyber-relationship addictions, when online relationships are the focus of the disorder; net compulsions, when the addiction is about online gambling or shopping online, and computer addiction, when the disorder is about obsessive game playing properly called. Nevertheless, as [14] highlights, addiction to the Internet happens when individuals are involved in an alternative reality allowed by the Internet. This fact should be distinguished from other behaviors that might not be directly related to the Internet since the behavior could happen in other conditions/places and not exclusively on the Internet.

When analyzing academic performance, excessive internet use has been reported as a cause of school burnout [15] even before the CoVid-19 pandemic when the use of technology was exponentially increased because of the lockdown.

From the interpersonal point of view, relationships between parents and their teens play a decisive role in Problematic Internet Use, and they can significantly contribute either to reducing or increasing PIU [16, 67].

Additionally, there are scientific evidence of Internet addiction, compulsive computer use, and video game excessive use associated with subjective distress, functional impairment, and other psychiatric disorders [68]. This scientific evidence has led even to the inclusion of both gambling disorder and gaming disorder into the ICD-11 (International Classification of Diseases – World Health Organization), which confirms the urgency of analysis of these behaviors.

Fortunately, these preoccupations have not gone unnoticed as shown by several attempts to identify and explain Internet addiction and similar behaviors (e.g., the Internet Addiction Test, whose validity has been researched by [69]; the Adolescent Pathological Internet Use Scale, researched by [70]; the Chinese Internet Addiction Scale, [71]; and the Compulsive Internet Use Scale, [72], among others).

10. Conclusions

Changes in society involving increasing exposure to screens, media, and video games support the election of gamification for improving learning outcomes. These changes were exponentially increased by CoVid-19 Pandemic Lockdown. Motivation levels, autonomy, and academic outcomes can significantly benefit from this innovation. Nevertheless, this is not an option that could be taken lightly, evidence of the growing number of disorders related to the abuse of technology and games highlights the importance of the appropriate design and guidance in order to lead to the best result and avoid negative effects such as impact on health and propensity to addictions.

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Conflict of interest

The authors declare no conflict of interest.

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Perspective Chapter: Complementarities of Teaching and Research on Higher Education

Michael Gidey Gebru

Abstract

Many activities have been used to impart knowledge and foster the quality of education at higher education institutions, mainly teaching and research. Higher education institutions have typically focused on the adoption of teaching and research independently, but in many instances, both activities coexist. By taking into account the coexistence, this study empirically analyzed why teaching and research activities appear together and how joint adoption of the activities has economic impacts on the performance of the higher education institutions. To do so, this chapter tested the existence of complementarity between teaching and research using supermodularity through the data envelopment analysis approach. Therefore, the empirical result showed that complementarity between teaching and research confirms that the adoption of one activity strengthens the adoption decision about the other activity. This implies that the institutions that execute both activities simultaneously become more productive rather than adopting a single activity. Moreover, it is important for academic decision-makers to take decisions in order to allow universities to achieve economies of scale.

Keywords: complementarity, shared resources, DEA, higher education, teaching and research interdependence

1. Introduction

The term complementary comes from the Latin word “complere” and its meaning is “to fill up.” In many disciplines, particularly in quantum physics, the concept of complementarity is used and most frequently connected with the wave-particle duality [1] and has several implications. In economics, complementary exists when marginal returns from one variable increase the level of another variable [2]. Therefore, the cumulative economic value added when two complementary variables are combined in a production process exceeds the value produced when these production variables are added separately.

In recent years, the notion of complementarity and its function in organizational structure has gained a lot of attention [3]. Complementarity occurs in the broadest sense when two factors improve each other in a way that adopting more of one factor rises the value of adopting more of the other [4]. On the contrary, complementarities

could also lead to undesirable results. For instance, the complementarity between factors of closely joined systems may create difficulties in an organization because a change in one factor causes a change in all other factors in the system [5].

The existence of complementarity between variables in an organization might be a powerful performance value. Nevertheless, studies based on the interactions between variables in isolation do not often measure the effects of these performances, as it disregards the contextual variable's role that may be important for the materialization of complementary relationships. It is a phenomenon of system-specific that arises from the embeddedness of individual traits into the relationships among variables in the organizational nexus. On the contrary, this embeddedness cause for both how to control complementarity relationship, and consider for it in scientific studies.

Through the work of Paul Milgrom and John Roberts in economics, the concept of complementarity has become more tractable [6]. They used the mathematical expression of supermodularity on lattices based on Topkis' work [7, 8] as an approach to formally modeling complementarity [2, 9]. This approach modeling the complementarities, which opposed traditional economics concepts in various significant manners: First, two basic production factors are identified by classical economic models and thus, focus on relative factor homogeneity [10]. on the other side, complementarity refers to the concept that comes from the combination of many distinct factors, as Lachmann has already noted [11]. Second, traditional microeconomics claims that design choices are infinitely divisible, that the relationship between them is concave and the constraints are convex. Performance-optimal configurations are identified through local testing based on these assumptions: Decision-makers manage their systems in small steps and analyze the resulting change in performance until they reach a point when the modifications no longer result in additional improvements. In comparison, modeling complementarity as to supermodular function on lattice may operate a condition, where combining of design choice is constituted by local maximum rather than a worldwide event that could occur, for instance, when the payoff function is not continuous. It also shows that design choices are primarily discrete variables rather than continuous variables that can be altered in increments if they can adapt at will. These perceptions have gotten further substantiation by researchers who use the NK-model for the simulation of organizational designs [12–14].

The notion of complementarity plays a significant role in the literature on strategy and organization field. From 1960 to 1970s, the term appeared rarely in the literature [15]. It started to emerge more frequently during the 1980s in the organizational configurations' literature [16–17]. Complementarity is used interchangeably with congruence and fits in this context. The main argument here is that a good fit among contextual factors, organizational design, and strategy can provide an organization a competitive edge over others that do not. Aside from survival, Miller [17] and his coauthors [16] did not make any conclusions about the consequences of organizational fit.

Since Schumpeter's time, numerous research on the complementarity of various innovation types has been done. For instance, studies have concentrated on innovations that include enhancements to products and production processes, as well as enhancements to corporate operations, distribution, and promotion. As a result, the investigations are directed by these innovation patterns to focus on a certain sort of innovation.

Currently, academics are examining the complementarity-in-performance between practices using interaction concept and cluster processes. For instance, Schmidt and Rammer looked into the connection between profit margins and technological

advancement. Both technology and non-technological trends are increasingly being taken into account, and they are interconnected. The outcome demonstrated that nontechnical innovation has significantly less impact on a company's profit margins than technology innovation. On the other hand, the combination of technical and non-technological innovation has a favorable effect on a firm's success [18]. Sapprasert and Clausen looked at how organizational and technological innovation affects a firm's performance. The empirical finding demonstrated that both types of innovation together have a favorable and significant impact on organizational performance [19].

The concept of complementarity has been used in a number of areas based on actual evidence. Certified labels and brands, process and product innovation, labor skill and innovation strategies, various government innovation policies, information technology, workplace organization, and new product and service innovation are a few of them. Others include the adoption of various information technologies in emergency health care, the use of various types of labor in the determination of trade patterns, and the use of external knowledge at various stages of new product development.

Generally speaking, the viewpoint of complementarity is not a hypothesis, but the meso-level method that enables scholars to understand the relational phenomena as driving forces that influence both the higher and lower levels of analysis [20, 21]. The concept of supermodularity helps researchers to model the relationships between multiple organizational factors of complex structures in a mathematically rigorous way as "something more than the sum of these factors." The positive outcomes of such interactions are also referred to as a fit, which in macro-organizational theory has a rich intellectual tradition [22]. Simultaneously, the perceptive of complementarity does not predict the relationships between factors as micro-level theories usually do in organizational behavior.

2. Aspects of higher education institutions

Higher education has long been acknowledged as a useful and significant tool for fostering social and economic development. Following the implementation of plans and initiatives designed to increase higher education's competitiveness, certain countries have seen the benefits of higher education in terms of the economy, social welfare, and human resources. In addition, higher education is essential for promoting social and economic development.

The problem of students confusing teaching with research is widespread around the world. Reforms must therefore be implemented on both sides, in both educational and research institutions. Few people are aware of the conflicts that arise as students try to understand how research and teaching will play a part in their future careers or how these conflicts affect the formation of their academic identities.

The complex structure of interconnected features of resources, activities, and procedures used by HEIs to construct the institutional framework. For both to be competitive, many HEIs are dedicated to fusing teaching and research. In order to supply a nation with skilled labor, HEIs must deliver top-notch instruction and carry out top-notch research. The institutions must improve their performance because higher education is so crucial to the growth of the nation's economy. On the other side, institutions have challenges while attempting to increase their effectiveness through the adoption of integrated and coherent procedures.

From the literature on the educational efficiency measure using the DEA approach, two major streams have been identified: First, its objective was to assess

the efficiency of basic education. For instance, the efficiency of secondary schools in Finland, England, and Latin America. Second, its objective was to assess the efficiency of higher education. For instance, higher education in the USA, China, Malaysia, UK, Israel, Australia, Greece, Canada, Taiwan, Poland, and Finland. It is challenging to gauge the effectiveness of HEIs due to certain of their characteristics. Furthermore, pinpointing the precise input levels required to produce the intended outcomes might be challenging. Because of the institution's complexity and the subjectivity of its educational outcomes, choosing the right performance metrics is quite challenging. However, it is frequently possible to construct a single summary measure of performance in the manufacturing and financial business contexts, such as profit, income, sales, or market share.

Recently, some businesses have started working together to share resources and increase earnings. While using a complementarity theory, other organizations increase their reward by enhancing the effectiveness of their actions. However, a lot of HEIs boost their results by enhancing the effectiveness of each activity separately. As a result, it is crucial to adopt activities simultaneously because doing so increases the connections between them, improves institutional innovation performance, and reduces institutional costs by utilizing specific resources for both activities. Additionally, it helps policymakers, school administrators, and the government track institutional performance and avoid wasting money.

By providing highly skilled labor and novel knowledge, HEIs significantly contribute to the economic development of a nation. The government's massive budget allocation to the education sector raises the bar for efficient resource usage and accountability. The Higher Education Commission (HEC) does not provide HEIs with a budget, so institutions are forced to start working on alternative strategies in order to increase efficiency and produce financial resources. It is challenging to assess the effectiveness of HEIs due to the drive to generate resources and the complexity of their objectives.

Previous research has demonstrated that higher education can produce higher levels of performance relative to the money invested in it as opposed to the association between educational costs and outcomes. Moreover, the existence of disparate efficiency levels in the education sector has been measured due to low investment in it. Hence, high investment in the educational system correlated with better academic performance.

HEIs are the foundation for high-tech talent growth, the key factors for enhancing the national quality and improving national competitive capacity [23]. Education generally is the cornerstone of every country's economy. Delivering quality teaching and conducting good research in higher education are important to provide a knowledgeable resource to the country. The center of educational assessment is a value-of-judgment practice to forward recommendations for improvement through a comprehensive collection of educational knowledge and educational values judgment. For instance, some developed countries, such as US and Europe, have an advanced mechanism to explain how to transfer educational inputs to outputs [24].

HEIs have a dynamic structure of interrelated characteristics of resources, activities, and processes to construct the institutional structure. Adopting teaching and research in tandem effectively enables HEIs to provide high-quality teaching and research while also enhancing their performance. Many studies have been conducted on how joint adoption leads to organizational performance improvement [25]. However, the institutions have faced challenges in how to improve their performance *via* the adoption of the institutes' activities jointly and coherently [26].

It is frequently possible to construct a single summary measure of performance, such as profit, sales, income, or market share in financial businesses and manufacturing. However, certain aspects of higher education make efficiency difficult to assess, and several metrics of performance are required due to outcomes such as faculty workload and productivity, sponsored research funds, and degrees awarded. In addition, it might be difficult to estimate the exact amount of funds or input needed to achieve the intended results or output levels. As a result of the complexity and diversity of higher education, as well as the subjectivity of educational outcomes, choosing performance indicators is a tough task [27].

Many HEIs in developing nations have recently risen at an exponential rate; nevertheless, the quality of education and the efficiency provided by these institutions has yet to be determined. On the contrary, these institutions are becoming more aware of the importance of boosting quality and efficiency [28]. Governments, private promoters, and policymakers construct institutions of excellence, benchmarking worldwide institutions; society and industry look for institutions that efficiently provide relevant value [29]. Similarly, parents and students seek out educational institutions that are efficient and provide high-quality instruction. It is crucial to figure out how HEIs rank in terms of performance to foster a competitive environment and look for gaps that are lowering performance.

The demand for higher education is growing with time due to the pressure from schools, parents, and other social agencies. This is commonly believed that an awarded degree from a university offers an opportunity for a broader variety of careers and for more interesting and better-paying careers. Another factor in higher education demand is that employers consider a degree as a useful preselection criterion, increase the proportion of the age group that enters the institution, and improve the valuation of education. Such higher education patterns underline the importance of examining quality problems and this, in turn, contributes to a range of methodological issues, for instance, the description of words, international comparability of data, application of various decision-making methods, etc.

Evaluation and analysis of inputs and outputs is a systematic assessment of higher education research, teaching, and other activities, and then the evaluation outcome represents the overall performance of HEI, that is, input efficiency, output efficiency, and the conversion relationship. Teaching and research are conducted well based on the idea of economics [30]. In order to perform an individual's job on a labor market, the individual must possess a mechanical and theoretical ability needed by a country's employer and socioeconomic needs. However, most HEIs produce less productive skilled employees and have a gap in fulfilling the economy's needs and this leads to socioeconomic inefficiency as a whole [31]. In the higher education context, there are methods that have also been used to address efficiency measurement problems.

A better teaching and research performance are a way of providing input for government, manufacturers, business companies and other stakeholders on the performance assessment of HEIs and these activities help to determine the institutions' production efficiency. It is not because of the large amount of money spent on them but because they have made a huge contribution to the country's economy and enhanced the reputation of HEIs [32].

Due to the aggravation of budgetary and issue of educational quality, the managerial body of the HEI is able to admit the concept of efficiency and its measurement in making the decision. The presence of various intangible education outcomes is a difficulty when viewing education through the lens of the production model [33]. For example, scholar successes may be quantified by administering standardized tests,

but outputs connected to ethical and aptitude development are difficult to quantify. Even if measure exists, they are inappropriate in order to put decision at the institutional level. However, few managerial bodies ignore external ranking of efficiency to give a good reason for past decisions or develop new educational policies [34–36].

According to earlier research [37–38], more education can provide higher levels of performance compared to the amount invested in it rather than the opposite, where education spending and outcomes are correlated. Research shows that insufficient investment has led to differential efficiency levels in the education system. Therefore, more educational system investment was associated with improved academic performance [39].

Increasing enrollment to HEIs and conducting academic research with limited funding does not imply that the institutions operate at the highest level of efficiency. To evaluate efficiency, the measurement tool for performance is needed to determine the efficiency of the performance of the institution. As the number of enrolled students in the institutions is increasing with time, it is not a matter of choice to operate the institutions efficiently. In order to determine whether the HEIs operate at a high level of efficiency or not, it needs a measurement performance tool to assess the institutions' efficiency.

HEIs are establishing their own internal mechanisms to evaluate to what extent their objectives should be accomplished. According to Ref. [40], self-assessment has a positive impact on strategies implemented to improve the performance and quality of higher education. It is a source of information about the institutions' performance and then, a benchmark for improving the efficiency and quality of the process. Most of the institutions' performance is measured and specified their rank at the regular interval and such assessments depend on a collection of specific standards that are called performance indicators [41]. For example, the benchmarks to measure the performance of the university research are the number of supervised PhD theses and the number of publications. Even though the reliability of choosing performance indicators is somewhat complicated, Grade Point Average (GPA) is a widely accepted indicator in HEI. The main indicator for student performance is GPA and the information available from the students' database system [42].

A nonparametric approach to measuring HEI efficiency has the advantage of allowing for the inclusion of numerous inputs and multiple outputs without the need for any prior knowledge and simply requiring the input and output values. Because of this, the analysis is appropriate even though it is challenging to the observed price of inputs and outputs. Additionally, it provides guidance on how inefficient institutions might become efficient as well as helps distinguish between efficient and inefficient organizations. However, because it necessitates defining the a priori functional form of the production frontier, the stochastic frontier analysis evaluates the efficiency of the institutions with a specification bias.

3. Relationship between teaching and research

The teaching profession is an outcome of research and a scholar's activity is vital to organize the strategies of higher education. Thus, teaching and research are interlinked activities. According to Refs. [43, 44], a good higher education scholar should be active in research activity. Hence, there is no separate teaching effectiveness measure since research proficiency can be used as a proxy for teaching effectiveness.

Students' equating of teaching and research is a well-known issue all around the world. Reforms in both education and research institutions are therefore necessary for the areas of teaching and research. Few people are aware of the conflicts that arise as students attempt to understand how research and teaching will play a part in their future professional lives, let alone how these conflicts will affect their growing academic identities.

Obviously, students benefit from effective links between teaching and faculty research; faculty members benefit from the satisfaction and efficiency of integrating their main professional obligation; higher education benefits when stakeholders are conscious in which they consider their educational mission because a positive public image can translate into governmental financial support. According to Ref. [45], there are numerous reasons to strengthen the teaching–research connection at both institutional levels and individual faculty members. Some of the reasons include trying to bring research into the classroom, student involvement in research projects, and continuing to expand academic scholarship models.

There are conditions to facilitate for integration of research and teaching in higher education. These are: instead of being told what to teach, academics should be active in the decision-making process; research is a broad term that encompasses both creative works and teaching scholarship and integration is also influenced by student awareness [46, 47]. According to Refs. [48, 49], students in the English department perceive research as something they did and as a way to collaborate with academics; students in the geography department see research as mainly noticeable in the field conducted by lecturers and students, and students in the physics department see research as visible when laboratories and machines are open. Hence, the integration of research and teaching is influenced by factors such as well-designed curricula at all levels, government support for teaching and research, and the role and goals of research funding bodies.

From the work of Zubrick [50] and Brown [51], the relationship between teaching and research is a debated issue. Many beliefs have been reported as a result of the debate. From this point of view, Hughes [52] concluded that “Our understanding complex and dynamic relationships between teaching and research is only going to be furthered from a perspective of healthy skepticism rather than mischievous vested interest.”

Many studies have been conducted to clarify the relationship between research and teaching, and this concept has evolved in higher education in recent years. For instance, about 33 institutions were encouraged to implement teaching and research together on some level as a result of the survey of institutional strategies and teaching and learning plans of the 39 publicly funded universities in Australia. On the other, the Australian Quality Agency revealed that many universities intended to adopt these activities concurrently but did not adequately translate them into practice because the institutes did not understand the significance of combination well before adoption [50]; educational administrators believe that the faculty needs to engage separately to achieve the goal of teaching and research and are distinct activities [53]; faculty of research and teaching roles are fragmented, and time spending by faculty members to achieve the goals of the research is not necessarily time to achieving for goals of teaching. On the opposite, policy analysts believe that the roles of faculty members in achieving goals of teaching and research do not always involve distinct and separate use of time. In other words, staff members occasionally mutually produce research and teaching. Hence, the roles of research and teaching are occasionally integrated, and faculty member is sometimes involved in activities that carry out research and teaching goals at the same time [54, 55].

The advantages of combining teaching and research in higher education have been outlined by researchers to professionals, administrators, and academic staff in order to shape higher education decision-making policy and spread ideas about higher education policy setting. Some of the works on this topic deal with how academic excellence is measured and attained as a result of collaborative adoption, knowledge transfer, institutional resource allocation, economic size in universities, and competitive pressure.

4. The complementary of teaching and research activities

4.1 Relative efficiency of HEIs

The efficiency measurement of HEIs was carried out through the output orientation DEA model. The teaching, research, and overall efficiency of 40 HEIs under observation are given in **Table 1**.

As we observed from the result of the efficiency scores of HEIs in **Table 1**, the mean and minimum score of the overall(join) efficiency of HEIs is greater than the mean and minimum score of teaching efficiency of HEIs. And also, the mean and minimum score of the overall(join) efficiency of HEIs is greater than the mean and

DMU	Efficiency scores for teaching	Efficiency scores for research	Overall efficiency	Ranking of DMU based on its overall efficiency
1	0.3656	0.0734	0.3745	29
2	0.5559	0.2755	0.5615	23
3	0.3854	0.7816	0.7922	15
4	1.0000	0.2416	1.0000	1
5	1.0000	0.5083	1.0000	1
6	0.9474	1.0000	1.0000	1
7	0.3919	0.8317	0.8411	10
8	1.0000	1.0000	1.0000	1
9	0.3586	0.5274	0.5364	25
10	0.7787	0.4824	0.7792	16
11	0.8109	0.4691	0.8148	11
12	0.3798	0.2181	0.5365	24
13	0.3481	0.4735	0.4760	27
14	0.4029	0.4643	0.4750	28
15	0.9728	0.3605	0.9741	7
16	0.9798	0.3695	0.9798	5
17	1.0000	0.3855	1.0000	1
18	0.6097	0.3670	0.8108	12
19	0.4180	0.2410	0.5912	21
20	0.8257	0.2785	0.9756	6
21	0.3993	0.3070	0.5847	22
22	0.2829	0.4776	0.6607	19

DMU	Efficiency scores for teaching	Efficiency scores for research	Overall efficiency	Ranking of DMU based on its overall efficiency
23	0.3974	0.4255	0.5095	26
24	0.9230	0.3695	0.9312	9
25	0.6082	1.0000	1.0000	1
26	0.4252	0.5427	0.8050	14
27	0.3100	0.4420	0.6012	20
28	1.0000	0.5614	1.0000	1
29	0.4893	1.0000	1.0000	1
30	0.9510	0.6020	0.9912	2
31	0.5854	1.0000	1.0000	1
32	0.7660	0.5286	0.7755	17
33	1.0000	1.0000	1.0000	1
34	0.6123	1.0000	1.0000	1
35	1.0000	0.9902	1.0000	1
36	0.9864	0.4555	0.9872	4
37	0.9587	0.1283	0.9594	8
38	0.9831	0.3131	0.9901	3
39	0.3978	0.5328	0.8068	13
40	0.7031	0.2740	0.7427	18

Table 1.
Relative efficiency scores of HEIs.

minimum score of the research efficiency of HEIs. Moreover, there are some HEIs that are efficient in either teaching or research is also efficient in their overall efficiency. This implies that each activity has a positive impact on the overall efficiency, and institutions that execute both activities simultaneously have better efficiency scores rather than adopting any one activity. Therefore, the institutions adopting both activities simultaneously are more beneficial rather than adopting a single activity. This indicates that the joint adoption of both activities follows economies of scale.

The number of faculty members is a proxy for the size of the HEI. Overall efficiency results indicate that smaller HEIs or universities with a smaller number of faculty members were performing better in transforming input resources into higher outcomes. Bigger HEIs might be restructured to new demands with lesser difficulty as they have established flexible structures. Our findings are in line with the theory of economies of scope. That is, HEIs seem to benefit from the reduction of cost per unit of output by adopting the other activity when one is in practice. This also strengthens the theory of complementarity, where one activity gives more power to output when the other activity is already in practice. Our results are in line with the finding concluded by Long [56] that economies of scope exist for the adoption of teaching and research in combination. However, these results should be generalized with caution of heterogeneity. HEIs would further increase efficiency by giving the same emphasis on teaching and research because the implementation of these activities simultaneously allows them to build their own core skills and gain more benefits. Therefore, institutes that have jointly adopted both activities are substantially more likely to achieve higher performance in those activities.

5. Summary

This chapter showed the following empirical results: Firstly, the joint adoption of teaching and research leads to better HEIs' performance rather than the adoption of a single activity. This result strongly supports the argument that there is joint interdependence between teaching and research and enhances the existence of complementary. Secondly, in HEIs, teaching is more uniform than research. The difficulty in getting research funding and funding research activities with limited financial resources is likely the cause of the variation in research productivity. Additionally, by contrasting public and private institutions, it was possible to gain insightful information about how the grouped HEIs that are private institutions prioritize teaching over public action. However, compared to private institutions, public institutions place a greater focus on research productivity. The efficiency ratings of the HEIs could also help other stakeholders and decision-makers in the educational sector choose more effective methods to allocate resources. Additionally, the educational management of HEIs allows for the classification of the institutions that have superior comparative efficiency or not and uses the group of HEIs as role models. Abbott [57] and Avkiran [58] contend that efficiency analysis leaves out factors that contribute to inefficient resource distribution among institutions while evaluating educational institutions.

The joint implementation of these initiatives in higher education increases the ability to introduce process innovations, such as new methods of instruction, and the faculty members update their knowledge with the most recent information. Furthermore, improving the HEI's performance demanded a top management concern. For that reason, higher educations are experimenting with its process, combining teaching and research activities. Therefore, educational administrators or policy-makers require tight integration of teaching and research with the HEIs activities to capture the positive effects and each activity has a marginal return of the other.

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Utilizing Design Thinking as a Compass to Develop a Personalized Flipped Learning Curriculum

Hisae Matsui

Abstract

This chapter illustrates the process of reforming the curriculum of a Japanese language course in a university through the process of design thinking and addresses its benefits and problems. Design thinking is a human-centered approach to problem-solving that involves processes of discovery, interpretation, ideation, experimentation, and evolution. By applying these processes, a curriculum reform led to the development of a prototype of a personalized flipped learning curriculum that addresses the diverse needs of students. The results of a survey conducted after implementing the new curriculum revealed areas that had improved and needed improvement, indicating that design thinking is an excellent guide for curriculum development. However, they also revealed limitations of applying design thinking, such as the difficulty of addressing the needs of students whose opinions were not able to be obtained.

Keywords: design thinking, curriculum development, personalized learning, flipped learning, world language education

1. Introduction

The first semester of the Japanese language program, JPN101, the first semester of the Japanese Language Program, opens the door to the Japanese language for most students. Many of them arrive on the first day of classes excited to begin their new journey. However, as with many other courses, there are obstacles along the way, and for some students, they may be too high to overcome. As a result, they were unable to complete the course despite still having an interest in the Japanese language and culture. For example, in Fall 2017, 12 out of 60 students dropped out of the course for various reasons. There is no doubt that learning a new language, especially one that is completely different from English, can be difficult, but by reforming the curriculum, we may be able to lower at least some of the obstacles—this is how this project began.

As with any other subject, there are many variables in world language learning, and there is no one solution that works for every world language classroom. Therefore, it is important to design components that target specific students in specific environments, and that is where “design thinking” comes in.

Design thinking is not a new concept. It was first introduced in 1969 by Simon as a “way of thinking” in the design process [1]. Subsequently, Rowe [2] expanded on the concept and described the approach as “a method of creative action.” The concept originated in architecture, design, and art; however, it has since been applied to the field of management [3].

Design thinking is a methodology that imbues the full spectrum of innovative activities with a human-centered design ethos [4]. It focuses on ideas and solutions (products, services, and systems) to “wicked problems”—the need to find viable and novel solutions for specific user groups [5]. Design thinking is an analytical and creative process that involves experimentation, modeling and prototyping, gathering feedback, and redesigning [6]. Innovation arises from a thorough understanding, through direct observation, of what people want and need in their lives and what they like or dislike about the way a particular product is manufactured, packaged, marketed, sold, and supported.

While the implementation of design thinking in learning and education is increasing, published research is still relatively limited [7]. Some examples in the literature where design thinking has been used in the development of new curricula and in curriculum reform are in the fields of medical education, professional education, industrial engineering, and entrepreneurship education, as well as in language education [8–12]. Crites and Rye [12] report on the results of an exploratory case study based on the implementation of design thinking in a university’s language curriculum design process. They report that implementing DT has made the curriculum design process more collaborative, creative, and efficient. In addition, implementing DT from the earliest stages of curriculum design has allowed the DT philosophy to permeate future iterations of the course, leading to more consistent curriculum assessment and development [12].

Willness and Bruni-Bossio [13] introduce the curriculum innovation canvas, which is based on the principles of design thinking [13]. They claim that the canvas was created to provide a tool that promotes creativity and innovation, to provide a novel way of thinking about the curriculum development process, and to guide the planning and implementation of the resulting ideas rather than to perfectly match everyone’s context [13].

Given the nature of the design thinking described above, it is clear that although design thinking is not currently a popular method of curriculum development for world language courses, it can be an excellent framework. This chapter will describe how design thinking was applied to reform a world language curriculum and how the curriculum reform affected the learning experience of the students in the course.

2. Curriculum before the reform

Before the reform, the curriculum was a typical traditional curriculum of world language courses at the university level: there were “lecture days” and “drill days.” On “lecture day,” two or three grammar points were explained, and the students had a limited opportunity to practice forms orally. On “drill day,” the students had more opportunities to have pair/group oral practices.

The typical flow of the lessons is as follows (**Figure 1**).

This was our starting point. From the next section, the process of reform and how design thinking was applied will be explained in detail.

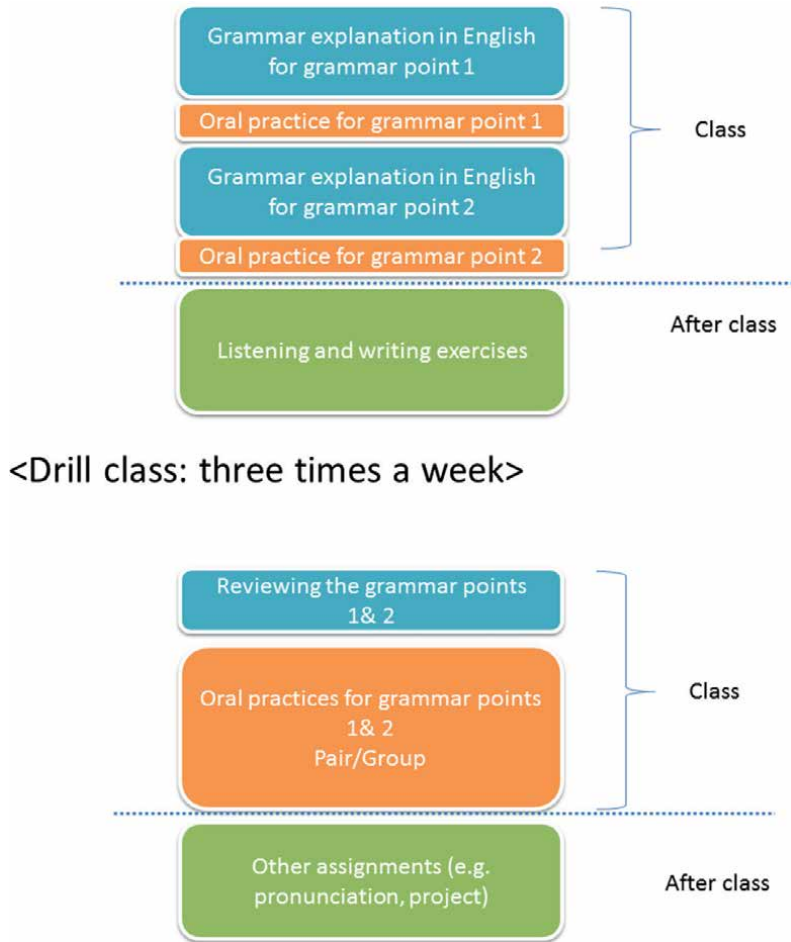


Figure 1.
The flow of the lessons before the reform.

3. The process of design thinking

Although the design thinking process varies slightly depending on the resources, the concepts underlying these steps remain similar. In this project, the design process that the book, “Design thinking for educators [14]” suggested was adopted. The process has mainly five phases: discovery, interpretation, ideation, experimentation, and evolution. The following diagram shows these phases (**Figure 2**).

From the next segment, each phase will be explained briefly with what was done in this project as an example.

3.1 Discovery

As the name suggests, the main goal of this phase is to discover various issues surrounding the existing problem. During this stage, it is important to consider all the stakeholders involved and understand how they are interconnected by immersing oneself in context and learning from users, for example.

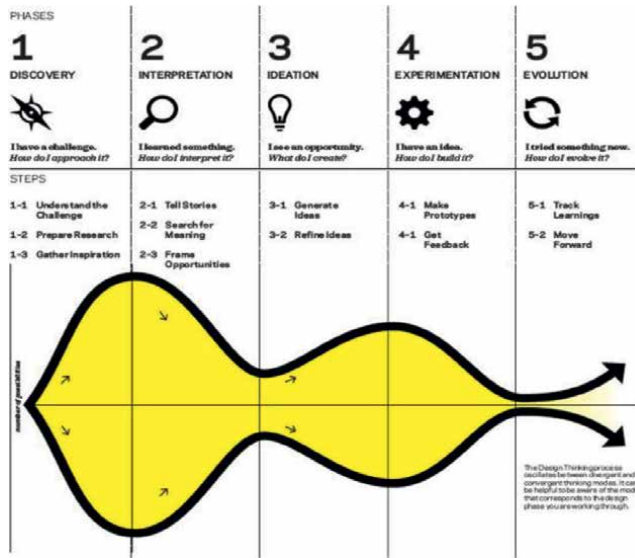


Figure 2.
The process of design thinking [14].

3.1.1 Application to this project

Mainly four activities were done during this phase: class observation of the current course, class observation of Japanese courses where more individualized instruction was offered, conducting a survey of all the students in the course, and interviewing five students from the course as well as instructors.

There were mainly two purposes in the class observation: 1. experiencing the class as a student, and 2. observing how class time was used, how the teacher and the students interact, and how the students interact with each other. Based on the observation, several students were selected for the interview. In design thinking, it is crucial to seek out extreme users, end users who are at opposite extremes and learn from the different issues, needs, and workarounds they have developed [15]; therefore, students who would be outliers on the survey were selected.

During the student interviews, the students were asked about their opinions of the course, how they prepared for the course as well as what their needs were. Similar questions were asked of the three instructors who co-taught the course.

The survey was also distributed to both the students who dropped out of the course and the students who finished the course. The former asked the reason for dropping out of the course, and the latter asked to evaluate the quality of teaching and learning of the course. As an instrument, the Teaching and Learning Quality instrument, which was developed by Frick and his colleagues [16] and revised in their later work [17], was used. The instrument attempts to measure the following factors via student ratings:

- Learning Progress: Student’s perception of his/her gain in knowledge or skill
- Academic Learning Time: Student’s perception of time he/she spends successfully on learning activities relevant to course goals.

- Student Satisfaction: Student’s liking of the course
- Global Quality: Student’s global rating: outstanding instructor and course

In addition to these questions, general impressions toward the course were asked both on a scale and in a narrative form.

3.2 Interpretation

In this phase, all the discovery from the previous phase was transformed into meaningful insights and actionable opportunities. It involves storytelling, as well as sorting and condensing thoughts until one would find a compelling point of view and clear direction for ideation [14].

3.2.1 Application to this project

The results of the survey to the students show that the students who completed the course felt that writing assignments after class was the heaviest and learning vocabulary items was the second heaviest workload of the course. The students who dropped out of the course had similar impressions, but learning vocabulary was the heaviest, and the writing assignment was the second heaviest (**Table 1**).

Some of the students mentioned in the survey that the workbook assignments were challenging because they were not ready to do the exercise on their own when they had to do it. Although Japanese verbs do not have complex verb conjugations that other languages have, they still have conjugations with which the students need to be fluent.

One student expressed his struggle in the survey as follows:

I just feel like I fell through the cracks in the course. Like I learned so much and I love the language and it’s important to me to learn it. But I was really struggling with the material and it’s fine to say “come to office hours” but at some point, I was so confused and behind that, I wasn’t sure exactly even where to start in office hours. I would have appreciated some optional resources for the grammar.

In the interviews with the instructors, all three instructors of the course were concerned that they sometimes could not do pair/group activities in class because the gap was so severe, especially when the activities involved newly introduced conjugations.

Field	The students who completed the course (Mean)	The students who dropped out of the course (Mean)
Homework (Writing exercise)	6.21	6.33
Homework (Listening exercise)	5.21	5.17
Studying vocabulary	5.74	7.33
Studying grammar points	5.57	4.67

(1: very light; 10: very heavy).

Table 1.
 The perceived workload for the learning activities.

It is a widely agreeable fact that there are differences in the speed of language acquisition among students. While some students “click” with newly introduced grammar points and learn the Japanese language writing system and vocabulary items without major problems, some students struggle with them. These voices indicate that some of the students did not have enough time and practice to reach the level where they could participate in pair/group practices in class and do writing practices after class.

The survey results and the findings from the interviews were summarized to shed light on the problems that need improvement. Furthermore, four composite character profiles were also created with the findings from in-depth interviews in the previous phase. The composite character profile is a (semi)-fictional character, which can be used to group interesting observations into one specific, recognizable character [18]. These characters were introduced in the meeting so that the instructors could put themselves in the students’ shoes.

3.3 Ideation

Ideation means generating lots of ideas. After identifying problem areas in the previous phase, the focus moves to idea generation. Brainstorming as a group is a crucial component of this step. Brainstorming encourages people to think expansively and without constraints.

3.3.1 Application to this project

The brainstorming meeting was held with all the instructors. In the meeting, each issue that came up in the previous phase was written on post-it notes and posted on the wall, and composite character profiles were shared to clarify the problems in the current curriculum. Several curricula were suggested during the meeting. These curricula were examined further to see if they were realistic or not, and one curriculum was chosen for the next phase.

3.4 Experimentation

Experimentation brings ideas from the previous phase to life. Building prototypes means making ideas tangible, learning while building them, and sharing them with other people to understand how end users respond to the idea and how it can be refined to align with their needs optimally. The goal of prototyping is not to make a perfect representation but rather to make it tangible, actionable, and testable.

3.4.1 Application to this project

It would be ideal if there were an opportunity to run the prototype (the chosen curriculum from the previous phase) on a small scale; however, due to time constraints, the prototype was adopted as a new curriculum for Fall 2019.

In the new curriculum, the lecture-drill format was changed to the format that the students would practice only one target grammar point a day to avoid confusion that some of the students expressed during the interviews.

The flow of the class has changed drastically. The main issue that became clear in the previous phases was the achievement gap among students. Although it has been said that a substantial amount of time and exposure are needed for second language

acquisition [19], class time often does not provide them to the students. Therefore, the benefit of spending as much time as the students need to understand and make a form and meaning connection after the grammar point is introduced is clear. The old curriculum did not offer enough time for most of the students and did not accommodate individual differences among the students. As a solution, “flipped learning” was adopted as a framework of the curriculum.

According to the definition provided in the Flipped Learning Network [20], flipped learning is:

a pedagogical approach in which direct instruction moves from the group learning space to the individual learning space, and the resulting group space is transformed into a dynamic, interactive learning environment where the educator guides students as they apply concepts and engage creatively in the subject matter.” ([20] p. 1).

Direct instruction of the target grammar was moved to the outside of the classroom with options: watching a lecture video and reading the textbook to accommodate personal preferences. Google Forms, which gives instructional choices and small quizzes, and YouTube, which provides video lectures, were used for this part.

After the initial introduction stage on Google Forms, the students do online listening comprehension practices. The main goal of the practices is connecting form and meaning to what the students have just learned. The students would listen to a short sentence or conversation and choose the correct answer. Quizalize, an online platform for classroom polling and assessing, is used as the platform for this practice. By using its “mastery mode,” students can try as many times as they need to reach a 100% score. This is especially beneficial for students who need extra practice to process a newly introduced grammar point. By the time the students complete all the pre-class activities, they should have a basic understanding and some mastery of the grammar point.

In addition to the grammar introduction and practice, the students are expected to practice vocabulary items using Quizlet, a web-based study application, which can help the students memorize the vocabulary items at their pace.

In class, the main focus would be conversational activities in more authentic and realistic situations rather than simple repetitions that the students in a traditional class have to do. After practicing the target grammar point before class, the students are expected to be ready for these activities.

The class concludes with writing practices. Writing practices were often treated as homework in a traditional classroom; however, the results from the interview and survey show that the students who did not quite understand the grammar point struggled with writing assignments because they could not receive the support they needed. Writing practices are individual activities, and the instructor can easily see who needs support. The writing assignments come with answers, and the students can check their answers immediately after they finish. There are also more advanced writing practices for students who complete the first set of practices so that everyone in the class can use class time more efficiently (**Table 2**).

Here are a diagram and a chart of the flow of the class (**Figure 3**).

After the semester, the same survey as the one distributed in phase one was distributed to the students in the course. Five students were also invited for one-on-one interviews to investigate their learning experiences with the new curriculum. Furthermore, the instructors were interviewed as well for their insights about the new curriculum.

Day	Current curriculum	Proposed curriculum
1	Lecture for grammar points 1 and 2	Practicing grammar point 1
2	Drill for grammar points 1 and 2	Practicing grammar point 2
3	Lecture for grammar points 3–5	Practicing grammar point 3
4	Drill for grammar points 3–5	Practicing grammar point 4
5	Drill for grammar points 3–5	Practicing grammar point 5
6	Lecture: Dialog comprehension check and culture	Reviewing grammar point 1–5
7	Drill for grammar points 1–5	Reviewing grammar point 1–5

Table 2.
Typical flow of the lessons for each chapter.

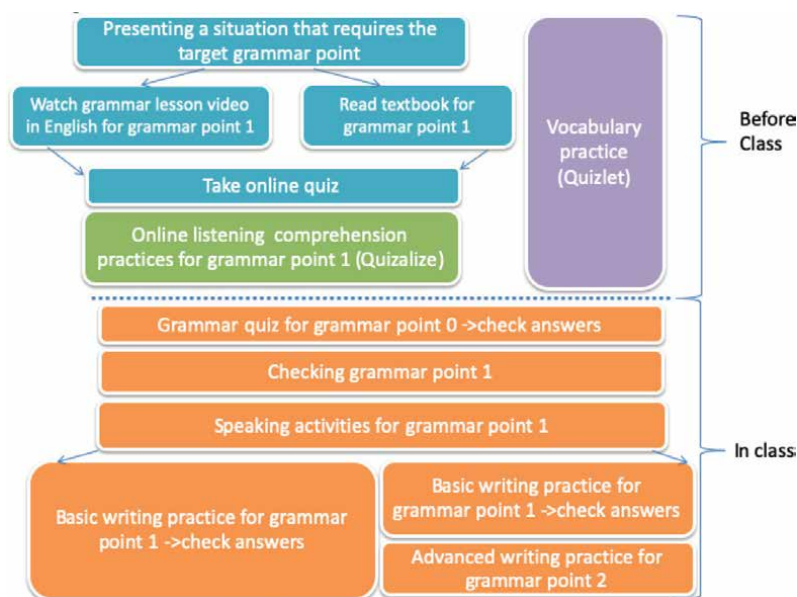


Figure 3.
Typical flow of a day.

3.4.2 Results from the surveys and interviews

First, four elements of Teaching and Learning Quality were compared. As the graph shows, there are not many differences between the old curriculum (2017) and the new curriculum (2019). Academic learning time shows a slight decline from 4.08 to 3.91, and the other three aspects, learning progress, student satisfaction, and global quality, show slight increases. Overall, the quality of teaching and learning remained the same (Figure 4).

Next, the perceived workloads were compared. Homework (grammar) in the old curriculum means written homework, while homework (grammar) in the new curriculum means grammar lessons and small quizzes. As the graph shows, the workload for homework decreased; however, the one for studying vocabulary increased even though Quizlet sets were created to reduce the workload of the students. One student

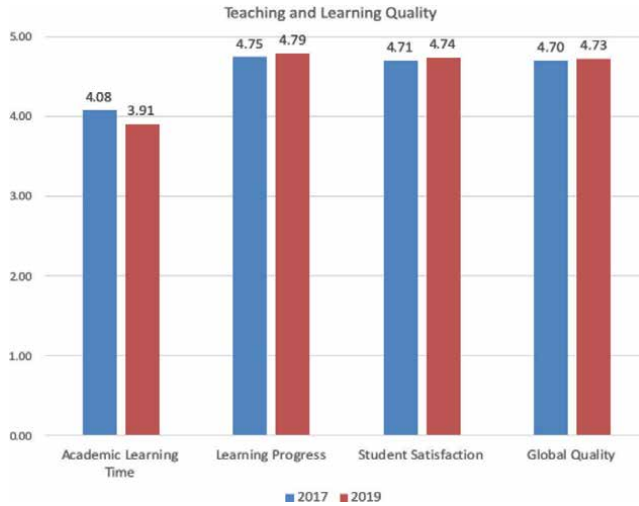


Figure 4.
 Teaching and learning quality.

pointed out that “vocabulary gets pushed to the side to learn grammar” on the survey. This indicates that more integration of vocabulary into grammar activities is necessary (Figure 5).

Furthermore, the perceived effectiveness of learning activities was examined. Interestingly, although the students felt that studying vocabulary is heavy on their workload, they also felt that it helped their learning. The students found more value in studying grammar points and in-class activities; however, less value in the listening homework. In the interviews, several students expressed that listening practice was challenging because the speed of the clips was too fast, and simply repeating them multiple times sometimes did not help. Additional help, such as slowing down function or showing script, might be helpful for these students (Figure 6).

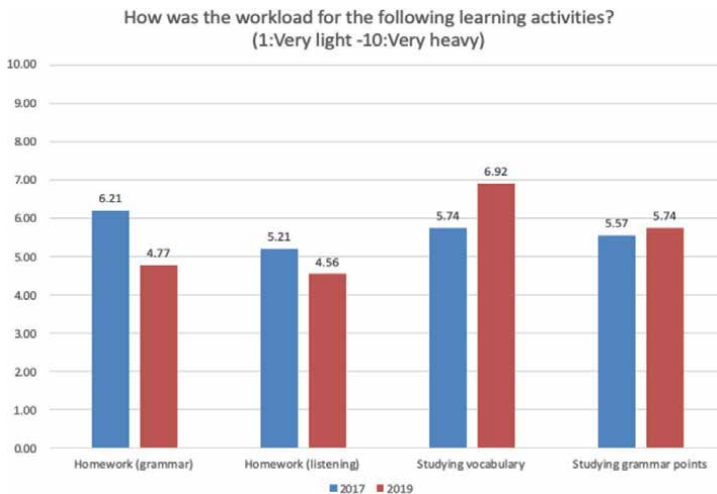


Figure 5.
 Perceived workload.

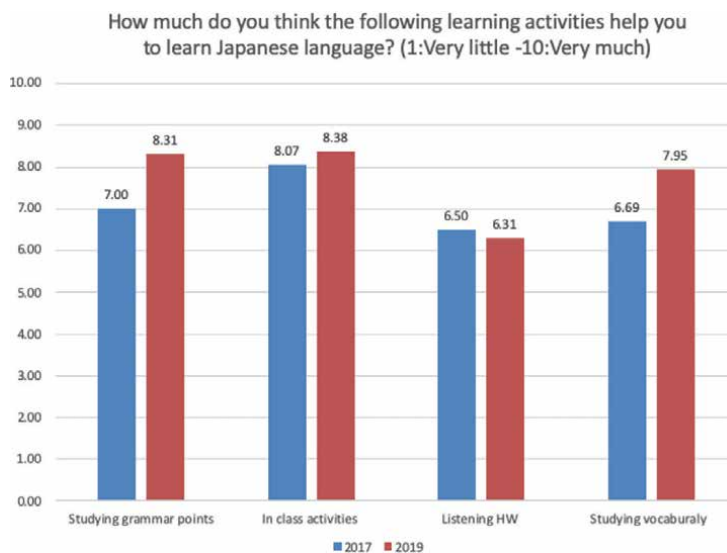


Figure 6.
Perceived learning activities.

The main purpose of the curriculum reform was to offer a firm understanding of the grammar points so that the students will be able to utilize them and express themselves in real-life situations. Therefore, the survey also asked how much the students understood and utilized the grammar points after lectures as well as after practice. The graphs indicate that while the students in the old curriculum show higher scores on understanding and utilizing the grammar points after lectures, the students in the new curriculum show higher understanding and utilization after practice. One student mentioned during the interview that he wished he could ask questions when questions arose, which is so easy during in-class lectures. A discussion forum was set up for this purpose, but the students did not use it as intended. Having a better form of communication outside of the classroom would solve this problem (**Figures 7 and 8**).

All the students who shared their opinions during the interviews and quite a few students on the survey expressed their preference for the flipped learning format. No one on the survey expressed his/her preference for the traditional one. The main reasons for the preference were being able to have more speaking practice time and being able to prepare for what was coming in class, even if the grammar point was difficult. Although several improvements seem to be necessary, the overall structure of the curriculum was perceived positively among students. There were still students who dropped out of the course during the semester, but the percentage went down from 20% (12 out of 62 students in 2017) to 15% (eight out of 52 students in 2019).

One main issue that the instructors and some of the students who had interviews felt was that it is very easy to get behind. If a student comes to class without doing homework, he/she can easily get behind in class. One of the students expressed that it was very challenging to keep up with homework, which was assigned every day. The students have to juggle so many “balls” during the semester, and sometimes it is hard to find time to finish homework. Grammar point handouts were prepared for those students, but not having quizzes every day might be a better fit with a realistic (not “ideal” as instructors may imagine) student life.

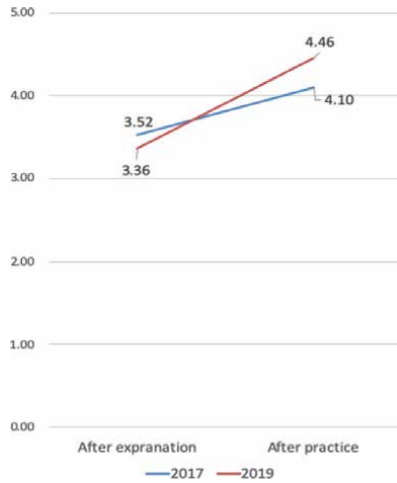


Figure 7.
Understanding grammar points.

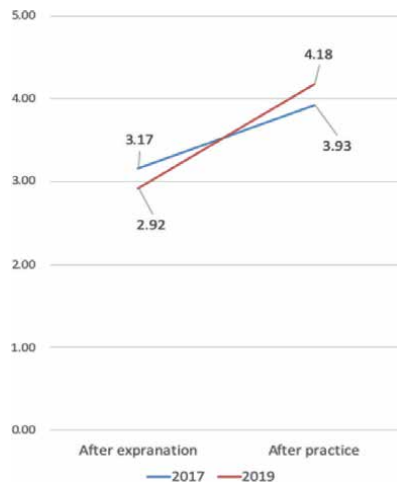


Figure 8.
Utilizing grammar points.

3.5 Evolution

Evolution is the development and changes that happen to the proposed solution after implementation. Change often happens over time, and reminders of even subtle signs of progress are important.

3.5.1 Application to this project

The findings and thoughts mentioned in the previous phase will be shared with instructors and go back to phase two to plan further implementations. The implementations which do not need preparation time were applied in the subsequent course, and the implementations which require time to prepare will be applied from the Fall 2020 semester.

4. Discussion

Given its human-centered nature with a focus on the end users, design thinking can have a tremendous impact on curriculum development. The survey is undoubtedly a powerful tool to evaluate the current curriculum; however, it may not be sufficient for significant reform. Class observations and in-depth interviews, especially with extreme users, were powerful tools for the interpretation and ideation phases. Curricula are almost always made by instructors or administrators who have expertise in the area of study and also tend to believe what they are doing is good for their students. It is not always the case. Seeing a class from a student's point of view and having empathy with students are often missing in curriculum development. The curriculum should be designed for the end users, students in this case. In this project, the process of design thinking became a compass for curriculum development.

Even after thorough discussion and consideration of students' needs, the idea might not work as expected. In this project, for example, listening practice materials were newly created with the intention of offering input as many times as the students need. However, it turned out that merely repeating is not enough for some of the students. This shows the importance of the final phase, "Evolution." Changing once is not the final stage. The curriculum is and should be fluid and change often over time.

Design thinking also encourages collaboration. The views of multiple perspectives and great minds are always stronger when solving a challenge than just one [14]. In this project, fortunately, four instructors taught the same course. Their multiple viewpoints brought many great ideas to the table. Although it was hard to find time when everyone could meet during the semester, it was definitely worth having the meetings as a great team.

One problem arose during the process. As several works of literature point out, one of the main concerns of flipped learning is that if a student comes to class without any preparation, he/she gets behind easily. There were instances like that during the semester. Vices from these students are desperately needed to prevent that from happening; however, several requests for the interviews had never been responded to, and the interviews with these students never happened. It is not certain that they responded to the survey either due to the anonymity of the survey. Without hearing their voices, it is hard to accommodate their needs. Assuming the problems from their learning paths is the only thing that can be done. This could be one of the limitations of design thinking.

5. Conclusion

In a traditional classroom, it was difficult to accommodate everyone in the class. The majority of the voices from the students might have been heard, but minor voices have often been ignored. Considering the limited in-class time and resources, it is reasonable for us to accommodate the majority. Now, with the advance of technology, the range of accommodation keeps expanding, and these minor voices can be heard. In this project, "the extreme users" provided us with inspiration that we probably could not gain from the survey.

Technological tools, which were adopted for this curriculum, were selected to accommodate a variety of students' needs; however, it does not mean that they are the best tools for any educational setting. Students from different student bodies in different learning environments may appreciate different tools. We are on a journey to

finding an optimal curriculum with optimal tools in a given environment or situation. Technology keeps advancing, and our students keep changing; therefore, it is crucial to keep listening to what the students say and finding the best solution available with or without technology, which design thinking has lots to offer.

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A Review of Digital Learning and ESL Online Classroom Experience in Higher Education

Noble Lo

Abstract

Whilst universities across the global community had adopted new digital learning standards prior to COVID-19, the radical effect of quarantines and social distancing on remote learning needs has fundamentally altered the structure of modern English as a second language (ESL) education in higher education institutions. The current investigation critically explores the educational paradigm from a perspective of content dissemination, learning best practices, and knowledge acquisition in Hong Kong colleges and universities. Through a critical review of the literature surrounding digital learning challenges and opportunities, evidence revealed an overlapping proposition of adaptation and discipline which many students lacked prior to the COVID-19 interruption. By comparing the perspectives of 1062 students across ESL programmes taking English for academic purposes (EAP) and English for specific purposes (ESP) courses within several Hong Kong institutions, this study has confirmed the potential advantages of digital learning solutions including time management, self-paced learning, and knowledge engagement. Students were surveyed using a digital, structured questionnaire to capture a robust representation of experiences during the COVID-19 pandemic and their effects on student learning outcomes. Through quantitative analysis, student feedback has confirmed several developmental challenges related to skills gaps, personal discipline, environmental forces, and student learning expectations. Based upon these findings, a revised protocol for digital citizenship has been proposed which focuses on core principles of self-accountability and discipline that evolve out of proactive, motivated learning objectives that link students to their digital identity and role. Ultimately, these observations indicate a need for future assessment of the competing motivations shaping student engagement in digital learning services and traditional classroom offerings as the COVID-19 pandemic restrictions are lifted and the educational industry evolves towards its new normal.

Keywords: digital learning, content dissemination, learning practices, ESL education, autonomy

1. Introduction

1.1 Research background

As universities have strategically evolved their operational approaches to reconcile the emergence of digital learning standards following the COVID-19 pandemic, the effects of quarantine expectations and social distancing requirements have fundamentally altered the structure and need underlying modern ESL education in higher education. Whereas traditional teaching strategies have involved front-facing, physical educational environments with students dispersed across large classroom environments, Coniam et al. [1] observe that digital solutions have resulted in a ‘blended form of learning and teaching’. Recognised as a ‘new phase’ or evolution of modern higher education, Oraif and Elyas [2] suggest that the sudden and significant push associated with COVID-19 has fundamentally altered the structure and systemic efficiencies of the educational ecosystem. For learners experienced in traditional educational environments, however, the shock and suddenness of the online transition raise multiple questions regarding the efficacy and sustainability of this radical shift in networked education.

For English as a foreign language (EFL), the systemic evolution of the technological landscape towards digital capabilities offers distinct advantages that have the potential to reshape the structure, efficiency, and effectiveness of language learning [3]. Early research in the field of digital language learning presented by Kryukov et al. [4] predicted that there would be a significant challenge in designing effective content and multimedia resources that would provide students with an engaging and motivational solution. Yet, as Lo and Mok [5] have demonstrated, the evolution of digital learning capabilities through gamification and interactive digital ecosystems has facilitated a paradigm shift away from utilitarian, list-based designs towards an engaging, meaningful, and adaptive digital environment. Recent evidence presented by Pobegaylov [6] and Rahman [7] confirms a range of systemic advantages and learner benefits arising from the digitalisation of EFL learning, whilst also highlighting the challenges arising from new skill sets, knowledge bases, and online responsibilities related to the COVID-19 pandemic. Based upon such findings, a review of the recent empirical research regarding EFL learning and online migration of higher education courses following the COVID-19 pandemic reveals an array of academic interest and varied empirical results from nations throughout the Middle East and Southeast Asia. However, a comprehensive database search for Hong Kong EFL reveals a significant empirical gap that has been remedied over the course of this study by focusing on inside stakeholders within this geographically integrated student population.

1.2 Research aim and objectives

The primary aim of this research was to critically assess the transition to digital learning in Hong Kong-based ESL higher education during the COVID-19 pandemic in order to determine the effects of digital citizenship and self-discipline on student experiences and learning outcomes. Through a combination of a theoretical review and empirical analysis, the following core research objectives were accomplished:

- To analyse the demands of digital learning, assessing the roles of self-paced study and pedagogical support in ESL education.

- To interpret the transformative effects of COVID-19 on learning objectives and dig practices in ESL education.
- To analyse the characteristics of digital citizenship and student autonomy in digital learning environments.
- To recommend a protocol for student-oriented digital citizenship and self-accountability to improve future digital learning outcomes in Hong Kong higher education.

1.3 Research questions

There were several questions that were answered over the course of this exploratory investigation:

- What were the primary challenges associated with transitioning higher education from traditional classroom settings to a digital learning ecosystem following COVID-19?
- What challenges have students encountered in transition into digital learning, and how have digital citizenship and self-accountability enabled positive performance outcomes?
- What support systems or pedagogical influences are needed to improve student learning outcomes in the future?
- What are the next steps for Hong Kong ESL programmes to support a new digital learning paradigm for the next generation of remote learners?

1.4 Research overview

This chapter has provided an overview of the transformative forces affecting the Hong Kong higher education ESL programme during the COVID-19 pandemic and the challenges and opportunities associated with digital education and learning processes. The remainder of this dissertation progresses from a theoretical and conceptual overview of digital learning to a critical assessment of empirical evidence related to ESL students and their experiences with the transition from traditional to digital learning practices. Through this synthesis of evidence, focused conclusions are drawn regarding the current and future evolution of the digital learning agenda.

2. Literature review

2.1 Online education and digital pedagogy

Providing justification for an emergent field of online education, McKnight et al. [8] originally identified five primary roles of technology in developing the learning environment including improving teacher and learner access to e-resources, improving communication between teachers and learners, providing flexible time arrangements, expands learner skill sets and discipline, and creates new, innovative

roles for teachers and learners. The COVID-19 pandemic persistence has allowed or forced higher learning institutions and stakeholders to adopt contemporary technological tools for education delivery. The pandemic is fairly a plus for digital pedagogy implementation. For EFL courses, Hazaymeh [3] observes that there are multiple functional advantages ranging from accelerated distribution of course content to innovative learning materials to knowledge sharing and social information exchange. In a technological assessment, Lo [9] highlights the advantages of authentic language learning using visual cues, digital audio, and artificial intelligence (AI)-supported assessments to test student abilities. Whereas traditional lecture-based classrooms relied upon teacher demonstration and student exercises, digital learning has the potential to provide a more immersive experience upon innovative modules, educator creativity, and interactive student experiences [9, 10].

Therefore, Kodrle and Savchenko [11] propose that the conversational and interactive advantages associated with multimedia EFL applications are conducive to 'favourable communication' practices that are not only integrative but are directed towards a practical translation of knowledge into meaningful real-world outcomes. Within this digitalisation paradigm, Lo and Mok [5] describe a concept of 'paratextuality' in gaming which transfers to language 2 (L2) acquisition in the form of consumption and production of linguistic themes, textual representations, and representations like art and/or imagery. From word association to goal execution to dialogue construction, the familiarity of digital natives to the paratextual experience in online gaming has direct and transferrable relevance in digital L2 learning experiences [5]. Similar recommendations for an emergent digital ecosystem in EFL learning proposed by Rahimi and Yadollahi [12] suggest that digital storytelling and exchanges allow learners to 'develop their language literacy' by engaging in collaborative reinforcement exercises and 'constructive dialogue with teachers and group-mates'. Whilst such group activities have been widely used in traditional EFL settings, the digitalisation of this experience not only accelerates the participative process but can use feedback mechanisms and digital prompts to reinforce student language proficiency (Rahimi & Yadollahi [12]).

2.2 Digital citizenship and self-accountability in online learning

For students entering into the digital ecosystem, Yilmaz [13] proposes that adaptation will be determined by key characteristics of digital citizenship such as digital self-efficacy, self-directed learning, and accountability. Central to the success in a digital ecosystem is the core concept of digital citizenship which involves the appropriate use of technology and the student commitment to behaviours and practices that support their own learning pathways as they evolve online [14]. Whereas traditional assessment has involved proctored settings, rigorous oversight, and clearly defined classroom controls, the digital alternative often shifts accountability and ownership away from the institution and into the hands of the student [1]. Online proctored exams, for example, can utilise digital monitoring resources and videoconferencing to maintain oversight during the testing process, whilst also allowing students the flexibility to complete critical coursework from the 'comfort and safety of their own home' ([1], p.59). Students immersed in digital environments are exposed to holistic learning outcomes that often involve pragmatic search behaviours and self-supporting activities that can lead to challenges during rigorous assessments and explicit testing requirements [7]. At the same time, Little and Al Wahaibi [15] have demonstrated empirically that if students have a clear understanding of the

requirements and expectations of the course and the assessment procedure, their self-determination, and motivated autonomy will allow them to engage more productively in the range of requirements associated with these new digital ecosystems.

Evolving far beyond the simplistic, list-based database solutions observed by Kryukov et al. [4], modern digital learning has adopted a gamified, engaging, and immersive content platform to the accommodation of varying student learning needs. Yet, following the suddenness of the COVID-19 pandemic, the shift from traditional to completely digital education across these Hong Kong institutions has radically altered the learning approach adopted by these EFL students. Yilmaz [13] proposes that core dimensions of e-learning readiness such as digital self-efficacy, self-directed learning, and accountability predict whether students are able to transition into a productive digital ecosystem. Similarly, McWilliam and Dawson [10] have observed the need for educators to engage in more creative and immersive pedagogical strategies, drawing upon an exchange of creative capital to actively engage students in the digital learning process. The findings in the current study have confirmed that students who identified as digital natives and who were experienced in school (e.g. higher enrolment level) were more likely to integrate seamlessly into the digital learning experience.

Central to the effectiveness of digital EFL programmes is an immersiveness that forms the basis for the proposed protocol for designing and implementing future programmes that encourage student performance and engagement. To improve the effectiveness of the digital EFL experience, Rahimi and Yadollahi [12] and Lo and Mok [5] propose that advanced digital storytelling technologies are providing immersive advantages for the gamification and participation enhancement of the language learning process. **Figure 1** extrapolates the four core dimensions from the conceptual framework and incorporates multiple assessment dimensions that can be used to ensure that EFL teams are meeting the needs of their students and their instructors. For example, students' technological skills must be assessed prior to classroom immersion as well as the resources they have available or may need to purchase. Once students have received adequate training, then expectations must be set regarding digital citizenship

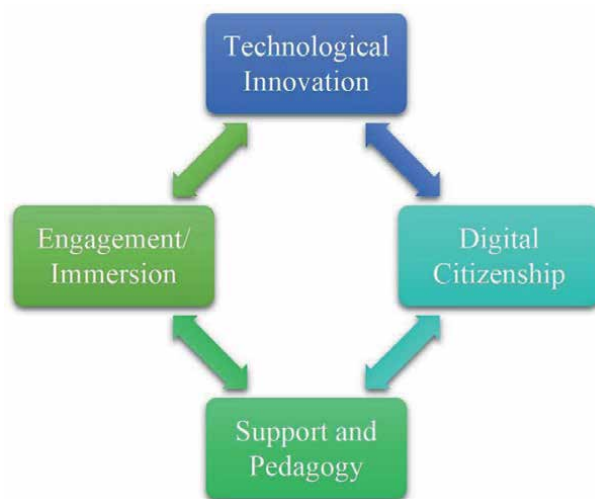


Figure 1.
Conceptual framework (Created for Study).

and the role of self-accountability in shaping student performance. Instructors will leverage multi-channel communication strategies (e.g. e-mail, telephone, and Zoom) to meet student needs and respond effectively, whilst adopting creative delivery strategies for videoconferencing and engaging coursework. Finally, to ensure that the immersion is comprehensive and sustainable, the EFL education curriculum needs to be gamified.

2.3 COVID-19 and online learning effects

The suddenness of the shift from traditional to digital learning was surprising to many higher education students, with Rahman [7] reporting that despite their experience with digital technologies (e.g. home computing, mobile applications), many adjustments to behaviours, awareness, and skill sets were needed during this process. In a small sample interview of students at the higher education institution, UKI Toraja, Allo [16] observed a variety of positive responses to the sudden shift from traditional education to online learning. Whilst some students reported experiencing cost and resources-related challenges, the acknowledgement of the advantages of persistent digital learning despite widespread disruption during the pandemic in other industries was viewed as positive [16]. Students reported a need for instructor awareness regarding technological, material, and access-based challenges in relation to the online curriculum and course scheduling; however, through social networks and peer support, many hurdles were overcome [16].

Central to the functional advantages of online learning, support for remote or distributed students offers a distinct advantage that not only empowers more students to participate in the digital ecosystem but expands the adaptability of classroom systems during unprecedented events like COVID-19 [3]. Further, Lo [9] acknowledges that authenticity and interactivity via the virtual ecosystem encourage students to engage in experiential learning that offers a significant advantage over traditional, coursework-focused learning experiences. Of the students who completed this study, just 32.7% indicated that they would not be satisfied with online learning in the upcoming semester despite minor improvements in the overall perceptions regarding the effectiveness of online teaching and the assessment process. These findings suggest that during this transitional period, the catchup procedures at these universities and inadequate levels of student support may have negatively affected the overall satisfaction with the online learning experience.

Despite positive assessment of students' ability to adapt to the digital learning experience by Allo [16] and Rahman [7] other evidence in this field suggests that the transition has been challenging for both students and teachers. For example, Pobegaylov [6] reveals that due to online switching, instructors have been unable to 'provide their educational influence' and leverage their pedagogical skill sets to instruct students via online courses in the same ways that they would have demonstrated in traditional classes. Students without the prerequisite skill sets, alternatively, have found their transition into digital learning a difficult process, one which has resulted in frustration, poor performance, and pathway uncertainties [6]. Whilst Yilmaz [13] has proposed that digital readiness is a function of digital citizenship and adaptation to changing online environments, gaps in the prerequisite skills and competencies needed to improve student learning outcomes may result in what Hava [17] has identified as frustration, discontentment, negativity, and resistance to change. Key concerns such as the time-consuming nature of the education process, the difficulty of the digital ecosystem, and the meaning versus the value of the digital content can lead to student frustrations and an inability to transition into more productive EFL outcomes [17].

2.4 Conceptual framework

Based on these findings, there are several core concepts that form the basis for the interpretive framework of digital EFL outcomes in higher education:

- **Technological Innovation:** Adaptive, creative, and innovative technological solutions designed to address student learning needs, incorporate multimedia communication, and disseminate curricular materials [3, 8].
- **Digital Citizenship:** From self-awareness to self-efficacy, a commitment to digital learning that involves autonomy, participation, and accountability [1, 13].
- **Support and Pedagogy:** The foundation of the educational process, instructors form the support basis for student problem-solving and guidance leveraging creativity and question-answering to navigate the curriculum [7, 16].
- **Engagement/ Immersion:** Active participation of students (individual and grouped) in the educational process; engagement between instructor and students; gamification and immersion in EFL content [17].

3. Research methodology

3.1 Research paradigm

In the field of educational studies, much of the research has involved the exploration of diversified population samples and comparative evidence from a range of insider perspectives via surveys or focus groups [18]. Derived from a positivist paradigm, these forms of quantitative, factor-based, instrument-constrained studies allow researchers to apply deductive reasoning to the interpretation and analysis of empirical findings in order to prove or validate a central theory [19]. For example, Coniam et al. [1] recently assessed the effectiveness of online proctoring in EFL examinations, weighing candidate experiences and attitudes in relation to graduate-level university programmes. Alternatively, researchers in the field of social sciences will often adopt a constructivist paradigm to critically compare theoretical propositions with a range of experiences and/or observed behavioural outcomes [20]. Allo [16], for example, relied upon the administration of semi-structured interviews with a discrete sample of students in EFL studies at UKI Toraja to assess the effects of COVID-19 on student learning outcomes. Whilst this approach can allow for a deeper, personalised insight, Bryman [19] reminds that due to the subjectivity of the participants' positions and the risk of evidential bias, constructivism can lead to significant reliability and validity issues.

For the current study, each of these philosophical positions was weighed, with emphasis placed upon the core problem (e.g. online schooling following COVID-19) and the most effective sources of evidence (e.g. participant insights and feedback). Whereas interviews might have illuminated individual perspectives, the lack of research surrounding Hong Kong university student experiences suggested that a larger scale study was needed, and for this reason, a narrow, qualitative interview would not meet the objectives of the study. Instead, a large-scale, comparative survey was needed to assess the perspectives of Hong Kong EFL students in relation to the effects of COVID-19 on digital learning processes, their effectiveness, and the

challenges of online EFL education. Therefore, this study has adopted a positivist lens, relying upon a structured, quantitative survey instrument to capture evidence from a large sample of Hong Kong EFL students.

3.2 Research approach

The design of the survey instrument for this study was based upon an extrapolation of several concepts from the literature review including learning disruption, student resources, assessment effectiveness, and educational outcomes. To ensure comparability, the instrument was structured into multiple sections which included the following core elements:

- Section 1: Demographic Overview: A review of general student demographics and digital education experiences that formed the basis for the independent variables.
- Section 2: Pre-COVID Assessment: A review of student perceptions of digital learning prior to COVID-19 using a 5-point Likert-based instrument to grade responses.
- Section 3: Post-COVID Assessment: A review of student perceptions of digital learning after COVID-19 using a 5-point Likert-based instrument to grade responses.

Where three of the prompts offered write-in responses relating to student experiences during digital learning, the open-ended feedback was aggregated and compared for similar themes. The survey was designed to be administered to students remotely via a dedicated SurveyMonkey link that was standardised and pasted into e-mail communications. The procedure involved identifying a possible sample population, distributing a targeted query letter to students, capturing evidence, and normalising and analysing the findings. The extensive data was analysed categorically to match the research objectives in technological advancement, challenges, and future projections and recommendations,

3.3 Sampling and participant selection

The purpose of this study was to capture evidence from inside stakeholders at Hong Kong-based universities. Accordingly, the large sample of 1062 participants was attained from a multi-stage distribution of a standardised, structured survey to more than 2000 university students currently studying at eight different Hong Kong higher education institutions. By applying this opportunistic sampling approach, the robust sample size and breadth of student characteristics and traits have ensured that the findings are both representative and generalisable in their assessment of student perceptions and experiences [19]. Results that were incomplete were excluded from the output unless the lack of a response was appropriate given the prompt.

3.4 Ethical concerns

Central to the efficacy and reliability of the research, Wallen and Frankel [21] observe that ethical responsibility is of paramount concern, directing oversight and administration to protect the rights and welfare of the sample population.

Nonmaleficence, the prevention of harm to participants in a given study, is identified by Punch [22] as a core expectation of any primary research technique. In this study, harm was mitigated by ensuring anonymity of the participants throughout the survey completion process, a condition which Babbie [23] argues will not only limit exposure and threat to survey-takers but will encourage more open, honest responses from the sample population. Prior to completing the survey, all participants were provided with a standard query letter that outlined the conditions of the study including their at-will participation and anonymity and the purpose of the research (e.g. academic only) [24]. The results were analysed using structured, quantitative techniques to reduce the potential for subjective interference, and the participants were encouraged to refrain from including any revealing information in the open-ended segments to maintain analytical consistency and comparability.

4. Results and discussion

4.1 Survey findings

The survey instrument was comprised of several overlapping sections with comparable metrics purposefully structured to elicit experiential feedback related to digital learning during COVID-19. The following sections subdivide this presentation into the core elements including the demographic overview and the core perceptions of the outcomes of digital ESL learning.

4.1.1 Demographic overview

The first series of prompts focused on the demographic categorisation of the participants, targeting grouping variables that could serve as independent dimensions to weigh against other perceptual biases. Despite the large sample size (N = 1062), there was a relatively equitable grouping between male (51.9%) and female (48.1%) respondents. In contrast to this broad gender representation, **Figure 2** visualises a highly biased age range distribution that was based upon the sample targeting and selection procedure.

From a programme perspective, **Figure 3** visualises the distribution of the participants' enrolled status, with 63% in associates degree or higher diploma undertakings

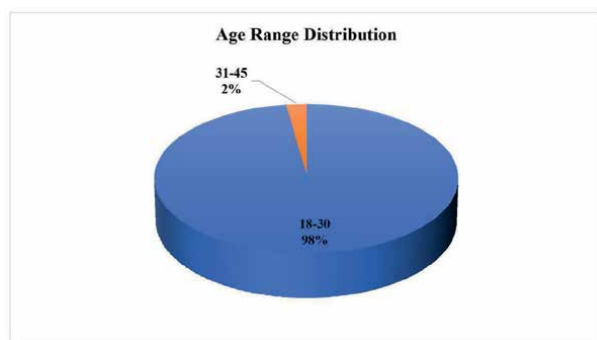


Figure 2.
Participant age range distribution.

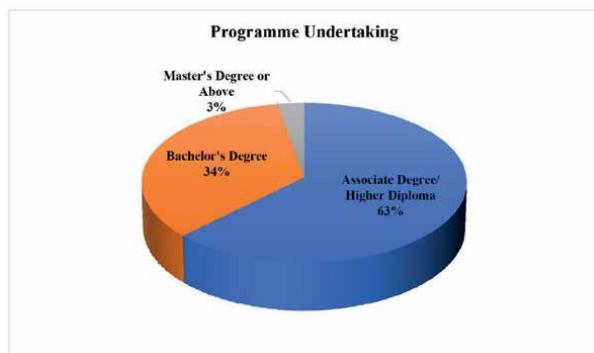


Figure 3.
Current programme undertaking.

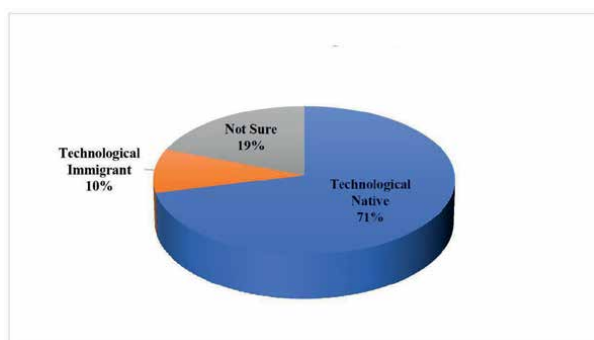


Figure 4.
Personal technological status.

and 34% pursuing a bachelor's degree. Through a Pearson's correlation analysis, a strong ($PC = 0.167$, $P = 0.00$), a positive correlation was observed between age and programme, suggesting that older participants were more likely to be pursuing higher level degrees. In fact, a crosstabular analysis revealed that 75% of the participants aged 31–45 were pursuing a Bachelor's degree or higher.

To classify the participants according to their technological acumen, **Figure 4** visualises their distribution between technological natives, immigrants, and unknown status. As predicted, there was a direct correlation between the participant age range and technological status ($PC = 0.243$, $P = 0.000$). A crosstabular analysis revealed that no participant over the age of 31 identified as a technological native and just 25% identified as a technological immigrant. The remainder were unsure about their classification. In contrast 72.8% of the participants aged 18–30 identified as a technological native which is appropriate for their Gen-Z and Millennial classification.

The subsequent prompts focused on student experiences in ESL learning, starting with contact hours, as visualise in **Figure 5**.

This model reveals that 92% of the participant sample received between 2 and 3 contact hours for English lessons each week ($M = 2.85$, $SD = 0.633$). Given the high degree of conformity, it can be generalised that most Hong Kong university students can expect between 2 and 3 hours of pedagogical contact each week.



Figure 5.
Contact hours for english lessons per week (#).

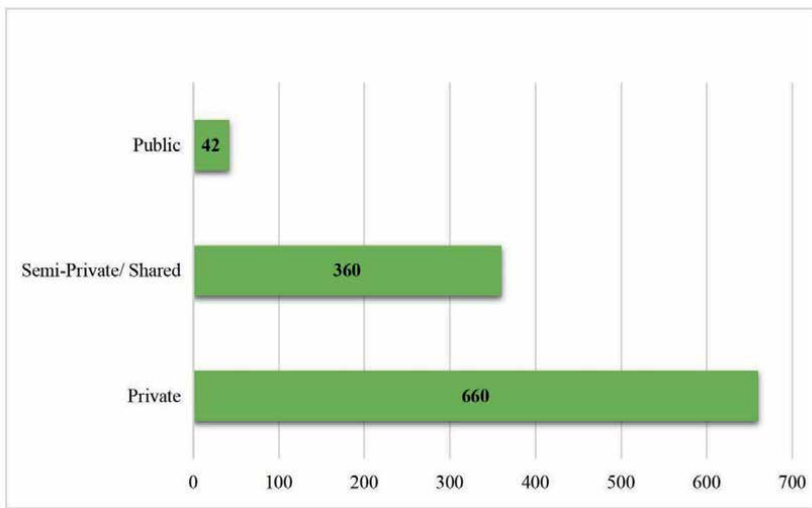


Figure 6.
Space occupied for online learning.

To achieve their learning objectives, **Figure 6** highlights the spatial resources adopted by these participants with 62.1% indicating that they maintained a private space whilst 33.8% utilised a semi-private or shared space. This bias was expected as it reflects the use of a personal room or private office within a participant’s household that can be dedicated to digital learning when needed.

Classifying these spaces according to their specific characteristics, **Figure 7** confirms that 62% of the students utilise their bedrooms, whilst 13% use sitting rooms and 11% use the dining room. Participants who had identified using public spaces were

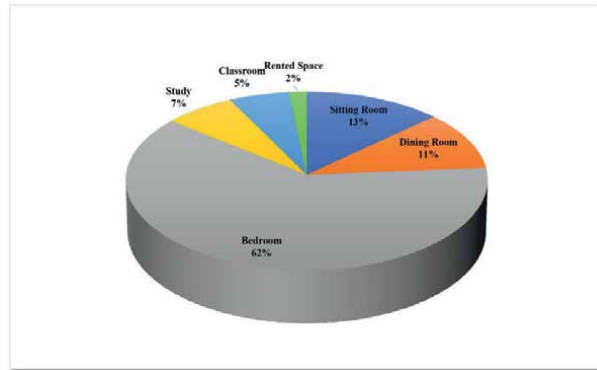


Figure 7.
Type of space used for online learning.

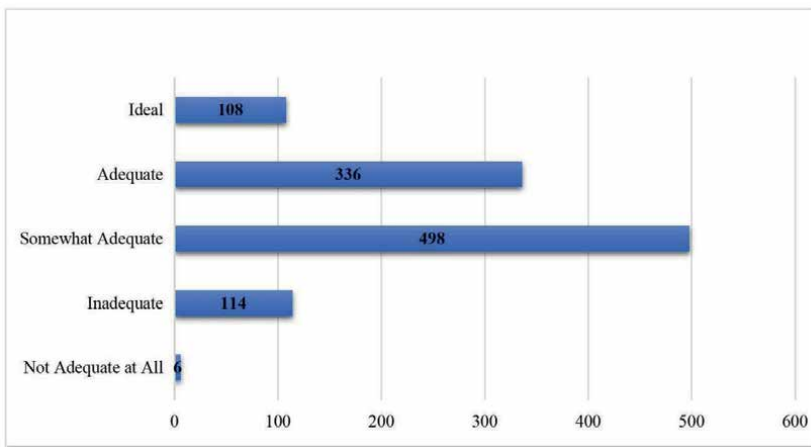


Figure 8.
Perceived adequacy of learning space.

most likely to indicate a classroom or study area whilst other spaces such as sitting and dining rooms were equally distributed across public and private classifications.

Despite the majority of the participants indicating that they retain a private space, as visualised in **Figure 8**, just 41.8% of the respondents indicated that their learning space was ideal or adequate. There was a negative correlation between the type of space (public or private) and the perceived adequacy of the learning space ($PC = -0.116$, $P = 0.000$). Despite predicting that public spaces would be perceived as inadequate, the six participants who reported that their space was not adequate at all indicated that they learn in private spaces. Further, 57.8% of those identified that their space is inadequate to study in private spaces. Overall, however, just 26.7% of the respondents who study in semi-private spaces and 57.1% of those who study in public affirmed their spaces as ideal or adequate. Of the 48.5% of the respondents who had changed spaces during the past learning period, 90.7% indicated that they had moved more than twice, indicating that they were forced to move due to various causes or they valued mobility.

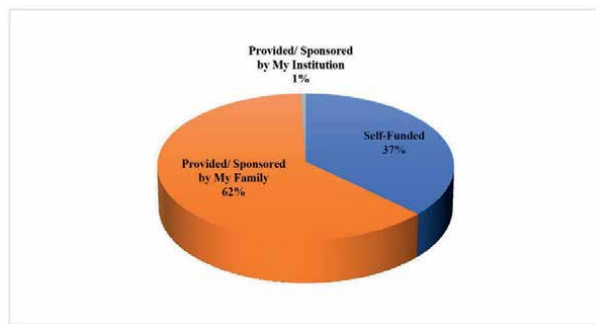


Figure 9.
Source of funding for equipment.

A review of the existing equipment reported by these students for online learning revealed that more than 60% used some form of mobile computing device such as an iPad or laptop whilst the remaining students utilised a dedicated workspace in the form of a desktop computer. 61% of the sample did not need to acquire any additional equipment to participate in online learning. For the other 39% that did invest in new equipment, the responses indicated one of three primary resources including an iPad or tablet, a webcam, and/or a pair of headphones (with mic). As visualised in **Figure 9**, most of the participants who invested in new equipment (62%) were funded or sponsored by their families, whilst 37% were self-funded. Institutional sponsorships were entirely absent, supporting just six participants out of the total sample.

The participants were asked about the quality of training and support provided by their institution (**Figure 10**). A total of 34% of the 900 participants who answered this question felt that such support was good or exemplary, whilst just 8% felt that it was poor or not very effective. There was a strong statistical correlation ($PC = 0.237$, $P = 0.000$) between the experience of a problem (38.9% of the sample reported a problem) and the perception of university support/training. Problematically, the participants who had experienced problems were more likely

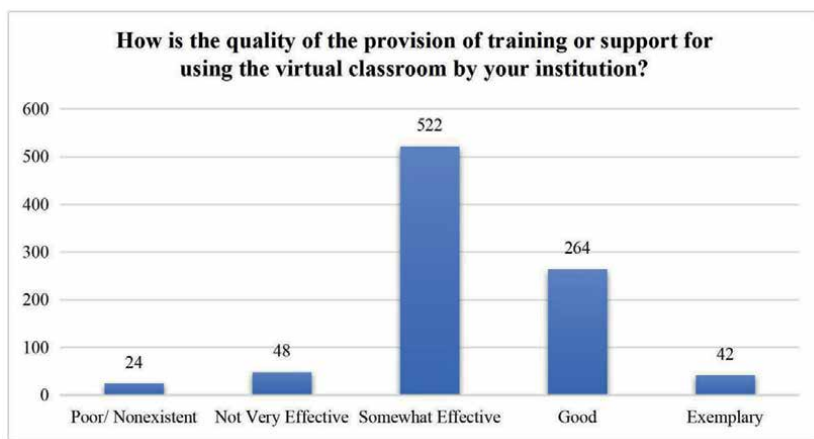


Figure 10.
Quality of training or support for virtual classroom by institution.

to report the support and training as poor or not very effective than those who had not experienced a problem. When assessing the range of problems experienced by the students, the core themes included network problems, delays in communication or responses, and camera/Zoom issues. From a more experiential perspective, many participants indicated that they missed the traditional interactions with their instructors and students during digital learning.

4.1.2 Perceptions of digital learning in ESL

Although it was predicted that there would likely be a high degree of the experiential effect associated with the online learning experience for these ESL students, **Figure 11** highlights the high level of congruity between the pre and post-online learning perceptions. The mean response for pre-COVID-19 attitudes towards online ESL was 3.31 (SD = 0.836), whilst after the courses migrated online, the mean attitude was 3.27 (SD = 0.916), a slightly lower perception.

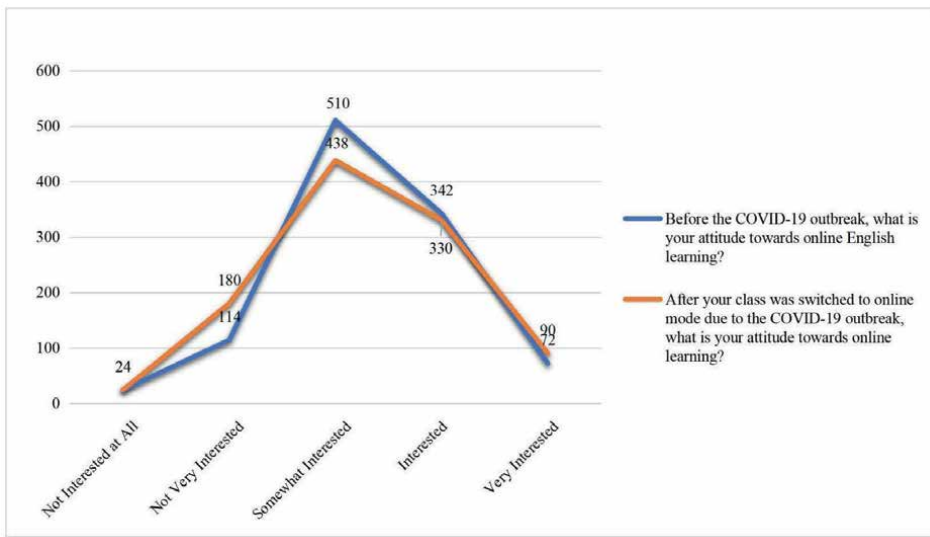


Figure 11. Student attitudes towards online learning before/after COVID-19.

Factor	Gender		Programme		# Classmates		Technological Native	
	F	P	F	P	F	P	F	P
Before the COVID-19 outbreak, what is your attitude towards online English learning?	6.880	.009	10.913	.000	5.497	.000	4.742	.009
After your class was switched to online mode due to the COVID-19 outbreak, what is your attitude towards the effectiveness of assessment in online learning environment?	23.900	.000	13.385	.000	18.797	.000	9.178	.000

Figure 12. One-way ANOVA test of statistical significance attitude.

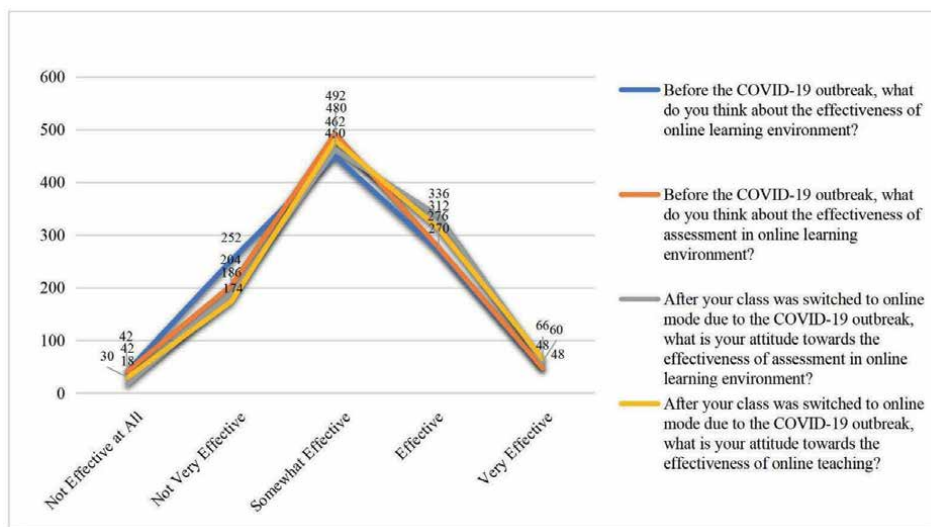


Figure 13. Perceptions of effectiveness of online learning before/after COVID-19.

The one-way ANOVA test results revealed that there were several statistically significant relationships between four of the independent variables and these two dependent prompts (see **Figure 12**). In terms of gender, the evidence indicated that prior to the COVID-19 pandemic around 16.5% of female participants and 9.8% of male participants were not at all or not very interested in online learning. Following the shift to online learning, 20.7% of male participants and around 17.6% of female participants were not at all or not very interested in online learning. Although small, this shift continued in relation to programme of enrolment, whereby higher level (e.g. Bachelor’s, Master’s) learners were more likely to be interested in online learning before COVID-19, but less likely to remain interested after their online experiences. The relationship with the number of classmates was statistically indistinguishable via crosstabular analysis with one shift in perceptions cancelling out the others. However, where individuals who identified as technological natives were most likely to be interested in online learning prior to COVID-19, a larger number of ‘not sure’ participants migrated towards a positive orientation, likely gaining confidence from their experiences.

Figure 13 presents the results of four prompts related to the perceived effectiveness of online learning before and after COVID-19. Similar to the responses to the prompts in **Figure 11**, there was a high level of congruity between the two periods of response with the mean effectiveness of the online learning environment before COVID-19 identified as 3.03 (SD = 0.911) and the assessment of the effectiveness of online teaching after COVID-19 was 3.20 (SD = 0.884) after COVID-19. From an assessment perspective, the mean effectiveness before COVID-19 was 3.08 (SD = 0.886) and after COVID-19 it increased to 3.22 (SD = 0.859).

The ANOVA test (**Figure 14**) revealed a similar range of statistically significant relationships between four core independent variables and these targeted prompts. Prior to COVID-19, 33.2% of the male participants and 23.5% of the female participants felt that online learning was not effective. However, after COVID-19, 22.8% of the male participants and just 15.3% of the female participants felt that the online

Factor	Gender		Programme		# Classmates		Technological Native	
	F	P	F	P	F	P	F	P
After your class was switched to online mode due to the COVID-19 outbreak, what is your attitude towards the effectiveness of assessment in online learning environment?	23.900	.000	22.711	.000	46.416	.000	9.178	.000
After your class was switched to online mode due to the COVID-19 outbreak, what is your attitude toward the effectiveness of online teaching?	9.065	.003	35.510	.000	34.934	.000	7.381	.001

Figure 14.
One way ANOVA test of statistical significance effectiveness.

assessment programmes were not effective. Prior to COVID-19, 20.7% of the male participants and 25.9% of the female participants felt that online teaching would not be effective. After COVID-19, whilst the male participants stayed relatively the same with 21.4%, just 15.3% of the female participants felt that the teaching was not effective, a substantial improvement over predictions. From a programme perspective, Master’s degree and to a lesser degree, Bachelor’s candidates did not find online assessments or teaching to be as effective as those in lower-level programmes. There was an experiential shift in these findings, where the optimism for both higher-level graduate degree programmes was erased and effectiveness was not perceived at these higher levels. Whereas statistical significance in relation to classmates could not be explicitly defined, when assessed via crosstabular comparison, technological natives were most likely to find online teaching and assessment effective, whilst immigrants were the least likely, suggesting an experiential advantage for technological natives.

The study involved data collection from 1062 student respondents; a relevant sample size in representing the whole Hong Kong student population. About 98% of the respondents belong to the ages ranging from 18 to 30 years. While the figure might illustrate the overall age distribution of Hong Kong-based students, it might also slightly reveal different age groups’ perceptions. The same conclusion can be observed from the respondents’ programmes with 97% undertaking degree or lower programmes and just 3% undertaking masters or a higher level. The figures are effective in projecting future perceptions as a significant number of respondents will likely undertake higher programmes after the pandemic.

Contemporary technology adoption was viewed as a minor challenge with just 10% claiming to be technological immigrants during the pandemic. 71% were confident of their technological experience while the rest 19% that claimed to be uncertain of their technological status could gradually settle on either side from experience. The study revealed an average of 2–3 contact hours of online learning compared to an average of 4–5 during face-time learning. While the slight time difference can be rendered insignificant since some students experienced on average the same kind of contact hours in previous face-time learning, most of the respondents claimed to miss the social experience of a classroom setup. The perception proves students’ reluctance to adopt online learning as a solo education delivery system but rather in conjunction with face-time learning. For most Hong Kong students, learning space was less of a challenge during online learning with about just 14% utilising public spaces. However, the 86% that enjoyed privacy privilege lacked social interactions essential in the former face-time setup. Consecutively, only 41.8% were confident of their learning spaces’ adequacy with the majority utilising

public places followed by private and semi-private in that order. In search of ideal learning spaces, over 48% had shifted spaces with more than 90% of those having moved more than twice. After the pandemic, public online learning places are seemingly ideal to support the education mode in the long term. The migration is also proof of students' keenness towards the adoption of digital pedagogy in the education system.

A total of 61% of the respondents already owned the necessary equipment to facilitate online learning prior to face-time learning suspension. Of the remaining 39%, the students and their families facilitated the purchase of required equipment with little assistance from the institutions. From the figures, students have proven to orient themselves into digital citizens, a factor necessary for online learning implementation. Despite institutions withholding support in the purchase of equipment, most students agreed that they were handling their part in delivery effectively. The ANOVA test proved a considerable shift in the perceived effectiveness of online learning from the pre-COVID to post-COVID era. The shift might be caused by the forced face-time learning suspension or the result of online experiences so far. Nonetheless, the shift can be utilised as a basis for online learning persistence after the re-adoption of face time ESL learning.

5. Conclusion

While a number of students were interested in online learning prior to COVID-19, the study showed notable interest from more students after the pandemic. Most of the interested students are in the generation z and millennial groups which provides support for the use of online learning to back face-time learning in the future beyond the pandemic. The students noted capability in technological status towards online learning with the system just lacking a social touch. Thus, online learning will persist in being an essential tool for ESL education delivery in Hong Kong during and after the pandemic. Institutions and students are unlikely to give up technological advancements and contemporary tools adopted through the online learning platform also due

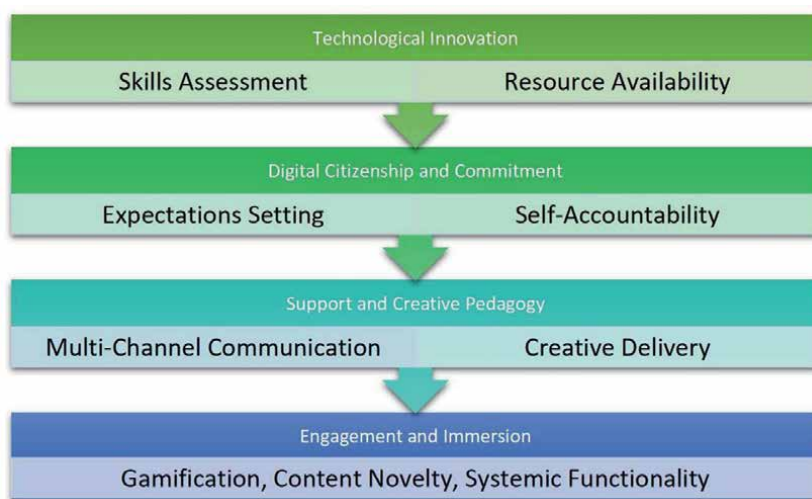


Figure 15. Digital learning protocol for Hong Kong EFL in higher education (Created for Study).

to improved perception of the mode's effectiveness. Currently, the primary supporters of online learning pursue a degree and associate degree programmes which is a basis for future preference of the mode by students undertaking higher programmes. The study supports the adoption of online learning and digital pedagogy to associate face-time learning in the long term as the standard mode of education delivery.

The study has a few limitations. First, the data was collected from Hong Kong universities and colleges students and is thus limited to an economic and technologically advanced setup. Second, the results were limited to students' perceptions which leaves a gap for other stakeholders like teachers and institution administrations. Also, the effectiveness of the learning system cannot be properly assessed as the ultimate outcome will be observed during career executions in the future. Thus, the author recommends research persistence on the topic from other stakeholders' perspectives and developing countries' setup (**Figure 15**).


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Section 4

Innovations in the Age
of COVID

Chapter 19

Education Innovations during COVID-19 Pandemic: “A Case of Zimbabwe and South Africa Universities”

Decent Mutanho

Abstract

The study investigated educational innovations in universities in South Africa and Zimbabwe respectively using a desktop research design. Only peer reviewed journal articles were considered to solicit data on educational innovations and challenges that these institutions faced and examination management online. Thirty-five articles were originally obtained and were reduced to nineteen after filtering them to relevant themes linked to the topic under consideration. The results showed that most of the universities were not utilizing digital tools available to them, and the usage only accelerated during the COVID-19 pandemic. Internet infrastructure, user capability, data bundle cost, erratic power supply, personal electronic devices and home space were among the challenges that hindered smooth running of online teaching. Examinations were difficult to manage under the uncertain conditions. Universities have a lot of work to do to ensure that migration from face-to-face teaching to online platforms sufficiently, effectively, and efficiently take place.

Keywords: educational innovations, COVID-19 pandemic, universities, technological advancements, e-learning challenges

1. Introduction

COVID-19 pandemic had shaken the world in unprecedented way and most traditional model across industries has been seismically challenged. Demarcated by technological infrastructure, economic performance, soft skills development, and agile leadership in responding to these changes was obviously different, with the rest of national governments declaring global disaster, rendering the world standstill. The world pondered what have hit it, strived to build resilient solution to protect business and life of its society. Education was dramatically affected; face to face learning was rendered impossible. Establishing e-learning platforms was not an easy switch because of financial constraints, hardware and software infrastructure and capabilities of users (both students and lecturers). This book chapter seeks to investigate the challenges that institute of higher learning responded to these challenges in

South Africa and Zimbabwe respectively. The study took desktop research from the publication ranging from year 2020 to October 2022.

2. Background of the study

Ninety nine percent of the global students were disrupted and most of the educational institutions of higher learning closed specifically in lower-middle income nations [1, 2]. Interestingly, Africa Higher institutions of learning struggled to adapt to the new normal because of infrastructural, computing equipment deficiency as well as lack of technological resources [3]. Access to technology, innovative capacity and organizational strategy to knowledge translation is posited as major areas to focus on future studies [3]. This study is motivated to gain more focus on educational sustainable innovations implemented during the COVID-19 pandemic. COVID-19 brought the world to a standstill and threatened human life, forcing government to implement stay at home strategy [3, 4]. Businesses, schools, and Higher education institutions were closed while national governments crafted sustainable solutions to contain the disease. Organizations grappled to innovate and implement strategies that promote work from home strategy to minimize face to face contact, and universities were not spared either.

3. Problem statement

COVID-19 has challenged many organizations' agility in responding to national disasters. Institutions of higher were forced to close and educational assessments were challenged and the authenticity of graduands during this period was highly questioned [4–6]. Many innovations were implemented including use of social media, Televisions, zoom., Microsoft teams, google teams to disseminate information that could of more importance to knowledge sharing between the instructor and student. However, the cost of internet, internet devices and the ability to use this technology were major obstacles to use e-learning for universities [4, 5, 7]. Given such interesting insights, the current study seeks to investigate the technological innovations that universities implemented during the Corona virus pandemic period. The Digital divide, internet infrastructure, data band width, user capacity, and computer devices are posited as some of the challenges universities faced during the COVID-19 era [8–10]. Additionally, the study focused on challenges that hindered e-learning operations. Desktop literature review was implemented to solicit data in the context of Zimbabwe and South Africa universities respectively.

4. Research questions

Research question 1: What are the educational innovations that were implemented during COVID-19 pandemic by South African and Zimbabwean Universities?

Research question 2: What are the challenges encountered by both the students and lectures in effectively carrying out e-learning sessions?

4.1 Sub question

How were the examinations monitored during this COVID-19 pandemic?

To answer these questions a systematic literature review was conducted in the context of the two geographical locations.

5. Literature review

5.1 Educational innovations

Globally universities implemented numerous digital innovations to migrate from face-to-face to online teaching [11]. Technologies that were commonly utilized were these among others: Moodle, Blackboard, Zoom, Google Classroom, Google Meet, Skype, Google Forms, Calendars, G-drive, Google Hangouts, Google Jam Boards, Drawings, YouTube Live, WhatsApp, Instagram, Twitter, Facebook Live and WebEx [12, 13].

One of the universities in Zimbabwe reiterated that google classroom was most common used virtual platform; however, it was abandoned because of service overload and interruption which led to WhatsApp as an alternative learning platform [4]. The author also revealed that Zoom gained prominence regardless of high costs associated with conducting lectures on the virtual platform. In South Africa students who are categorized as rural contingent used email and university websites as a medium of communication during the pandemic and implementation of virtual classroom became very impossible [5]. Despite the challenges of network disruptions some of the institution in rural set up implemented WhatsApp, blackboard and YouTube to conduct lectures [5]. Similarly, Moodle platforms, social media (WhatsApp, Facebook, YouTube) and zoom were asserted as potential innovations that universities could possibly implemented during the pandemic regardless of digital divide criticality [9]. Use of webinars, video conferencing and WhatsApp platforms were innovative measures taken by one of the South African universities to deliver psychometric lectures [10].

Challenges of face to face lessons were totally disrupted because of the lockdown measures announced by the government for students to vacate the university premises except for the foreign students who could not travel during the pandemic period [14]. In South Africa, universities introduced zero based data facility to help both the lecturers and students to use online resources [14]. The author also revealed that educational innovations such as the virtual and augmented reality, flipped classrooms, social media-based platforms (Facebook), teleconferencing (Skype, Zoom, GoToMeeting and WebEx) were common educational innovation implemented during the pandemic. Despite the fact that many universities in Africa have Moodle as e-learning management systems, the inadequacy of the platforms to students needs were the song of the day [15].

In the Zimbabwean context, pre-COVID utilization of learning management systems such as SAKAI, Blackboard and Moodle was at a slow rate compared during the pandemic where e-learning utilization gained traction [16]. The same authors claimed that universities resorted to digital technologies such as electronic mail (e-mail), WhatsApp, telephone, video-conferencing techniques to communicate and conduct learning sessions. WhatsApp integration into pedagogical tool was found to be useful and convenient for both the lecturers and students in Zimbabwe higher institution of learning [17, 18]. WhatsApp was familiar for social connection tool where users share societal issues rather formal business information. The costs associated with WhatsApp usage (data bundle) was the major reason universities used it for teaching

and learning purposes [19]. Despite slight differences in technological innovations used in South Africa and Zimbabwean universities respectively, the study continued with probing the challenges that led to selected technological choices.

5.2 E-learning challenges faced by South African and Zimbabwean universities

In Zimbabwe most of challenges that universities faced to conduct e-learning were poor ICT infrastructure, incapacitated users, lack of top management support to implement digital technologies, unstable and unreliable data bandwidth [11]. Similarly, In south Africa, university rural students were faced with erratic internet connectivity, short supply of electronic devices, Lack of internet accessibility infrastructure, user computer skills and expensive data bundles [8]. Echoing the same sentiments, digital skills, internet speed, cost of internet data and non-availability of appropriate hardware were found to be major challenges failed to implement google class e-learning in Zimbabwe [20]. Demographic factor of gender favored male lecturers compared to female counterparts, in terms of ability to teach online which attributable to years of experience in the teaching field [11]. Students pointed out that home was never conducive for e-learning because of lack of space in addition to non-possession of electronic gadgets such laptops, iPad etc. [4, 21]. Using the Capability approach, in investigating disabled students during COVID-19, certain challenges were revealed. The challenges include lack of social interactions and low levels of concentration [22]. Furthermore, students with physical impairment in South Africa higher institution of learning faced accessibility of software and internet infrastructure at home [23]. Therefore, University grappled to find quick solutions that ensure total inclusiveness of students' categories across faculties in terms of setting up e-learning remotely. Human being social animals meeting online was made difficult for numerous reasons; lack of skills operating the online resources, undesirable home facilities and space as well as poor ICT infrastructure in homes [24]. Load shedding was also implicated in online teaching failure [25]. Overhauling these challenges, it is interesting how universities managed examination to access students' application of knowledge before graduating them. The ensuing paragraphs focus on that perspective.

5.3 Examination management during COVID-19 pandemic

In primary and secondary educational levels examinations was prioritized to examination classes where COVID 19 health protocols must be followed to minimize the spread of the disease [26]. In the case of universities, open book case studies were conducted online with limited time frames of between 4 hours to six hours of exams specifically in South Africa [27]. The author went on to reveal that there was no difference in performance when students wrote examinations under tight control conditions and coursework marks that were considered in the year 2020. Time allocation, student cheating, Internet connectivity and ICT department support were challenges in conducting and managing exams online [25]. The possibility of students writing exams in a group and submitting same scripts were more often common and aggravated with poor internet connectivity and time allocations [25]. Online examination authenticity proved flawed and suggestions such as the use of biometrics and remote proctoring software in the form of an Invigilator App to monitor and maintain integrity of the online examination is strategical future remedy [25]. ICT infrastructure

and poor connectivity also posed challenges to both the lectures and student during online examinations [28]. In addition, students demonstrated changed examination structure that was composed of difficult questioning regardless of open book nature [28]. Application of concepts and theory was highly demanded, and past exams papers could not match the new demands. In Zimbabwe online examination were not successful because of the following reasons; non-availability of data (students and lecturers), poor internet connectivity, lack of ICT support and lack of personal electronic gadget [29].

6. Methodology

Desktop research was undertaken to obtain data for the study. It also referred to as secondary research. When using desktop research, the collection and analysis of data originates from existing data sets, reports, and documents, usually compiled by other persons or organizations. Peer review journals from Science direct, Scopus and google scholar were used to carry out the research study. The search was done using search keywords like ‘covid-19 innovations, “Educational innovations” and “university innovations”. The study targeted all South African and Zimbabwean universities both public and private owned respectively. For ethical reasons, particularly related to the protection the identity of the universities under study, pseudo names were used wherein universities were referred to as University A, B, C and so on. Data sources from social media was totally ignored. Thirty-five articles were originally obtained and were reduced to nineteen after filtering them to relevant themes linked to the topic under consideration. The journal articles were written by international, South African, and Zimbabwean authors focused on educational innovation, Challenges and opportunities posed by digital or online teaching and management of online examination during the COVID-19 pandemic.

7. Discussion of the findings

7.1 Research question 1: what are the educational innovations that were implemented during COVID-19 pandemic by South African and Zimbabwean universities?

Considering all technological advancement proliferation across the globe there was common effort to use them, but issues of ICT infrastructure was the point of difference. For example, University A in south Africa suggested that use of 4th industrial revolution technologies such augmented reality, virtual reality, and robotics in managing virtual classes or online classes [14]. However, erratic electricity and poor ICT infrastructure disrupted the potential of operating artificial intelligence based technologies in higher institution of learning in South Africa [25]. The common innovations in South Africa universities innovations were zoom, Microsoft teams, emails, blackboard, Moodle, and other Web based learning Management systems and to a lesser extent WhatsApp [5, 10, 13]. In Zimbabwe innovations that were implemented are these among others; google class, zoom, email, universities websites, and WhatsApp platforms [9, 18, 19]. The innovations available in both countries were the same however the implementation was determined by cost of

data, ICT infrastructure, availability of electronic gadgets and many other factors. It is evident from the literature that innovations in developing countries are still lagging compared to their developed counterparts. This will lead us to the next research question.

7.2 Research question 2: what are the challenges encountered by both the students and lectures in effectively carrying out e-learning sessions?

The challenges faced by both South African and Zimbabwean universities in successfully implementing the online lectures were similar. Poor network bandwidth [11, 23], personal electronic gadgets [4, 21], loadshedding [25] and user capability [8], lack of internet infrastructure [8], restricted home space [21, 22, 24] and cost of data bundles [8, 20] were the most common challenges coined in the reviewed publications. These challenges exacerbated the digital divide gap between the rich and poor [8] and problems of power generation in Southern Africa interrupted online lectures and rendered great challenges in disseminating information between students and lecturers [25]. Universities were caught unprepared with the pandemic and accelerated use of digital tools for pedagogical purposes. However, students and some of the lecturers were not accustomed on how to use the technological innovations. Additionally, the internet infrastructure, software and hardware were drastic challenges to operate online learning sufficiently and efficiently.

7.3 Sub question- how were the examinations monitored during this COVID-19 pandemic?

Running examinations, the traditional way became very difficult as universities totally closed for a longer period. Universities were forced to innovate and run open book exams online where application of epileptological and cognitive difficulties challenged students to finish the exams on allocated time [25]. Issues with examination cheating and sharing of answer sheet using technologies such Bluetooth and mobile devices took tall. Despite efforts by South African universities to run online examinations, literature showed that they were difficult to manage from perspective of student cheating, lack of technological skills by students to upload their answer sheets and lack of support from ICT department [25]. In Zimbabwe, online examination online was at larger extent a failure because of data cost and connectivity [29]. Generally, managing and running examinations online caused a lot of challenges and provided learning curves for most the universities. Perhaps this may raise many questions on the pass rate of students on exams to consolidate their final course mark.

8. Recommendations

The results revealed that universities in South Africa and Zimbabwe have online technologies that should be useful in disastrous period. The implementation of these technologies during normal times was partially done. This has contributed to user capabilities problems, exacerbated by infrastructure challenges both in software and hardware at institutional level and domestically at residential homes. Obviously running online lectures and examination became a big challenge. Looking at these scenario universities are encouraged to set up technological infrastructure that can promote easy migration from face to face to virtual lessons. Universities must make

use of available digital tools and enhance training to students to familiarize with online learning tools. Advanced proctoring apps, biometrics and robotics may successfully be implemented in managing virtual interactions, teaching, and manning examinations.

9. Further area of research


The current study undertook desktop research using peer reviewed journal articles eradicating other publication sources such as university websites, social media, and magazines. Future studies could use these data sources. Empirical research using interpretive and positivism epistemology and ontology may bring interesting results to compare the two geographical areas. Another futile area of study is carried out a survey on actions universities are taking post COVID-19 era.

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Work Engagement of the Academic Community in Developing an Inclusive Campus

Muchamad Irvan and Muhammad Nurrohman Jauhari

Abstract

In the last decade, higher education has moved to implement inclusive education to strive for equal access for people with disabilities. However, equality of accessibility is not only in the aspect of infrastructure, but also includes the academic and non-academic climate on campus. If examined more comprehensively, many problems are still not resolved. Various factors are responsible for this, one of which is the involvement of community work in the campus environment. This study aims to describe the role of lecturer involvement in managing quality and equity learning. This research raises a project of implementing inclusive education in various universities in Indonesia. The method used is a mixed method by utilizing a combination of UWES and HEdPERF instruments. Researchers involved 100 lecturer respondents who were involved in learning with students with disabilities. This research has proven the phenomenon of lecturer performance in the perspective of inclusive education. Lecturers with no special educational background have a significant gap. The results of this research can also be a contribution to better policies and procedures.

Keywords: work engagement, inclusive education, higher education, disability, academic community

1. Introduction

Inclusive education is an education delivery system that provides opportunities for all students with disabilities to participate in education and learning in an educational environment together with students in general [1]. Inclusive education is an approach that pays attention to how to transform the education system so that it can respond to the diversity of students, allowing teachers and students to feel comfortable with this diversity [2], and sees it more as a challenge and enrichment in the learning environment than seeing it as a problem [3, 4].

The Indonesian government has regulated the education system described in the National Education System Law. These articles regulate full guarantees for all persons with disabilities to obtain quality educational opportunities and services. Therefore, the government issued some implementing regulations through government regulations in Permenristekdikti number 46 of 2017 concerning Special Education and Special Services in Higher Education. Through this regulation, the government hopes

there will be more opportunities for individuals with disabilities to pursue higher education. This regulation is also intended so that students with disabilities can obtain educational services that suit their needs so that they can study and achieve optimal academic achievement [5].

Students with disabilities are those who have disabilities, barriers, or difficulties in carrying out certain activities, so they need special tools, environmental modifications, or alternative techniques to be able to participate effectively in attending higher education [6]. All study programs at universities must be open to the presence of students with disabilities [7]. Determining the requirements for prospective students should focus more on the academic abilities of prospective students, not because of aspects of their disabilities [8]. Opportunities to study at universities for students with disabilities need to be provided as broadly as possible so that in the future they can fully participate in various social aspects of society [9]. Universities need to provide services for students with disabilities to be able to participate in the educational process at universities easily, comfortably, and safely [10].

The involvement of the academic community has an important role in providing an environment that allows students with disabilities to access academic and non-academic services [11]. This aims to ensure that students with disabilities can study easily and complete their studies on time [12]. Efforts to realize an inclusive university require cooperation from all parties, including leaders, lecturers, administrative staff, student organizations, and students with disabilities [13]. In the learning process, universities must provide accessibility to make it easier for students to access their various learning needs [14]. The academic community must pay attention to assessment, lesson planning, class management, learning materials and media development, implementation of accessible learning, and evaluation of relevant learning. The university also launched a disability service unit, which is part of an institution or institution that functions as a provider of services and facilities for students with disabilities [15].

In recent years, various universities in Indonesia have opened up to students with disabilities. This progress is a positive achievement for education in Indonesia. However, the achievement of the main topic of implementing inclusive education in tertiary institutions is a fundamental question. This relates to the complexity of learning and services available at the higher education level. Awareness of the academic community is an important key to being able to provide learning equity for students with disabilities [16]. Therefore, this study aims to examine the involvement of the academic community in providing quality learning at universities.

2. Method

This study uses a mixed-method design. Quantitative research instruments are used to collect data on the involvement of the academic community in realizing quality learning at universities. Quantitative data use the UWES (Utrecht Work Engagement Scale) measurement instrument [17, 18]. Furthermore, qualitative data use a descriptive questionnaire. This questionnaire was adapted from the HEdPERF Scale, which is used to measure the quality of higher education services [19]. The scale components cover six aspects including academic, non-academic, reputation, access, program issues, and understanding aspects. However, at this stage, it is only limited to the academic aspect, which examines the management of learning. Furthermore, the academic aspects are broken down into five main components, namely Assessment



Figure 1.
 Role of research.

Category	n = 100
Gender	
Male	43
Female	57
Age	
25–35	32
36–45	45
>46	23
Work duration	
<5 Years	38
>5 Years	62
Bacground	
SE	64
NSE	36
Department	
Educational	71
Non-educational	29

Table 1.
 Respondent demographic.

(AS), Learning Planning (LP), Material Development (CD), Accessible Learning (LA), and Evaluation (EV) (**Figure 1**).

Respondents in this study were teaching staff, totaling 100 respondents spread across eight universities in Indonesia (see **Table 1**). Respondents involved are parties who have authority in managing learning activities for students with disabilities. The next stage is to conduct interviews with respondents to confirm descriptively their involvement in creating quality learning. The results of the quantitative and qualitative data are interpreted to be able to produce recommendations.

3. Result

The UWES instrument consists of 17 questions that must be filled out by respondents with a score of 1–6. The score that respondents can achieve with this instrument is 0 for the lowest level and 102 for the highest level. The instrument was distributed to 100 respondents in the Bahasa Indonesia format, which can be downloaded directly

through the website <https://www.wilmarschaufeli.nl/>. This instrument with the Bahasa Indonesia format has met the validity and reliability criteria based on the Rasch analysis [18]. The results of quantitative data collection are described with descriptive statistics in **Table 2**.

Instrument data scores from two groups of lecturers were tested using the Mann-Whitney formula, which showed that the SE category had a score of $U = 180.5, p = .005$. This result shows a significant difference between the two groups with a score lower than $\alpha (0.05)$. Even though the two groups had the same highest score (60), the lowest score had a very significant difference. Thus, the mean of the two groups shows a difference. In general, this condition can be assumed that the work engagement between the two is at a different level. The distribution of scores in the NSE group is in principle lower. However, this score still does not explicitly describe the quality of their work with performance loads related to the management of inclusive learning. Other additional performance load factors may influence the level of scores achieved with the UWES instrument. Therefore, there is a need for further confirmation of each filling in the question item. This confirmation is quantitative to increase the flexibility of the response they provide. Furthermore, this confirmation also aims to describe the efforts they have made so far. The qualitative instrument indicators refer to the HEdPERF service quality instrument, which has been narrowed down only to academic aspects. This effort was made to limit the expansion of data provided by respondents. In simple terms, the efforts they have made to manage quality and inclusive learning are described in **Table 3**.

The collection of qualitative data on respondents includes five main components of higher education services that support quality learning for students with disabilities. The data include lecturer involvement in managing quality learning (see **Table 3**). Assessment is an important initial stage to determine the characteristics of students. At the assessment stage, lecturers take an important role to determine the characteristics and needs of their learning. Based on the data, the average NSE in compiling this document is relatively high (77.7%) compared with SE having a percentage (35.9%). NSE lecturers generally do not have competence for assessment, so they involve volunteers to obtain specific information about the needs of students with disabilities. While the SE lecturer made an initial identification in the disability category. They argued that most of their students were visually and hearing impaired, so they did not need a more specific assessment.

	N	Range	Min	Max	Mean	Std. Deviation	Variance	Kurtosis	Std. Error
SE	64	12	48	60	52.83	3.195	10.208	-.308	.590
NSE	36	20	40	60	49.58	6.272	39.336	-1.129	.768

Table 2.
Quantitative data.

Background/Aspect	AS	LP	CD	LA	EV
SE (n = 64)	23 (35.9%)	38 (59.3%)	15 (23.4%)	64 (100%)	64 (100%)
NSE (n = 36)	28 (77.7%)	14 (38%)	14 (38%)	36 (100%)	20 (55.5%)

Table 3.
Confirmation data.

The second component is learning planning with a universal design. This approach requires lecturers to prepare learning program plans by integrating learning designs for students with disabilities in the same document. In this component, 59.3% of SEs have integrated curriculum modifications that are universal in the document. The others stated that they did not know the specific concept of Universal Design. However, they revealed that in general they have attempted to determine the limits of learning outcomes that must be mastered by students with disabilities. Thirty-eight percent of NSEs have received training internally on adjusting learning outcomes and displaying them in planning documents.

The third component is the development of material content, which must be in accordance with the conditions of students with disabilities. This section shows the low involvement of lecturers in the development of accessible learning content. This is evidenced by the percentage of SE 23.4% and NSE 38%. Based on the results of SE confirmation, most stated that they gave freedom to students to independently explore various sources of material. In accessing the availability of textbooks for people with visual impairments, SE relies more on the role of volunteers to access the material.

The high percentage of learning activities (all categories 100%) in general does not mean that their learning activities are equity. This statement is proven in the confirmation they gave. Generally, SE already knows the need for assistive technology that must be available. This was conveyed by them at the beginning of the lecture and ensured that the collaborating volunteers understood this. However, NSE statements are relatively dependent on volunteer performance. This condition is considered a problem if their students do not have volunteer companions.

At the learning stage, class teachers and subject teachers showed very good engagement data (X 86%, Y 89.6%). Not so with GPK, who stated that the implementation of learning that was carried out was not accessible (GPK involvement was 13%). This is burdened by classroom management provisions that are not supported by non-physical accessibility such as books for blind students or learning methods that are identical to teacher centers. In other conditions, GPK finds it difficult to control environmental situations that are friendly to students with autism or ADHD. This is generally caused by applying of the regular class model, which is considered less relevant to their conditions.

Whereas in the evaluation component, Equity emphasizes aspects of the assessment that are relevant to the learning outcomes that have been planned and modified beforehand. NSE shows a figure of 55.5%, which states that the assessment has been based on adjustments to learning outcomes. While others stated that they provide equalization. Most of them do equalization because it is a form of appreciation or mercy. However, this is not proven in SE, which has determined a standardization of assessment based on the criteria of each student with disabilities without any reason for mercy.

4. Discussion

4.1 Assessment

Based on expert statements, generally known that the procedures that need to be carried out by practitioners before providing interventions for persons with disabilities are identification and assessment [20]. Identification is the process of searching for an identity or category of disability by finding symptoms and characteristics.

The process is known as the screening process to be able to justify whether individuals are included in the disability category or not. This information is used as capital in the next process, namely assessment. The assessment aims to obtain more specific information about their characteristics. To carry out assessment activities, each expert utilizes instruments or tools to obtain valid information about the child's condition [21]. This procedure applies to any intervention or learning program that will be provided to persons with disabilities. In the context of learning services in higher education, assessment places more emphasis on identifying and analyzing the needs of students with disabilities. This procedure includes aspects of the potential, competence, and characteristics of students with disabilities within the framework of determining educational programs [22].

In particular, the assessment is also intended to find out the strengths and learning barriers of students with disabilities. For the assessment to obtain optimal and accountable results, it is necessary to involve relevant experts in its implementation, such as doctors, psychologists, pedagogues, and other specific professions. In the context of learning and special services, the results of the assessment can be used to determine the initial abilities (baseline) of students with disabilities before receiving educational services [23]. Based on the data obtained, it shows that the implementation of the assessment has not yet been carried out in every institution that involves students with disabilities in lectures. There are still many of the lecturers involved who do not know the specific procedures they have to do before learning takes place. Some of the assumptions found in the results of data confirmation and analysis are (1) Lack of comprehensive socialization at universities providing inclusive education, which has an impact on the low knowledge of lecturers; (2) Unavailability of centralized service systems and units under the auspices of the university in managing special services; and (3) Availability of experts who are still unable to cover the need for special service procedures. Theoretically, the quality of assessment has a close relationship with the quality of learning [24]. Conditions in the field have proven that there are not only NSE lecturers but also many SEs who have not carried out mandatory procedures. These findings trigger the emergence of the next hypothesis, namely about service provision based on student perspectives.

4.2 Learning plan

Learning is a process that is carried out in an orderly and orderly manner and runs logically and systematically following pre-agreed rules. Learning planning is the elaboration, enrichment, and development of the curriculum. In making lesson plans, lecturers must consider the situation and conditions as well as the potential of students with disabilities [25]. This of course will have implications for the model or content of lesson plans developed by each lecturer, adapted to the real conditions faced by each university. Planning as a learning program has several meanings that have the same meaning, namely a process of managing, organizing, and formulating learning elements, which include determining objectives, material or content, learning methods, and formulating learning evaluations [26]. Learning objectives are the formulation of qualifications that must be achieved by students after carrying out the learning process. Formulation of the qualifications of abilities that students must have after participating in the learning in that learning with a change of behavior. The types of behavior changes in the outline cover the cognitive, affective, and psychomotor fields. In learning planning, the lecturer makes a Semester Learning Plan (RPS),

which is a learning planning document that is structured as a guide for students in carrying out lecture activities for one semester to achieve predetermined learning outcomes [27].

The development of learning plans in inclusive education settings must be universal. This can be interpreted that the learning that will be carried out must be accessible for all students, including students with disabilities. Based on the results of this analysis, it proves that most of the teaching staff who are involved with students with disabilities still do not understand the concept of UDL (Universal Design for Learning). This concept has long been developed as a relevant curriculum model for learning that includes persons with disabilities [28]. In general, UDL displays modifications to the curriculum components developed by teaching staff [29]. This modification aims to describe the competency achievements set for students with disabilities. A literature study has elaborated on the suitability of UDL implementation in inclusive schools, which has a positive impact on the quality of learning [30].

4.3 Content development

Materials are learning components that play an essential role, in directing students with disabilities to achieve the set learning goals or objectives. Learning materials contain certain aspects that are expected to be able to guide students with disabilities to get good results. Learning material is very important as a means used in the teaching and learning process to achieve goals and shape the competence of students with disabilities. However, this research reveals the low performance of lecturers in providing accessible learning content. Respondents stated that they fundamentally ensured that students with disabilities involved (those with visual and hearing impairments) had companion volunteers to help gain access to the available materials. Practically, lecturers (SE and NSE) still do not provide a lot of diversity of sources and learning media in various formats.

The success of learning as a whole is very dependent on the success of the lecturer in designing learning materials. Learning materials occupy a very important position in the entire curriculum, which must be prepared so that the implementation of learning can achieve the target [29]. While learning media are tools used in the learning process to convey messages, ideas, or ideas in the form of teaching materials managed by lecturers for students with disabilities. The message can be in the form of information that is easily absorbed by the recipient but can also be in the form of information that is abstract or difficult to understand [31]. When the message conveyed cannot be received by the recipient, the media becomes a solution that can convey the message. The function of learning media can help facilitate learning for students with disabilities to provide a more real experience (abstract becomes concrete), can attract the attention and interest in learning of students with disabilities, and can evoke an equating between theory and reality [32]. It is a fundamental requirement that the format of learning resources and media must be available for various characteristics of disabilities. Text and voice-based formats can help students with visual impairments access content with the help of screen reader applications. Furthermore, text-based formats and visual images can help students with hearing impairments learn the material. Of course, these formats can be combined into one model of friendly learning resources and media for other categories.

4.4 Learning accessibility

Implementation of learning is sought to encourage students with disabilities to be active and explorative in achieving their competencies, which include attitudes, knowledge, and skills. These three competencies have different acquisition trajectories (psychological processes), namely attitudes, knowledge, and skills [33]. Attitude is obtained through the activity of “accepting, implementing, appreciating, living, and practicing.” Knowledge is obtained through the activities of “remembering, understanding, applying, analyzing, evaluating, creating.” Meanwhile, skills are acquired through the activities of “observing, asking, trying, reasoning, presenting, and creating” [34]. Competency characteristics along with differences in acquisition trajectories also influence the standard process characteristics. To strengthen scientific approaches (*scientific*), integrated thematic (inter-subject thematic) and thematic (within a subject) as well as apply discovery-based learning or research (*discover learning*). To encourage the ability to solve problems using a scientific approach, it is necessary to apply *problem-based learning*. Meanwhile, to encourage the ability to produce contextual work, both individually and in groups, it is highly recommended to use a learning approach that produces problem-based work (*project-based learning*) [35].

The diversity of learning approaches that can be implemented in lecture classes has implications for optimizing the quality of learning itself. However, the limited abilities of students with disabilities certainly bring a certain level of difficulty to learning. Therefore, adjustments need to be made, which include modifications, substitutions, or omissions to the learning design [36]. This adjustment approach encourages more equity learning for students with disabilities. However, this concept is not fully implemented in universities. The results of the previous analysis provide evidence that lecturers have not fully made adjustments to the learning model. Most lecturers emphasize the involvement of volunteers be able to help students with disabilities in passing the “impossible” learning stage.

In principle, the problems encountered in the implementation of learning can be minimized. Generally, students who experience the most problems in the learning process in classical classes are those who have hearing or visual impairments. These two categories of disabilities make it difficult for them to obtain conventional information. The use of assistive technology can help them minimize this condition, such as screen readers, live transcribers, and augmented reality [37]. Supposedly, lecturers have understood the importance of this effort and ensure that their students are available with the tools.

4.5 Evaluation

Evaluation refers to a process to determine the value of a learning activity. Evaluation means determining to what extent an activity is valuable, quality, or valuable [38]. Evaluation is carried out in the context of overall education quality control as a form of accountability for education providers. The main purpose of evaluating learning is to obtain accurate information about the level of attainment of instructional goals by students so that follow-up can be pursued [39]. Therefore, the evaluation also does not only measure student success. However, through student achievements, the evaluation also aims to determine the quality of learning through the suitability of the chosen approach or method.

Evaluation implementation must eliminate bias and ensure that it can be carried out comprehensively, not just to test the level of success. In the context of inclusive education, evaluation of course also has specific standards to comply with these provisions. Of course, this provision must uphold the principle of equity so that the attainment of instructional objectives is more precise and measurable. In the previous section, we discussed adjustments at the learning planning stage by emphasizing the substitution, modification, or omission approach. The approach is also recommended to be applied at the evaluation stage. For example, practice-based learning with learning outcomes of the ability to analyze objects. This type of learning prioritizes observational abilities, which are impossible for students with visual impairments to do. So it is necessary to make adjustments to the form of evaluation that is more relevant to their abilities, for example, emphasizing students' abilities in elaborating the characterization of the object being studied.

It was a surprising phenomenon when the data confirmed that there was an element of "pity" in the assessment process. This is very clearly contrary to the principle of evaluation. Even though it was proven by NSE lecturers, this fact is proof that lecturers do not fully uphold the principle of objectivity in the evaluation process. Equity in learning is not about compassion, but about efforts to support accessibility and justice to achieve the expected goals.

5. Conclusion

Learning should eliminate various elements of bias that have the potential to eliminate equality. The principle of equity emphasizes the aspect of equal access for all students. The evidence found in the field can be concluded that lecturers' understanding of inclusive learning is still relatively low. Although several aspects show a fairly good percentage, in terms of implementation, there are still many who ignore proper procedures. The assumption is that their work involvement is still not optimal and has not shown a proactive role. Of course, this is an important prerequisite that needs to be maximized so that higher education can be truly inclusive. As a form of recommendation from the results of this study, it is necessary to determine standard procedures that must be carried out by every tertiary institution that is committed to inclusive education. Increased understanding also needs to be done for each element responsible for service quality, not just teaching staff who are involved in the academic field.

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Appendices and nomenclature

SE	Special education background of lecturer or teaching staff
NSE	Non-special education background of lecturer or teaching staff

AS	Assesment (analyzing process to find student's charateristics)
LP	Learning Plan (plan document for learning)
CD	Conten development (material, learning media, and learning resource development)
LA	Learning accesibility (accesibility of activity ini learning context)
EV	Evaluation (learning evaluation process)
HEdPERF	Higher education performance (performance scale for higher education)
UWES	Utrecht work engagement scale

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Social Media in Higher Education Research and Practical Insights

Tihana Babić

Abstract

Social media enable students to learn in a way that is adapted to them; they started a virtual life on social media when they were growing up and do not know a world where computers, mobile phones, and social media do not exist. However, as numerous research showed before the COVID-19 pandemic, it is not them who are hesitating, but teachers and higher education institutions. The results of research conducted in 2019 and presented in this chapter showed that a positive impact on the teachers' use of social media for higher education purposes could have higher education institutions through the implementation of education for both teachers and students on the use of social media. The results of research conducted in 2021 showed that teachers consider easier and faster access to information, when and where it is needed, as the most important characteristic of social media usage for higher education purposes during the COVID-19 pandemic. Even before the COVID-19 pandemic and especially since, social media's impact on society has caused changes that necessitate a shift in the educational worldview from one that is rooted in the past to one that is forward-looking and progressive.

Keywords: social media, higher education, college teachers, students, COVID-19 pandemic

1. Introduction

Social media enable the creation and sharing of information, ideas, and interests through virtual communities and networks whose purpose is to turn communication into an interactive dialog. The students studying today are members of the generation that started a virtual life on social media when they were growing up and do not know a world where computers, mobile phones, and social media do not exist. Before the unexpected COVID-19 pandemic, numerous studies indicated a digital gap between students and their educational institutions, in the sense that students are willing to use them, and faculty employees are not, as well as that they are more inclined to think about disadvantages instead of advantages.

In this chapter, some lessons that the crisis caused by the COVID-19 pandemic has taught us, types of social media, and the possible purposes of using social media for the needs of higher education will be presented.

In the research part, two studies will be presented, before and after the Covid pandemic, on a sample of higher education teachers. The first research will show the

significance of the constructs that influence teachers' use of social media in the higher education process and the advantages and disadvantages of social media according to teachers' opinions. The second research will present factors that facilitated the use of social media for the purposes of higher education while performing mandatory online classes during the COVID-19 pandemic, characteristics of social media that have affected the reduction of teachers' stress during mandatory online classes during the COVID-19 pandemic as well as characteristics of social media that have affected the increase in teaching stress during mandatory online classes during the COVID-19 pandemic.

2. What can the crisis caused by the COVID-19 pandemic teach about teaching?

The year 2020 brought new challenges to all of humanity, the global economy, but also the entire education, which no one could even imagine just a few months ago. Higher education institutions faced a significant challenge as the SARS-CoV-2 coronavirus, also known as COVID-19, spread throughout the world: how to continue teaching if in-person lectures are forbidden per the directives of the government and the civil protection headquarters? Many colleges found themselves facing a test of their ability to function since they were unprepared for this task, particularly in the beginning, following the ominous prediction of Drucker in 1997 [1]: "Thirty years from now, the big university campuses will be relics. Universities won't survive." Drucker also claimed that video distribution may lower expenses and eliminate the need for school structures while expressing concern about the rising cost of education. "Already we are beginning to deliver more lectures and classes off campus via satellite or two-way video at a fraction of the cost. The college won't survive as a residential institution. Today's buildings are hopelessly unsuited and totally unneeded."

Of course, other higher education institutions were somewhat more prepared and started, immediately or shortly after closing, with online classes as a short-term solution. Teachers, as leaders of online classes, should have made additional efforts to familiarize themselves (in more detail) with technology and use the new digital tools through which a particular higher education institution conducted classes (screen sharing, presentations, chat, polls, even holding online exams, etc.), mostly with the help of technical support.

Numerous research are still ongoing, concerning satisfaction with online teaching, and judging by the current experience, teachers, and students who participated in this type of "forced" and "unprepared" or more precisely unexpected online teaching, believing that this online teaching was the best a possible solution at a given time and in given circumstances, but many agree that it cannot replace the face-to-face teaching experience. Very often, the results of studies on distance learning versus face-to-face learning, which have been carried out since the 2000s, have shown that (i) students prefer face-to-face classes, but also that students want to actively engage in their learning [2].

Extraordinary preventive measures due to the threat of infection with the SARS-CoV-2 coronavirus, in addition to fear and uncertainty, significantly changed the lives of individuals and the community, which then additionally caused stress and a threat to the mental health of the individual and the entire community [3, 4], and are numerous experts tried to communicate recommendations on how to preserve mental health and how to "manage" our experience of risk and fear. One of the most

important recommendations was “it is important to connect with each other and provide support and help while respecting all the recommendations of health and other competent institutions, especially social distancing. Modern technology can help us in this, that is, social media, e-mail, mobile phone, etc., which enable us to communicate with our loved ones, respecting the recommendations of experts about reduced direct contacts and social distance” [3, 4]. As a result, adaptation to the recently developed scenario was defined by the employment of (digital) interactive technologies, most frequently social media, through which a seemingly hopeless situation was changed into a surmountable one. These digital tools enabled at least the partial functioning of life as we knew it before and the continuation of studies instead of the complete cessation of “life,” reducing not only the fear of the threat and the resulting uncertainty but also the social separation and distancing of people, which also negatively affect the psychological health of people. However, for example, the research “How we are - life in Croatia in the age of corona” showed that online teaching was a source of great stress [5], there were many challenges, and apart from working from home, where clear boundaries between business and private life most of them are related to everything mentioned so far in this doctoral thesis. Accordingly, the fundamental question is whether the stress caused by online teaching and the use of new digital tools would have been much milder if adaptation to the digital environment had started earlier, that is, if we had become more familiar with these digital tools before the extraordinary circumstances and before it became a kind of necessity and compulsion? [3].

3. Social media tools

Social media platforms make it possible to create and share content across virtual communities and networks with the goal of transforming communication into interactive discourse. There are 13 subtypes, including blogs, microblogs, social networking tools for business and networking, collaborative projects, forums, photo-sharing tools for business, product and service evaluations, research networks, social games, and virtual worlds [6]. They can be accessed from many devices and locations around the clock, 7 days a week. They are therefore solely dependent on the availability of the internet and the users’ will. They have an impact on politics, the economy, science, and the educational system. There are many divisions of social media, and new subtypes are possible every day. The following typology, used according to Aichner and Jacob in 2015 [6], defines the scope and applicability or use of the proposed models. **Table 1** lists the types of social media with associated descriptions.

As a result of the emerging globalizing environment, various social, economic, cultural, and demographic changes require a long-term reflection on the position of education and science in society, especially because the capital of human knowledge in modern societies means an advantage over financial capital. Changes in that globalized world, thanks to the development of new technologies, are fast and difficult to predict, and education can play its role in the triangle of knowledge; lifelong learning, science, and innovation, to be fulfilled more permanently if the results of research and innovation have an adequate impact on educational processes. Consequently, educational environments must be improved by encouraging creative thinking and innovative action [7], and social media cannot be overlooked or neglected in this process. The following will explain the possible purpose of using social media for higher education.

Types of social media	Description
Blogs	An online diary, blog, vlog, or web blog is a chronological list of posts on the web that visitors can read and comment on, arranged so that the latest news/articles are at the top of the page. They are managed by individuals or companies, they can be personal, business, or thematic, in the form of a magazine.
Sharing photos	Web services for sharing photos provide their users with services, such as uploading, server services (hosting), sharing and managing photos: online editing, organization into albums, users can view them, comment on them, and the like.
Video sharing	Websites or software that allow their users to share, watch and search for videos. Some services offer private video-sharing options, as well as services for public posting of video content. Although they may charge for their services, they are generally available for free. They may have defined restrictions on the size of the record, duration, topic, or format, especially in connection with the publication of inappropriate content or restricting the access of minor users. Companies often use them for advertising (and thus to reduce costs which are much lower compared to TV advertising).
Social games	Networked social gaming enables or requires social interaction between players, as opposed to, for example, independent online gaming. They often involve multiple players, such as card games, board games (in which pieces or pieces are placed, moved, or removed on a predefined and marked surface according to a set of rules), role-playing games, alternate reality games, mass video games, and the like.
Social bookmarking	Online services enable organizing, saving links, and tagging on a centralized platform to share it with friends and other users to make the content more accessible and searchable, although some pages have the option of privately storing bookmarks. Social bookmarking websites are a valuable indicator of the popularity of websites and other web content.
Social networks	A type of internet service that serves to network/connect their users, get to know each other, share common interests, and participate in joint or similar activities. Users have their own individual profiles, which can be found by other users if they use their full (real) first and last name, and can upload and publish/share their thoughts, ideas, photos, and videos. They can also be used by companies to inform or provide support to existing or new users of their services and products.
Social networks of companies	Company social networks are open to employees of a specific company or group. Given that they have common business interests and/or activities, networking increases the efficiency of knowledge management within the company. They offer similar features as social networks, for example, personal profiles, profile photos, etc. They help to get to know each other and share experiences and ideas. Social software is used mainly in the context of a “company/enterprise” as a business or commercial tool, for example, an intranet, for organizing communication, collaboration, and other aspects of its business, but also for external social networking to increase the “visibility” of its companies.
Forums	An online forum that allows its users to exchange opinions and experiences via a web browser. It is easy to use because it resembles a message board, and participants can read and post messages on it (not in real-time, such as during chat). It is most often organized thematically for easier navigation. In a discussion on a certain topic, users can participate by posting anonymous messages (“post”), without revealing their real identity, but which are visible to all users until/if they are deleted by the moderator/administrator of the forum.

Types of social media	Description
Microblogs	Network microblog, a shorter blog that differs from classic blogs in that it contains only short messages of up to 200 characters, photos, videos, and other records, the length of messages on twitter is tentatively taken as a criterion (the limit is 140 characters). Users can subscribe (become “followers”) to news/ announcements from other users, celebrities, companies, brands, and the like. They represent a combination of blogs and social networks.
Business networks	A complex network of companies that retain their autonomy but join together and act jointly to achieve certain strategic and operational business goals, and to increase competitiveness and innovation. They often include cooperation agreements to make it easier for companies operating in different countries/ regions to achieve common goals in the international market. The synergy of a business network is more than the sum of individual companies. It includes suppliers, distributors, customers, developers, and others to support the information and operational requirements of the business.
Overview of products and services	Websites that allow you to view products and/or services, provide information about them, and sell them. Users have the option of rating and commenting on products and services or their specific characteristics and attributes, such as quality, and can write or read existing reviews of them. This type of website is usually professionally designed, so often because of specialized marketing, the reviews are not objective. Likewise, there is a possibility that negative reviews may be written by competitors, disgruntled employees, or third parties with a negative and/or non-objective orientation.
Collaborative projects	Social media apps with two subcategories; research and development projects, which bring together users with a common interest or knowledge to plan, develop, research, and test technological, academic, scientific, or entertainment projects. They enable joint and simultaneous creation of, for example, programs, codes, discoveries, games, and achievement of results. They are usually distributed as open source and made available to the public free of charge.
Virtual worlds	Computer-supported social environments are designed and shared by users to interactively participate in a simulated and user-created world. They can create a personal avatar and simultaneously participate in the exploration of the virtual world, but also in communication and activities with other users, thus exploring human nature and user capabilities. Unlike video games, in virtual worlds, time continues even when the user is not present or logged in. Virtual currencies that have real values are often used. Their purpose is often entertainment, but they also have social, educational, and many other purposes.

Table 1.
Description of social media [3, 6].

4. The purpose of using social media in higher education

For educational environments to be improved by encouraging creative thinking and innovative action, state education strategies often foresee measures for the development and expansion of e-learning, the introduction of expert teaching systems and other modern teaching methods based on information and communication technology, the dynamic development and application of which radically change the paradigms of learning and education, with impacts and consequences that are difficult to predict on future ways of acquiring, transferring and applying knowledge, skills, values, and attitudes [7].

On the trail of such measures, the range of social media enables a wide range of possible purposeful ways of use, and in addition, they are constantly increasing and generating new possibilities of use. Some possible purposes are listed in the following **Table 2**.

The purpose of using social media in higher education	Areas of application
General information	<ul style="list-style-type: none"> • General informing. • To update upcoming and past events. • Monitoring of events in real-time. • Sharing presentations on special events. • Sharing of information related to studies.
Organization	<ul style="list-style-type: none"> • Organization of meetings. • Event organization. • Personal organization (both students and staff). • Class schedule.
Marketing	<ul style="list-style-type: none"> • Attraction of new students. • Promotion of higher education. • Promotion of quality and excellence.
Teaching	<ul style="list-style-type: none"> • Presentation of course content. • Informing students about courses. • Explaining to students about teaching literature. • Notifying students about exams.
Research work	<ul style="list-style-type: none"> • Research. • Finding sources and references. • Publishing magazines. • Libraries' purposes: publishing, visibility, metrics. • Publication of professional or scientific papers (both with students or with fellow teachers). • Conducting conferences or as part of presentations.
Project work	<ul style="list-style-type: none"> • Facilitating project work. • Encouraging work on projects. • Conducting workshops.
Student support	<ul style="list-style-type: none"> • Offering assistance to students outside their studies. • Counseling on the personal development of students. • Workshops on financial aid and scholarships. • Assistance with student retention. • Improving student satisfaction.
Help in learning	<ul style="list-style-type: none"> • Encouraging active learning. • Respect for different talents and ways of learning. • Workshops on easier learning. • Workshops on mental mapping. • Improving knowledge and skills in areas, such as science, technology, literacy, environment, humanities, STEAM, and other teaching areas and topics. • Inspiring writing and creativity. • Aggregation of applications on social media.
Community building	<ul style="list-style-type: none"> • Heightening student focus. • Encouraging connections between students and higher education institutions. • Improving communication between higher education institutions and students.

The purpose of using social media in higher education	Areas of application
	<ul style="list-style-type: none"> • Enabling feedback in all directions. • Building and strengthening the campus community. • Establishing and upholding individual learning settings, etc. • Giving online students more of a sense of community.
Creating connections with the wider community	<ul style="list-style-type: none"> • Supporting an event, team, and community support. • Encouraging students to participate in the activities of the wider community. • Recognition of the accomplishments and successes of the students. • Highlighting the successes of the teacher
Maintaining connections with alumni	<ul style="list-style-type: none"> • Maintaining connections with alumni. • Connecting enrolled students with alumni.
Professional orientation	<ul style="list-style-type: none"> • Informing students about practice. • Sharing of materials for professional development.

Table 2.
Purposes of using social media in higher education [3].

The globe has become smaller because of social media, according to Raut and Patil in 2016 [8]; people have access to more knowledge, information, and opportunities to apply it. With their aid, it is now feasible to process material that would have been too difficult for humans to understand just 20 years ago, and in addition to speeding up our education and training, talents are also identified more quickly [8]. They have also increased our ability to absorb information.

Social media use in higher education is subject to both pro and con arguments.

5. General implications of the use of social media in higher education

The main educational implication of social media is the seemingly changing nature of the relationship between students and information and knowledge. The epistemological tenets of formal education and tailored instruction are fundamentally different from the modes of knowledge generation and consumption that social media promote [9]. These changes are embodied in Thomas and Seely Brown’s [10] description of a technology-enhanced “new culture of learning”—that is, learning based on the principles of collective inquiry, play, and innovation rather than individualized instruction. The generation of today’s students has organically grown up with social media. Additionally, they have little knowledge of a world without computers, smartphones, or social media. A technology that has been widely embraced by students is social media, which has the potential to be a useful tool for boosting communication in the classroom and student cooperation with professors [11].

However, several studies show that there is a digital divide between students and their educational institutions; students are willing to use them, and faculty employees are not [12].

To investigate in practice whether this is the case, that is, what affects teachers’ use of social media, a survey was conducted in 2019.

6. The teachers' attitudes about the use of social media in higher education

The research conducted in the Republic of Croatia, in the institutions Algebra University College and University of Applied Sciences Baltazar Zaprëšić in the year 2019, on the convenient sample of 73 teachers in scientific-teaching and associate positions as shown in the until now partially published research [3, 13].

It was necessary to investigate teachers' perception of social media and whether and to what extent teachers use social media for higher education. The subject of this research was social media and whether teachers use it for higher education. The goal was to examine how teachers evaluate the role and importance of social media as a communication channel for the needs of higher education.

The study aims to ascertain whether teachers use social media for higher education and demographic factors like age, gender, and the scientific field of the teacher's primary teaching and/or associated profession affect their use of social media for higher education, as well as teachers' attitudes, social influence, and anxiety when using social media.

The specially constructed survey questionnaire was designed according to the adapted UTAUT model [14]. The use of technology, in general, can be influenced by numerous factors; therefore, in 2003, Venkatesh et al., based on a review of eight models of earlier theories and by consolidating constructs, created and empirically validated the unified theory of acceptance and use of technology (UTAUT). According to the UTAUT model [13], behavioral intention (intention to use in the next 12–24 months) and (actual) behavior, that is, technology use, are distinguished. It is assumed that behavioral intention is significantly influenced by:

- expected work performance (a person's degree of belief that the use of technology will help his work performance),
- expected effort (a person's degree of belief about the ease of using technology),
- social influence (the degree of a person's perception that important people believe that he should use new technologies).

While behavioral intention and facilitating conditions (a person's degree of belief that there is an organizational and technological infrastructure that supports the use of technology) significantly contribute to the actual use of the system.

The structure of the sample according to age was as follows: 0% of teachers were younger than 20 years of age, 8.2% were 21–30 years of age, and the same proportion of teachers was 61 years of age or older. The largest share is teachers aged 31–40, 39.7% of them, and teachers aged 41–50, whose share was 30.1%. 13.7% of teachers were in the age group 51–60.

The total ratio of participating teachers by gender was 56.2% of the male population and only 43.8% of the female population. The male gender was slightly more represented among teachers.

The results of this research showed that gender, age, and the scientific field of the teacher's profession do not significantly affect the actual use of social media by teachers, but there are statistically significant relationships between individual teachers' attitudes toward the use of social media, social influence, variations in anxiety during of social media use [13], expected work performance and teachers'

intention to use social media for higher education purposes on the frequency of teacher use of social media, as summarized in **Table 3**.

It is significant to notice that the results of this research showed that demographic characteristics of teachers such as age, gender, and the scientific field of the teacher's profession do not affect the frequency of teachers' use of social media for higher

Dependent variable	Independent variables	Explanation
Social media usage for higher education purposes	Gender	The connection is not statistically significant.
	Age	The connection is not statistically significant.
	Academic field	The connection is not statistically significant.
	Attitude toward using SNS for higher education purposes	<p>The connection is not statistically significant:</p> <ul style="list-style-type: none"> • Teachers should use social media more actively to teach students. • Higher education institutions should adopt a policy of using social media for study purposes. <p>The connection is statistically significant:</p> <ul style="list-style-type: none"> • Higher education institutions should educate teachers about the use of social media. • Higher education institutions should educate students about the use of social media.
Social influence		<p>The connection is not statistically significant:</p> <ul style="list-style-type: none"> • College teachers use social media for higher education purposes. • Friends and close acquaintances of teachers use social media for higher education purposes. <p>The connection is statistically significant:</p> <ul style="list-style-type: none"> • Students who feel that teachers should use social media for higher education purposes. • Faculty management supports the use of social media for higher education purposes.
		Computer anxiety when using social media for higher education purposes
The self-confidence of teachers when using social media for higher education purposes		<p>The connection is not statistically significant:</p> <ul style="list-style-type: none"> • I could complete a job using social media for higher education even if there was no one to tell me what to do during the execution. • I could complete work using social media for higher education if I had professional help available when I got stuck.

Dependent variable	Independent variables	Explanation
		<ul style="list-style-type: none"> • I could complete work using social media for higher education purposes if I had enough time available. • I could complete work using social media for higher education needs if I had a built-in help system.
	Organizational factors	<p>The connection is not statistically significant:</p> <ul style="list-style-type: none"> • The higher education institution where I work is open and flexible to new ideas. • I believe that Croatian higher education institutions should adopt a policy of using social media for the needs of higher education. • I believe that Croatian higher education institutions should educate teachers about the use of social media for the needs of higher education. • I believe that Croatian higher education institutions should educate students about the use of social media for the needs of higher education.
	Facilitating factors (conditions) of using social media for higher education purposes	<p>The connection is not statistically significant:</p> <ul style="list-style-type: none"> • I have the resources needed to use social media for higher education purposes (for example, internet access, computer/tablet/mobile device...). • I have the knowledge necessary to use social media for higher education. • The higher education institution where I work encourages the use of social media for higher education purposes. • Professional help is available to me for all questions concerning the use of social media for higher education purposes.
	Expected effort for using social media for higher education purposes	<p>The connection is not statistically significant:</p> <ul style="list-style-type: none"> • The use of social media is clear and understandable to me. • I am skilled in using social media. • I think social media are easy to use. • I easily communicate, collaborate through social media, share and search content, and use social media in other ways.
	Expected work effects of using social media for higher education purposes	<p>The connection is not statistically significant:</p> <ul style="list-style-type: none"> • Social media enable me to hold classes faster and easier. • Social media increases my effectiveness as a teacher. • The use of social media enables students to master the teaching material more easily and quickly. <p>The connection is statistically significant:</p> <ul style="list-style-type: none"> • The use of social media for study purposes enables students to achieve better results during their studies

Dependent variable	Independent variables	Explanation
	Intention to use social media for higher education purposes	<p>The connection is not statistically significant:</p> <ul style="list-style-type: none"> • I intend to use social media for higher education purposes in the next 12 months. <p>The connection is statistically significant:</p> <ul style="list-style-type: none"> • I intend to use social media for communication and cooperation with students. • I intend to use social media for educational and research purposes. • I intend to use social media for communication and cooperation with the higher education institution where I work

Table 3.
A summary of factors that (do not) influence the frequency of teachers' use of social media for higher education purposes; Pearson's chi-square test, N = 73 [3].

education, and this is also the case with individual attitudes toward use, social influences, and anxiety during use. However, it is not negligible that at the same time the frequency of teachers' use of social media for higher education would have a significant positive impact on higher education institutions through the implementation of education for both teachers and students on the use of social media, which could reduce their feeling that the use of social media is for higher education a little scary.

Likewise, regarding the frequency of teachers' use of social media for higher education, it is significant that students believe that teachers should use social media for higher education, as well as support the faculty administration regarding the use of social media for higher education.

Additionally, the research showed that there is no statistically significant relationship between teachers' self-confidence when using social media for higher education purposes, organizational factors, facilitating conditions for using social media for higher education purposes, and the expected ease (effort, effort) of using social media for higher education purposes. And the frequency of teachers' use of social media for higher education purposes. However, the results also showed that there is a statistically significant relationship between the expected work performance of using 'the use of social media for study purposes enables students to achieve better results during their studies and the teacher's intention to use social media for higher education in the next 12 months and the frequency of teacher use social media for the needs of higher education.

To gain an even deeper insight into teachers' attitudes about social media to the needs of higher education, teachers were asked to select which characteristics of social media teachers consider being advantageous. More than half of the teachers' survey point out easier and faster access to information, when and where it is needed, sharing ideas and experiences, photos and videos, flexibility in choosing technologies, quick feedback, and the possibility of creating digital content, as the main advantages of social media. While less than 20% of them pointed out reliability in continuous use over a longer period and the possibility of testing existing teaching models as advantages. The results are presented in percentages in **Table 4**.

Also, teachers were asked to select which characteristics of social media teachers consider disadvantaged. More than half of the interviewed teachers pointed out fewer

Characteristics of social media that teachers consider to be advantages:	
Easier and faster access to information, when and where it is needed	76.7%
Sharing ideas and experiences	64.4%
Sharing photos and videos	64.4%
Flexibility regarding the choice of technologies	57.5%
Fast feedback reactions	53.4%
The possibility of creating digital content	50.7%
Following current topics	49.3%
Marketing and recruitment of new students	47.9%
Expense reduction	45.2%
Strengthening ties with the wider local community, but also with people around the world/ international community	40.1%
Independence from a particular platform (e.g., computers, availability already with internet access and a browser)	39.7%
The possibility of integrating various web 2.0 technologies in learning and teaching activities	37.0%
Less time and effort needed to search for and manage information	37.0%
Optional access	35.6%
Maintaining existing contacts and connections	35.6%
Possibility of access control through user authentication	31.5%
Low level of complexity of use (minimum skills required)	31.5%
Focus on innovation in learning, not technology itself	31.5%
Acquisition of IT education	28.8%
The possibility of making new acquaintances	28.8%
Increasing the way of learning due to the variety of new technologies	27.4%
Strengthening self-confidence and motivation through interaction with other users	27.4%
Compatibility with fields of education	23.3%
Supporting existing or new businesses	23.3%
Reliability in continuous use over a long period	19.2%
Possibility of testing existing teaching models	15.1%
None of the above	2.7%

Table 4.

Characteristics of social media that teachers consider to be advantages, N = 73 [3].

characteristics as the main disadvantages than as advantages and that; neglecting direct communication (face-to-face), the possibility of false identities, and privacy issues (lack of privacy ...), while less than 10% pointed out that they are monetarily quantified (everything becomes “business” and “numbers”), they hide behind technologies and concepts that have not yet been sufficiently defined/researched, become a type of used web, that is, a medium for people with a low level of digital skills, time and knowledge spent on using it, the speed of the program is incomparably lower than the speed of desktop programs, the content means nothing to itself, it is only electronic “waste.” The results are presented in percentages in **Table 5.**

Characteristics of social media that teachers consider to be disadvantages:	
Neglecting direct communication (face-to-face)	58.9%
The possibility of false identities	57.5%
Privacy issues (lack of privacy...)	52.1%
Decrease in social skills	49.3%
They promote the offer of amateur content generated by users	39.7%
Stalking	38.4%
Electronic violence	34.2%
Information is offered in open sources with very unclear meaning and quality	34.2%
The possibility of developing an addiction	30.1%
They lead to low quality of the actual content	26%
They have limited security	26%
They give everyone a chance to complain, thus creating a community without rules	23.3%
They encourage negative behavior such as immorality and laziness	21.9%
Pedagogical expectations are reduced instead of the other way around	21.9%
Lack of systematic education on the use	20.5%
Scientific communication is becoming (too) informal	20.5%
Internet connection required (especially broadband connection)	16.4%
They negatively affect health (for example, diseases of the spine, and eyes...)	16.4%
They increase the gap between generations	16.4%
The extremely diverse offer of social media that can be used only makes it difficult to choose	11.0%
They are monetarily quantified (everything becomes “business” and “numbers”)	9.6%
They hide behind technologies and concepts that are not yet sufficiently defined/researched	9.6%
They are becoming a type of second-hand web, that is, a medium for people with a low level of digital skills	6.8%
Time and knowledge spent on the use	6.8%
The speed of the program is incomparably lower than the speed of desktop programs	5.5%
The content means nothing in itself, it’s just electronic “waste”	4.1%
None of the above	5.5%

Table 5.
Characteristics of social media that teachers consider to be disadvantages, N = 73 [3].

7. Post covid situation research results

The research was conducted in the Republic of Croatia, at the institution Algebra University College in the year 2021, on the convenient sample of 38 teachers in scientific-teaching and associate positions as it will be shown, not published by now.

After the forced and unexpected mandatory online classes during the COVID-19 pandemic, it was necessary to reinvestigate the perception of teachers about social networks and whether and to what extent teachers use social networks for higher

education. The goal was to examine how teachers evaluate the role and importance of social media as a communication channel for the needs of higher education during that period, and which circumstances they perceived as facilitating and which as aggravating.

Teachers were once again offered adapted constructs from the research conducted in 2019. The structure of the sample according to age was as follows: 0% of teachers were younger than 20 years of age, and 7.9% were 21–30 years of age, The largest share is teachers aged 31–40, 31.6% of them, teachers aged 41–50, whose share was 44.7%, teachers aged 51–60, whose share was 10.5%, and 5.3% teachers above 61 years of age. The total ratio of participating teachers by gender was 71.1% of the male population and only 28.9% of the female population. The male gender was more represented among teachers.

As the factor that teachers believe made it easier for them to use social media for higher education purposes during mandatory online classes during the COVID-19 pandemic, they singled out their self-confidence when using social media for higher education purposes, followed immediately by teacher training on the use of social media.

The questionnaire developed for the teachers was shared via a link to the online Google questionnaire form. The questionnaire contained questions related to demographic data (age, gender), statements about the existence of factors that facilitate the use of social media for higher education purposes during mandatory online classes during the COVID-19 pandemic, for which they could choose pre-offered answers of five degrees on a Likert scale of agreement, with one indicating that they do not agree at all, and five indicating that they agree, and finally, they could indicate which social media features they now consider advantages and which disadvantages.

The analysis was quantitative, and the results are presented descriptively below. From the results in **Table 6**, it can be noticed that the most significant factors that facilitated the use of social media for higher education while performing mandatory online classes during the COVID-19 pandemic, according to teachers were teachers' (own) self-confidence when using social media for higher education purposes, their training on the use of social media, fellow teachers who use social media for higher education purposes as well as the availability of professional (technical) support. It was of less importance to students' education on the use of social media, institution-level social media usage policy, students' expectations that teachers will use social media for higher education purposes (which happened by itself due to circumstances), or ease of use.

The teachers also singled out the characteristics of social media that have affected the reduction of stress during mandatory online classes during the Covid-19 pandemic, as shown in **Table 7**. They highlighted easier and faster access to information, when and where it is needed, as the most important characteristic of social media usage for higher education purposes during the COVID-19 pandemic, followed by sharing ideas and experiences, fast feedback reactions, and a low level of complexity of use. Under the given circumstances, stress reduction was least influenced by the characteristics of strengthening ties with the wider local community, and also with people around the world/international community, marketing and recruitment of new students, as well as the possibility of making new acquaintances.

During the Covid pandemic, it was most difficult for teachers to deal with the neglect of direct communication (face-to-face), while characteristics of social media that have the most affected the increase in teaching stress during mandatory online classes during the **COVID-19** pandemic were a decrease in social skills and

Factors that facilitated the use of social media for higher education while performing mandatory online classes during the COVID-19 pandemic	Arithmetic mean of factor rating (M)
Teachers' (own) self-confidence when using social media for higher education purposes	4.02
Teacher training on the use of social media	4
Fellow teachers who use social media for higher education purposes	3.91
Availability of professional (technical) support	3.86
Education of students on the use of social media	3.84
Organizational factors (institution-level social media usage policy)	3.81
Students' expectations that teachers will use social media for higher education purposes	3.71
Ease of use (easy to communicate and collaborate through social media)	3.76
The intention of use (use has become an obligation)	3.76
Expected work effects (increase the achievement of better student results)	3.65

Table 6.
Factors that facilitate the use of social media for higher education while performing mandatory online classes during the COVID-19 pandemic, N = 38.

privacy issues (lack of privacy ...). The speed of the program is incomparably lower than the speed of desktop programs, The content means nothing itself, it is just electronic “waste,” the possibility to increase the gap between generations or social media becoming a type of second-hand web, that is, a medium for people with a low level of digital skills increased their stress during classes held online during the Covid pandemic at least. More details are shown in **Table 8** that follows.

8. Conclusion

The results of research conducted in 2019 showed that demographic characteristics of teachers, such as age, gender, and the scientific field of the teacher's profession, do not affect the frequency of teachers' use of social media for higher education, and this is also the case with individual attitudes toward use, social influences, and anxiety during use. At the same time, a significant positive impact on the teachers' use of social media for higher education would have higher education institutions through the implementation of education for both teachers and students on the use of social media, which could reduce their feeling that the use of social media is for higher education a little scary. Also, teachers' social media usage is significant and students believe that teachers should use social media for higher education, as well as support the faculty administration regarding the use of social media for higher education.

The results of research conducted in 2021 showed that teachers consider easier and faster access to information, when and where it is needed, as the most important characteristic of social media usage for higher education purposes, followed by sharing ideas and experiences, fast feedback reactions and low level of complexity of use which has affected the reduction of their stress during mandatory online classes during the COVID-19 pandemic. Under the given circumstances, their stress

Characteristics of social media that have affected the reduction of teachers' stress during mandatory online classes during the COVID-19 pandemic	
Easier and faster access to information, when and where it is needed	60.5%
Sharing ideas and experiences	44.7%
Fast feedback reactions	44.7%
Low level of complexity of use (minimum skills required)	42.1%
Independence from a particular platform (e.g., computers, availability already with internet access and a browser)	39.5%
Flexibility regarding the choice of technologies	36.8%
Possibility of access control through user authentication	31.6%
The possibility of creating digital content	28.9%
Expense reduction	26.3%
Sharing photos and videos	23.7%
Following current topics	21.1%
Optional access	21.1%
Reliability in continuous use over a long period	21.1%
The possibility of integrating various web 2.0 technologies in learning and teaching activities	18.4%
Less time and effort needed to search for and manage information	18.4%
Compatibility with fields of education	18.4%
Focus on innovation in learning, not technology itself	18.4%
Acquisition of IT education	15.8%
Maintaining existing contacts and connections	15.8%
Strengthening self-confidence and motivation through interaction with other users	15.8%
Increasing the way of learning due to the variety of new technologies	13.2%
Possibility of testing existing teaching models	13.2%
Supporting existing or new businesses	10.5%
Strengthening ties with the wider local community, but also with people around the world/ international community	7.9%
Marketing and recruitment of new students	7.9%
None of the mentioned	7.9%
The possibility of making new acquaintances	5.3%

Table 7. *Characteristics of social media that have affected the reduction of teachers' stress during mandatory online classes during the COVID-19 pandemic, N = 38.*

reduction was least influenced by the characteristics of strengthening ties with the wider local community, and also with people around the world/international community, marketing and recruitment of new students as well as the possibility of making new acquaintances.

The biggest lesson which was left to us by the stressful teaching situation during the COVID-19 pandemic, is that stress caused by online teaching and the use of new

Characteristics of social media that have affected the increase in teaching stress during mandatory online classes during the COVID-19 pandemic	
Neglecting direct communication (face-to-face)	60.5%
Decrease in social skills	47.4%
Privacy issues (lack of privacy ...)	42.1%
Pedagogical expectations are reduced instead of the other way around	39.5%
They encourage negative behavior such as immorality and laziness	36.8%
The possibility of false identities	31.6%
They lead to low quality of the actual content	28.9%
They give everyone a chance to complain, thus creating a community without rules	26.3%
Stalking	26.3%
They negatively affect health (for example, diseases of the spine, and eyes...)	21.1%
Lack of systematic education on the use	21.1%
They promote the offer of amateur content generated by users	21.1%
They hide behind technologies and concepts that are not yet sufficiently defined/researched	21.1%
Internet connection required (especially broadband connection)	18.4%
Information is offered in open sources with very unclear meaning and quality	18.4%
Scientific communication is becoming (too) informal	15.8%
Time and knowledge spent on the use	15.8%
They have limited security	13.2%
The extremely diverse offer of social media that can be used only makes it difficult to choose	13.2%
They are monetarily quantified (everything becomes “business” and “numbers”)	13.2%
Electronic violence	10.5%
The possibility of developing an addiction	10.5%
They increase the gap between generations	5.3%
They are becoming a type of second-hand web, that is, a medium for people with a low level of digital skills	5.3%
None of the mentioned	5.3%
The content means nothing itself, it's just electronic “waste”	2.6%
The speed of the program is incomparably lower than the speed of desktop programs	0%

Table 8. *Characteristics of social media that have affected the increase in teaching stress during mandatory online classes during the COVID-19 pandemic, N = 38.*


digital tools **COVID-19** pandemic would have been much milder if adaptation to the digital environment had started earlier before it became a kind of necessity and compulsion. The changes in society that occurred due to the emergence of social media, even before the **COVID-19** pandemic, and especially after, require a change in the scientific and teaching paradigm from a classical paradigm that is gradually becoming a thing of the past to a progressive paradigm focused on the future.

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Educational Programs of Business Producers and System Creators for Future Strategy Design Based on Action Project Group Activities through Industry and University Cooperation

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Abstract

Our Japanese industry and university project group at Aoyama Gakuin University carried out two types of development and demonstration classes as part of new educational programs to create human resources focused on future strategy design over several years. In response to social issues related to SDGs and the circular economy (CE) that may arise in the future, new human resources who can formulate SDG/CE business scheme documents to solve these social issues are called “business producers.” New educational methods that combine both project-based learning (PBL) and active learning (AL) to create business producers were developed to accommodate hybrid group work exercises. Specifically, educational digital transformation (DX) technology was integrated to ensure a flexible response to the new normal following COVID-19. As prerequisites to develop the four types of human resources that make up the SDGs/CE business scheme, the learning of theories and mechanisms pertinent to the various advanced technologies is desirable. These new human resources equipped with specialized knowledge and practical skills are called “system creators.” A practical hands-on training program to enhance the skills of the system creators through future strategy design was created to cover the following subjects: IoT and platform services, as well as metaverse experiences.

Keywords: future strategy design, business producer, hybrid group work exercise, system creator, hands-on training program, sustainable development goals (SDGs), circular economy (CE), education DX

1. Introduction

The Future Strategy Design Promotion Conference features a focus on industry-academia collaboration, of the Sustainable Development Goals (SDGs) Human Resources Development Partnership Research Institute of Aoyama Gakuin University in Japan aimed to develop two types of new human resources over several years: (1) business producers who are capable of future strategy design (hereafter business producer) and (2) system creators who are capable of future strategy design (hereafter system creator). In response to social issues related to the SDGs and the circular economy (CE) that may arise in the future, the present research group aimed to create new human resources who could formulate SDGs/CE business scheme documents to solve these social issues and thus called “business producers.” As a prerequisite to the development of the four types of group human resources that can formulate SDG/CE business schemes, learning the theories and mechanisms related to the various advanced technologies is desirable. Therefore, a new human resource group equipped with specialized knowledge and practical skills is called “system creators.”

The research team has been working on developing and demonstrating programs to be implemented in university education. Specifically, the research group focused on hybrid-type group work exercises for business producers and hands-on training education for system creators.

The COVID-19 pandemic made it impossible to conduct face-to-face classes for all subjects, and there was an urgent need to introduce online classes in the form of on-demand, real, and hybrid classes. As part of a digital transformation (DX) subsidy project promoted by the Ministry of Education, Culture, Sports, Science, and Technology (MEXT) in 2021, advanced higher education institutions in Japan further accelerated the conversion to educational DX in the post-COVID-19 era.

Therefore, to develop these new human resources, the research team has been engaged in developing new educational methods for hybrid-type group work exercises that combine both project-based learning (PBL) and active learning (AL) in industry-academia joint research.

The National Science Foundation (NSF) uses the broad term “Science, Technology, Engineering, and Math (STEM)” to encompass the fields of chemistry, computer science, information technology (IT), engineering, geosciences, life sciences, mathematical sciences, physics, astronomy, social sciences (anthropology, economics, psychology, and sociology), and STEM educational research [1]. The character of STEM education has evolved from a set of overlapping disciplines into a more integrated and interdisciplinary approach to learning and skill development. This new approach includes the teaching of academic concepts through real-world applications of theory and combines formal and informal learning methods in schools, the community, and the workplace. It seeks to impart various skills, such as critical thinking, problem-solving, cooperation, and adaptability.

Therefore, the research team has been engaged in developing another new practical hands-on training program to promote the future strategy design capabilities of system creators, aiming to promote the experiential learning of the theories and mechanisms for the various advanced technologies, such as the Internet of Things (IoT), platforms, artificial intelligence (AI), virtual reality (VR)/augmented reality (AR), and metaverse.

Thus, this research paper is organized as follows. Section 2 discusses two types of human resource development programs for future strategy design, with a specific focus on hybrid group work exercises for business producers and hands-on training

for system creators. Section 3 discusses curriculum design and SDGs/CE business schemes for business producers, with a focus on hybrid group work exercises combined with PBL and AL. Team-based PBL as part of the multi-side platform (MSP) business model aimed at solving issues related to SDGs and CE are also discussed. Four different types of group roles for AL and SDGs/CE business schemes as final deliverables for each team/group are also outlined. In Section 4, shared digital whiteboards and DX learning environment systems for business producers are highlighted. Class operation management methods before, during, and after classes and how to use DX learning environment platforms (Eps) corresponding to regular class times are shared. Furthermore, class operation management methods corresponding to special class times and DX learning EP are discussed. In Section 5, the factors affecting the hands-on training of system creators are outlined. Specifically, these factors include the curriculum, the use of Micro:bit, the use of obniz, and experiences of the metaverse on the Spatial platform. This paper ends with a conclusion.

2. Two types of human resource development programs for future strategy design

The Future Strategy Design Promotion Conference, with a focus on industry and academia collaboration, aimed to develop two types of new human resources: (1) business producers and (2) system creators. The conference attendees mainly focused on adult education. Based on the results of these studies, the research team in this paper worked on the development of programs and demonstrated their efficacy in university education. Specifically, the research team worked to develop hybrid-type group work exercises for business producers and hands-on training-based education for system creators.

2.1 Hybrid group work exercises for business producers

In response to future SDG- and CE-related issues, new human resources who can formulate SDG/CE business scheme documents are necessary and have been referred to as business producers. Considering the characteristics of education methods, the curriculum for hybrid group work exercises that consist of PBL and AL methods was proposed.

The theme of PBL was that the whole team (about eight learners) worked together at the beginning of class to create a business concept plan that could solve social issues related to SDGs/CE by adopting an MSP business model. The final educational goal was to ensure learners could formulate and propose a unique SDG/CE business scheme through collaborative AL by dividing one team into four different groups. Four different types of groups (each group had about two learners) and the business contents of each group are shown below:

- Group 1—Business process model.
- Group 2—SDGs/CE product planning and digital marketing.
- Group 3—DX smart product design.
- Group 4—Sharing platform services.

2.2 Hands-on training program for system creators

To enable the four types of groups to formulate the aforementioned SDG/CE business scheme, a prerequisite was for the groups to learn theories and mechanisms

for the various advanced technologies described (e.g., IoT, platforms, AI, VR/AR, and metaverse). These learners equipped with specialized knowledge are referred to as “system creators.”

It is not possible to understand the mechanisms of various advanced technologies simply by reading technical books or attending lectures. Therefore, our research team decided to develop and demonstrate new hands-on training programs that allowed learners to experience the technologies and theories discussed by themselves. Therefore, the training systems for this hands-on training program were designed in relation to the STEM education program mentioned above and were developed using computer education devices, software, and various platforms (e.g., Micro:bit and obniz for IoT platform, and Spatial for the metaverse) described later.

3. Business producers (1): curriculum design and SDG/CE business scheme

3.1 Curriculum design for hybrid group work exercises with PBL and AL

Considering the characteristics of the education methods, a curriculum for hybrid group work exercises consisting of PBL and AL methods was proposed, as shown in **Table 1**.

3.2 PBL among the entire team: Business concept for MSP business model aimed at the SDGs/CE

In the first to fifth classes, as demonstrated in **Table 1**, each team formulated a business concept for future strategic design, with all team members participating by applying the PBL method. The theme of PBL for future strategic design adopted the MSP business model. This MSP business model involves the usage of platform and application software that mediates between the supply side that provides products/services and the demand side (customers who want these products or services). In other words, the MSP built a new business model by acting as an intermediary between the providers of products/services and customers.

When deciding on the theme of this MSP platform service, each team was required to draft a business concept that would be useful in solving social issues. Therefore, the instructor (Professor Tamaki, who was in charge of this course) suggested that each team choose a theme for MSP platform services related to SDG 12.3: reduction of food loss or SDG 12.5: reduction of waste part of SDG 12: responsible consumption and production.

SDG target 12.5, “By 2030, substantially reduce waste generation through prevention, reduction, recycling, and reuse,” is related to the CE. The shift from a linear economy to a CE requires new marketing methods. The European Commission suggested that the successful adoption of CE would require new consumer behaviors. Therefore, it is necessary to conceive a CE business model and consider how to solve CE-specific social business issues.

3.3 Four different types of group roles for AL

In team-building exercises for the AL method, learners were separated into four project groups (Groups 1–4) with different business roles, and each group worked on virtual project management (**Table 1**):

No.	New educational methods	G1: business model	G2: SDGs product planning	G3: smart product design	G4: platform service management
1	PB: Collaborative learning with all team members	Introduction: team and group building and learning goals of the educational program for business producers			
2		Survey of advanced cases of platform services and application software			
3		Determining the theme of SDGs product planning and MSP platform for each team			
4		Create the business concept plan for platform service management for each team			
5		(1), (2)			
6	AL: Collaborative learning within the same group and/or Collaborative learning between different groups	Own required management resources and business partners	Target customer and customer purchasing decision process	Image of the service utilization of smartphones and mobile products	Required functions and specifications of platform services
7		[G1⇔G4] Business and service process model for platform services and application software	SDGs product planning to reduce food loss	Product architecture of smartphones and mobile products	[G1⇔G4] Platform services and application software
8		[G1⇔G2] Materials and functions required for	[G1⇔G2] Materials and functions required for	[G3⇔G4] Application software	[G3⇔G4] Application software
9	Improved business model canvas with customer behavior and service processes	SDGs product planning (1)	[G3⇔G4] Processing algorithm for application software linked to smartphones and mobile products	[G3⇔G4] Processing algorithm for application software linked to platform systems	
10		[G1⇔G2] Customer benefits and value required for SDGs product planning (2)	[G1⇔G2] Customer benefits and value required for SDGs product planning (2)	[G1⇔G2] Customer benefits and value required for SDGs product planning (2)	
11		[G2⇔G3⇔G4] Digital marketing strategy for SDGs product sales promotion	[G2⇔G3⇔G4] Digital marketing strategy for SDGs product sales promotion	[G2⇔G3⇔G4] Usability of application software linked to smartphones and mobile products	[G2⇔G3⇔G4] Algorithm for the collection/accumulation/analysis of customer usage data and behavior data
12	PBL:	Submission of final business scheme planning			
13		⇒ Learner's grade evaluation (evaluated from the point of team, group, personal contribution)			
14	PBL:	Submission of final business scheme planning			
15		⇒ Learner's grade evaluation (evaluated from the point of team, group, personal contribution)			

Table 1.
 Curriculum that combines PBL and AL methods for business producers [2].

Group 1—Business model.

Group 2—New product planning and digital marketing.

Group 3—Smart product design and usability.

Group 4—Platform service management.

There were two types of collaborative learning for AL group work. One involved carrying out collaborative learning within the same group, and the other involved

collaborative learning between different groups, as described, for example, by [G1↔G2] in **Table 1**.

3.4 Items in the SDG/CE business scheme as final deliverables for a team/group

The following SDG/CE business schemes were the deliverables for each team/group, as outlined by the instructors at the end of the class.

PBL team common work:

1. Invent a new value chain management (VCM) system aiming to reduce food loss/waste and identify various stakeholders engaged in the VCM.
2. Build an MSP business model used by various stakeholders and plan products and services for new application software operated by the MSP.
3. Outline the MSP business model proposal.
 1. Where in the value chain did you focus on reducing food loss?
 2. Who are the target customers?
 3. Who are the collaborating stakeholders?
 4. What is the business purpose of the MSP?
 5. What is the impact of MSP services on society (effects, market size, etc.)?
 6. Provide an MSP business concept planning/use case diagram.

AL collaborative learning among the four types of groups:

4. G1/G4 (collaboration between groups); MSP business model WS
5. G3/G4 (collaboration between groups); smart products and application software (APS) WS
6. G1 (group work); business process model diagram, business model canvas, and profit model WS
7. G2 (group work); SDG product plan for food loss reduction, touch points for target customers, and website construction for the promotion of WS
8. G3 (group work); system design of smart products, APS service content, and usability WS
9. G4 (group work); platform data flow/information processing flow chart WS

4. Business producers (2): shared digital whiteboard and DX learning environment

In 2022, as the impact of COVID-19 gradually subsided, Japanese universities reduced the ratio of online classes to around 30% and promoted a return to face-to-face classes. Therefore, this study group decided to use the form of a face-to-face class for the hybrid group work exercises of this research target in 2022. However, digital lecture materials were distributed at the same time *via* the LMS to use the on-demand class format.

Furthermore, even in the classroom, we decided to use the digital whiteboard platform service so that team/group members could conduct collaborative learning together by sharing data online during group work exercises.

The following describes how to manage a class before, during, and after the group work exercises corresponding to regular class times and how to use the DX learning EP. Next, the class management method and DX learning EP corresponding to special class times are shown.

4.1 Class operation management methods before, during, and after classes and how to use DX learning EP corresponding to regular class times

Table 2 shows how to manage classes before, during, and after classes and how to use the DX learning EP for ordinary class times. To accomplish “1. Class management/creation of digital teaching materials,” instructors created digital lecture materials necessary for group work exercises corresponding to each ordinary class time. The teaching assistants (TAs) created team/group exercise WSs that served as guides for each learner to proceed with their own individual exercises.

There were three types of WSs. The first was to organize the template WSs that indicate description contents, such as tables, diagrams, and explanations, so that each learner could easily describe and express the results of collaborative learning according to the individual exercises. The WS was formatted to allow descriptive expression. Hence, it was also referred to as a “*white WS*,” as it did not describe anything other than the format. In the second type of WS, instructors and TAs guided case examples corresponding to the contents of the respective exercises in the white WS, so that learners could visualize how to respond to the WS. This WS was referred to as the “*case study introduction WS*.” The third type of WS was a summary of the results of collaborative learning by each team/group in response to the group work exercises presented by the instructor. This WS was referred to as the “*deliverable WS*.”

In “2. Lesson preparation/learning support/learning EP,” first, through LMS, the learner was instructed on how to deliver the digital lecture materials and how to proceed with the class and group work exercises on the day of the class. Next, the following two types of digital whiteboard platforms were utilized for the group work exercises. In addition, each team’s own working board was set up on each platform, and WS materials were uploaded onto their own boards for collaborative learning corresponding to each group work exercise.

4.2 Collaborative learning method using the Google Docs platform

Google Docs and the other apps in the Google Drive suite served as a collaborative tool for the cooperative editing of documents in real time. Documents can be shared, opened, and edited by multiple users simultaneously, and users can see character-by-character changes as other collaborators make edits [4]. Changes are automatically

	1. Class management and creation of digital teaching materials	2. Class preparation, learning support, and learning EP	3. Collaborative learning and submission of deliverables by learners
Before class	1.1 Lecture materials: Theories/techniques for each lesson 1.2 Exercise procedure and worksheet (WS) materials: <ul style="list-style-type: none"> • White WS • Case study introduction WS • Deliverable WS 	2.1 Upload lecture materials to Learning Management System (LMS) 2.2 Exercise materials for team/group collaborative learning: <ul style="list-style-type: none"> • White WS for collaborative learning in Google Drive • Submitting deliverable WS in miro 	
During class	1.3 During each class: Lectures by instructors, explanations of exercise methods, learning support, and educational guidance corresponding to the learning situation of each team and group.	2.3 Utilization of AI chatbot's question and answer system: <ul style="list-style-type: none"> • Enter the question code/question keyword in each case study introduction WS. • Each learner uses question-and-answer system above during the learning process involved in exercises. 	3.1 Collaborative learning using the sharing function of Google Drive: <ul style="list-style-type: none"> • Team common collaborative learning • Inter-group collaborative learning • Group collaborative learning 3.2 Attach each learner deliverable WS to the corresponding sheet in miro
After class		2.4 Each learner uses the question-and-answer system during the learning of 3.1 to 3.4 2.5 TA gives feedback to each deliverable WS using miro's comment function on miro in 3.4.	3.3 Homework using Google Drive 3.4 After completing homework, submit deliverable WS for each exercise to miro.

Table 2. *Class management method corresponding to before, during, and after classes for regular class times [3].*

saved to Google's servers, and a revision history is automatically stored so that past edits may be viewed and reverted to. An editor's current position is represented using an editor-specific color/cursor, so if another editor happens to be viewing that part of the document, they can see edits as they occur. A sidebar chat functionality allows collaborators to discuss edits. The revision history allows users to see the additions made to a document, with each author distinguished by different colors. Only adjacent revisions can be compared, and users cannot control how frequently revisions are saved. Files can be exported to a user's local computer in a variety of formats (ODF, HTML, PDF, RTF, Txt, Office Open XML). Files can be tagged and archived for organizational purposes.

The collaborative learning method using Google Docs during the group work exercise in this research is described below. Based on the group work exercise procedures and method explanations shown in the digital lecture materials created by the instructor, the TAs prepared a WS flock that summarized multiple white WSs according to the exercise procedures. TAs uploaded the WS flocks into their own work board within the Google Drive platform for each team/group before class.

While referring to the group work exercise methods and case study introduction WSs mentioned in the lecture materials, each team/group member could work with each other using the same white WS on their own workboard.

4.3 Collaborative learning method using the miro platform

Miro is an online collaborative whiteboard platform that enables distributed teams to work effectively together, from brainstorming using digital sticky notes to planning and managing agile workflows [5]. Miro allows users to take advantage of a full set of collaboration capabilities, make cross-functional teamwork effortless, and organize meetings and workshops using video chat, presentation, sharing, and other features.

Miro empowers user's own design, development, and engineering teams to align and innovate on a platform that makes all their endeavors possible in real time. They can create concepts, map user stories or customer journeys, or engage in roadmap planning easily, enabling them to focus on delivering the right products to customers.

The instructors further instructed teams/groups to place individual deliverable WSs on their own miro work boards, according to the fixed order of the exercise procedure. After the deadline for the submission of the deliverables, the specific TA in charge of each group provided feedback on the deliverable WS using miro's comment function.

How to use the question-and-answer system of the AI chatbot platform service is explained in detail in the next chapter.

4.4 Class operation management method corresponding to special class times and DX learning EP

Table 3 shows the class operation management method and how to use the DX learning EP for special class times.

The method for submitting deliverable WSs (e.g., SDG/CE business concepts, interim deliverable WSs, and final deliverable SDG/CE business schemes) per team was the same as described above. Specifically, learners were instructed to place individual deliverable WSs on their miro work boards according to a fixed order of the exercise procedure.

TAs provided feedback to the respective WSs in the same manner. The merits of being able to provide feedback using the miro platform for the instructor and TA are as follows: Instructors and each TA in charge of each team/group could cross-observe their work boards for different teams/groups, as well as select and add comments to the specific deliverable WS related to each TA from remote environments.

Figure 1 shows an example of "2.9: Pasting each WS submitted by each team/group in the above format table" for the "1.5 AL Interim Results Report."

The instructor prepared a concept map using one of miro's templates for the presentation of the SDG/CE business scheme assignment results in the final class. Then, the instructor instructed all learners to place each deliverable WS for the assignment into this concept map. This concept mat was used to visually represent the interrelationship structure connecting various deliverable WSs related to team common, inter-group, and specific group collaborative learning.

Moreover, as a creative way to use miro to present the results, a separate new board for results presentation was established instead of the usual miro work board. In this new board for results presentation, the instructor arranged the deliverable WS of the business scheme for each team in the same concept map format. As a result,

Class	1. Class management and creation of digital teaching materials	2. Class preparation, learning support, and learning EP	3. Collaborative learning and submission of deliverables by learners
6th	1.4 PBL learning outcomes: How to submit the SDG/CE business concept	2.6 Prepare the format sheet for the business concept in miro. 2.7 TA gives feedback to each WS using miro's comment function for the deliverables submitted in miro in 3.5.	3.5 Collaborative learning shared by the team: Submit the deliverable of the business concept to the format sheet in miro.
11th	1.5 AL interim result report: Explanation of how to review the results of collaborative learning according to group collaboration and individual groups	2.8 Prepare a format table for each team's interim result presentation in miro. 2.9 Attach the deliverable WS submitted by each team/group to the corresponding format table in miro. 2.9 For the deliverables in miro in 3.6 above, TAs provide feedback for each WS using miro's comment function.	3.6 Each team/group member mutually evaluates all deliverable WSs, including those not in charge of their own, by commenting on good points and points to be improved.
14th	1.6 PBL/AL final result report meeting: Explanation of how to submit the SDG/CE business scheme for each team. 1.7 Prepare class evaluation questionnaire.	2.10 Prepare concept map formats for announcing the business scheme in miro.	3.7 Using the LMS, each learner filled out an online class evaluation questionnaire. 3.8 Each team/group member improved all deliverable WSs and added explanatory documents corresponding to each WS. 3.9 Paste the WSs for SDG/CE business schemes in the 2.10 concept map format. 3.10 Prepare presentations for all 15 classes' results.
15th	1.8 Present the results of the SDG/CE business scheme for each team. 1.9 Explain the mutual evaluation method for the presentation content of other teams.	2.11 Questions and comments from instructors and TAs for each team's presentation.	3.12 Presentation by each team using 3.9 above and Q&A. 3.13 Online mutual evaluation of other teams' presentations using LMS.
After classes	1.10 Prepare quiz questions corresponding to knowledge Bill of Materials (BOM) by each group, which becomes the basis of the AI chatbot's question-and-answer system.		3.11 Each learner took online comprehension tests in each group after using the AI chatbot's question-and-answer system.

Table 3.
Class management method for special class times and how to use the DX learning EP.

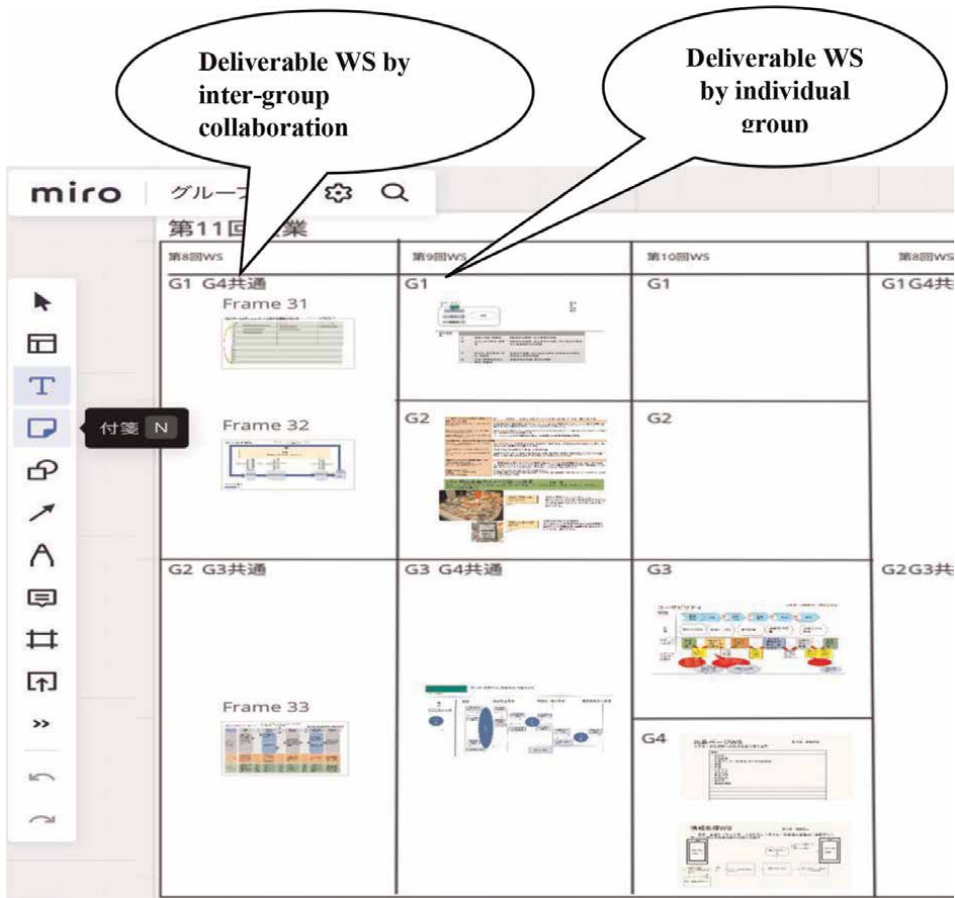


Figure 1.
 Example of “2.9: Pasting each WS submitted by each team/group in the format table.”

instructors/TAs and all learners could assess each other’s business scheme proposals on the miro platform while comparing the characteristics of each team/group.

5. Hands-on training of system creators

5.1 Curriculum for the hands-on training of system creators

A 2022 second-semester curriculum for system creators consisted of three lesson themes, as shown in **Table 4**, that indicated the necessary educational instruments, software, and platforms according to the respective hands-on training sessions shown below:

1. IoT and service—Micro:bit
2. IoT and service—obniz
3. Metaverse experience—Spatial

Lesson theme	Computer education devices and software and platform	Hands-on training contents
1. IoT and platform service: Micro:bit	Educational one-board microcomputer: Micro:bit	Lecture: IoT and platform mechanism, <i>embedded programming, and algorithms</i> in service (programming editor: MakeCode)
	Block programming by using the Micro:bit and browser-based programming editor: MakeCode	Hands-on training (1) for <i>programming algorithm</i> : event-driven mechanism, sequential processing, setting variables and calculation operations, programming procedures, such as conditional branching (if-then)/repetition (for, while) Hands-on training (2) for <i>embedded programming</i> : 1. Programming practice for the <i>pedometer system</i> 2. Programming practice of the <i>timer system</i>
2. IoT and platform service: obniz	IoT hardware platform from Japan with high utility value: obniz	Hands-on training (1): Lighting by using red LED and green LED properly
	Block programming editor by using the obniz cloud platform service	Hands-on training (2): Programming a distance sensor system
	LED: Red, Green Distance sensor	Hands-on training (3): Attendance confirmation system using the above training contents of (1) and (2)
	Group work exercise four learners organized as a group	Report Submission Assignment: Social system design of attendance confirmation system aiming to solve future social issues, to elucidate the design system mechanism, and to achieve the required function and information transmission of IoT platforms.
3. Metaverse experience: Spatial platform	VR headset Meta Quest 2	Lecture: VR/AR, latest trends in the metaverse, Virtual World Office: Meta “Horizon Workrooms,” Social VR Platform: VRChat.
	Meta Quest platform service	Hands-on training (1): For the Meta Quest platform and Meta Quest 2, how to create a personal account, how to create a personal avatar, and how to operate Meta Quest 2.
	Spatial platform service: Tamaki Lab Virtual Museum produced by our research team	Hands-on training (2): For the Spatial platform, how to create a personal account, how to create a personal avatar, and how to browse the Tamaki Lab Virtual Museum.
	Group work exercise	Group presentation in Spatial: Proposal of future laboratory for each group in Spatial, specifically the Tamaki Lab Virtual Museum, presentation of each individual avatar, and mutual evaluation between groups.

Table 4.

The curriculum of the system creator, computer education device, and software and platform.

After organizing the learners into one group of four people, hands-on training was conducted. After the training, the group work exercise was executed as an output that utilized the results of the training. This group work exercise involved having learners propose a social system design for an IoT platform that aims to solve social issues.

5.2 IoT and platform service: hands-on training using Micro:bit

In the lecture, first, to understand the mechanism of cooperation with IoT devices and platform services, the functions equipped with Micro:bit, which has a practical track record as computer education device, were explained (see **Figure 2**).

Micro:bit (also referred to as BBC Micro:bit) is open-source hardware based on an embedded system designed by the British Broadcasting Corporation (BBC) for use in computer education in the United Kingdom. The device is described as half the size of a credit card and has an ARM Cortex-M0 processor, accelerometer, magnetometer sensors, Bluetooth and USB connectivity, a display consisting of 25 LEDs, two programmable buttons, and can be powered by either a USB or an external battery pack [6]. The device's inputs and outputs are through five-ring connectors that form part of a larger 25-pin edge

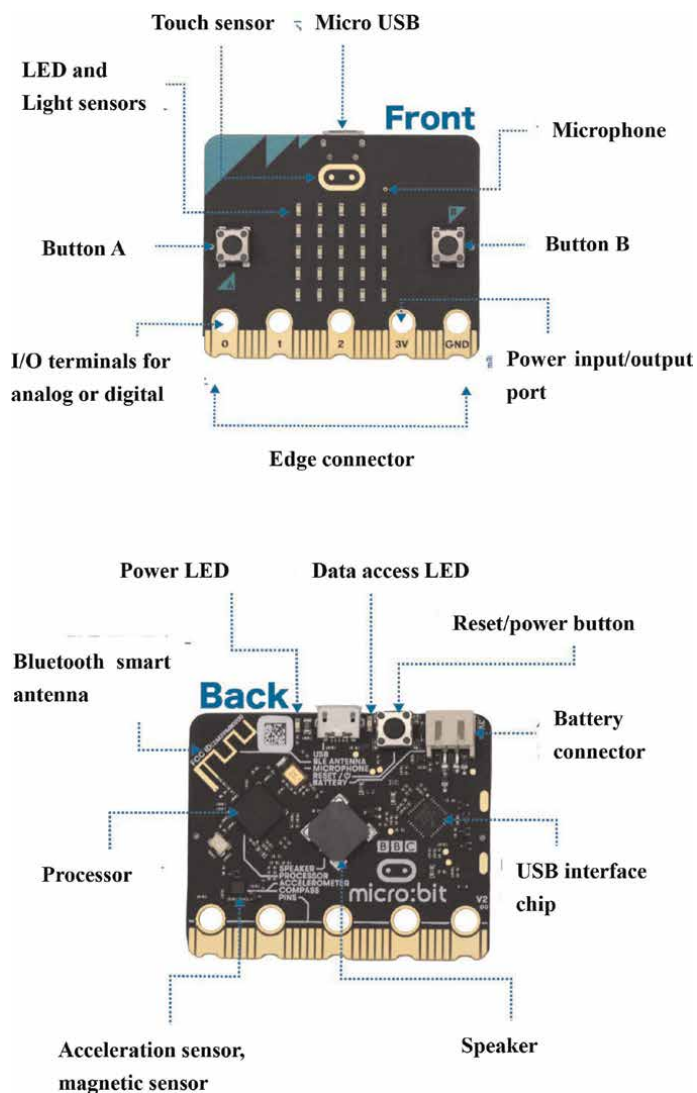


Figure 2. Various devices and functions are placed on the front and back of the Micro:bit [6].

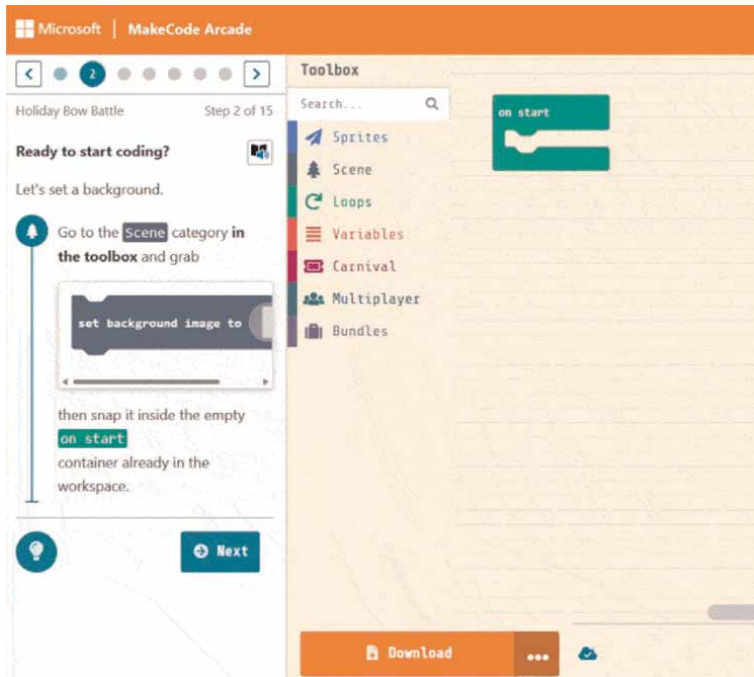


Figure 3.
MakeCode as a visual editor [7].

connector. In October 2020, a physically nearly identical v2 board was released that features a Cortex-M4F microcontroller with more memory and other new features.

In parallel with the lectures on the various algorithms mentioned above, the learners created programming that applied each algorithm. The learners used MakeCode, a program editor available in the browser environment from Microsoft that supports the operation method of Micro:bit. After creating various embedded programs, the learners were able to implement the programming on Micro:bit and check whether the IoT mechanism worked well.

MakeCode is a visual editor that can be used in the browser environment of a platform service that allows programming practice. In other words, in MakeCode, programs are prepared in advance as block-type commands, and learners can visually express the programming process by combining each block (**Figure 3**).

The advantage of using MakeCode in class management is that individual learners could practice programming through the same Microsoft browser environment not only in the classroom but also when doing homework. In addition, many of the students at the School of Business were beginners who had no experience in implementing specialized programming languages and grammar. However, while receiving lectures on the procedures for operating IoT systems, it became possible for them to create programming easily by selecting the appropriate blocks according to each procedure and connecting the blocks to each other.

5.3 IoT and platform service: hands-on training using obniz

The Japanese company obniz provides IoT hardware devices called the obniz Board, which has preinstalled obnizOS and the obniz Cloud service as a development

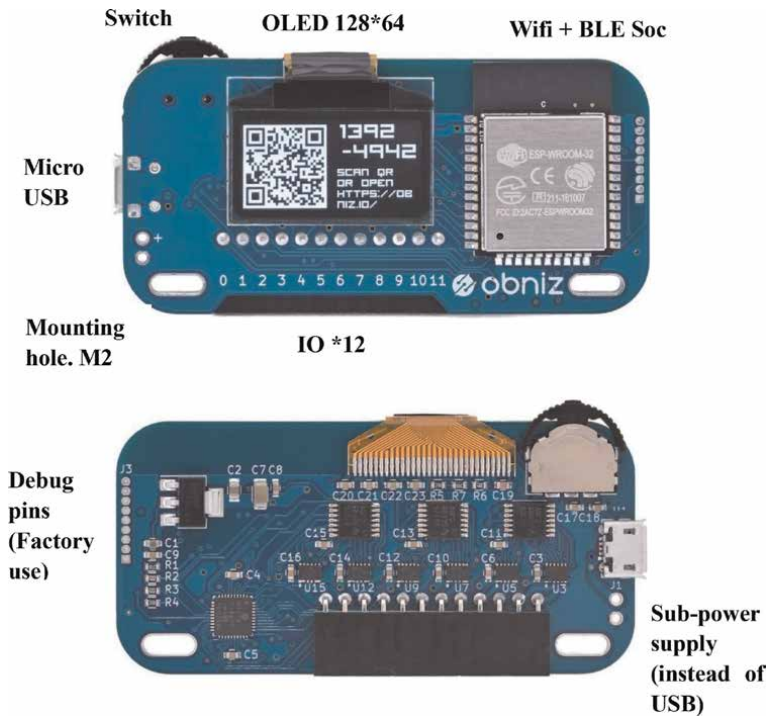


Figure 4. Various devices and functions are arranged on the obniz board [8].

environment that can build IoT systems in a browser environment *via* Wi-Fi. By programming the electronic parts connected to the Mounting Holes in the obniz Board shown in **Figure 4**, it is possible not only to operate them with the keyboard of the PC but also to use mobile phones through obniz Cloud. JavaScript can be used as a development language. As with Microsoft’s program editor MakeCode mentioned above, block programming that does not require programming knowledge can also be used.

In “2. IoT and platform service: obniz” in **Table 4**, the attendance confirmation system is explained below. In the attendance confirmation system, both LEDs were inserted into the appropriate positions of the mounting holes, so that the green LED blinked when the person was away and the red LED blinked when the person was present (**Figure 5**). Furthermore, to detect the presence of humans using the distance sensor, the terminals of the sensor were connected to the appropriate positions of the mounting holes.

For the algorithm to confirm people’s presence in seats, if the value of the distance sensor (variable name “range”) detected an object within 300 m, the seat was considered filled (assuming that a person was seated); otherwise, the seat was considered empty. An example of block programming according to this algorithm is shown in **Figure 6**.

5.4 Metaverse experience: spatial platform

Spatial, as a US start-up company, provides the Spatial platform that allows users to create their own VR/AR spaces. Multiple users as avatars (up to 25 to 30 users) in

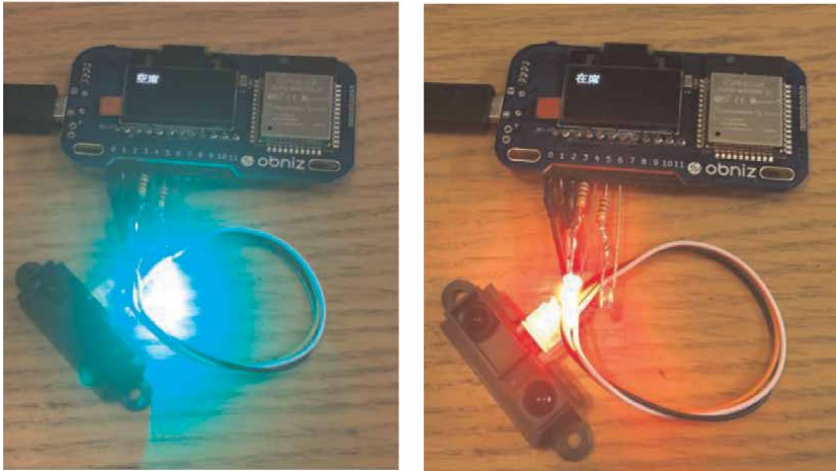


Figure 5.
LEDs (blue: vacant, red: occupied) and distance sensor connected to the mounting holes of obniz (Source: Yoshiyuki Ono).

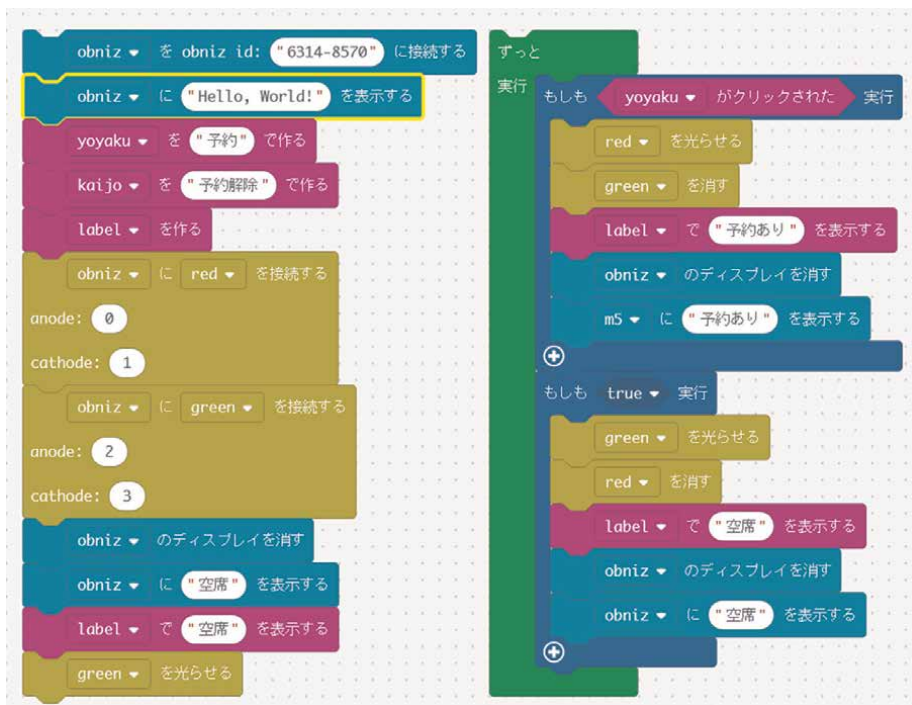


Figure 6.
Example of block programming and the seat confirmation system algorithm (Source: created by Yoshiyuki Ono).

different locations can participate in the same VR/AR spaces, such as virtual galleries, virtual tours, virtual facilities, and communicate with each other.

The Spatial platform enables the communication between different devices (cross-device communication) [9]. For example, compatible cross-devices include

MR devices such as Microsoft's HoloLens and Magic Leap's Magic Leap 1, integrated VR headsets such as Meta Quest, tablets, desktop PCs, and smartphones. Our own Tamaki Lab Virtual Museum, especially for "Hands-on training (2)" in **Table 4**, was created using the Spatial platform.

In hands-on training for each group (one group consisting of four learners), each learner first created their own spatial platform account and avatar. After entering the Tamaki Lab Virtual Museum, the individual learner browsed various exhibits while walking around the museum. They attached some digital sticky notes with each learner's name to their interested exhibits (**Figure 7**).

Then, they selected the most popular exhibit by having the four avatars communicate with each other and meet in front of the selected exhibit. After everyone gathered in front of the selected exhibit, they took a virtual commemorative photo. The virtual commemorative photo data were submitted as a group assignment report for hands-on training.

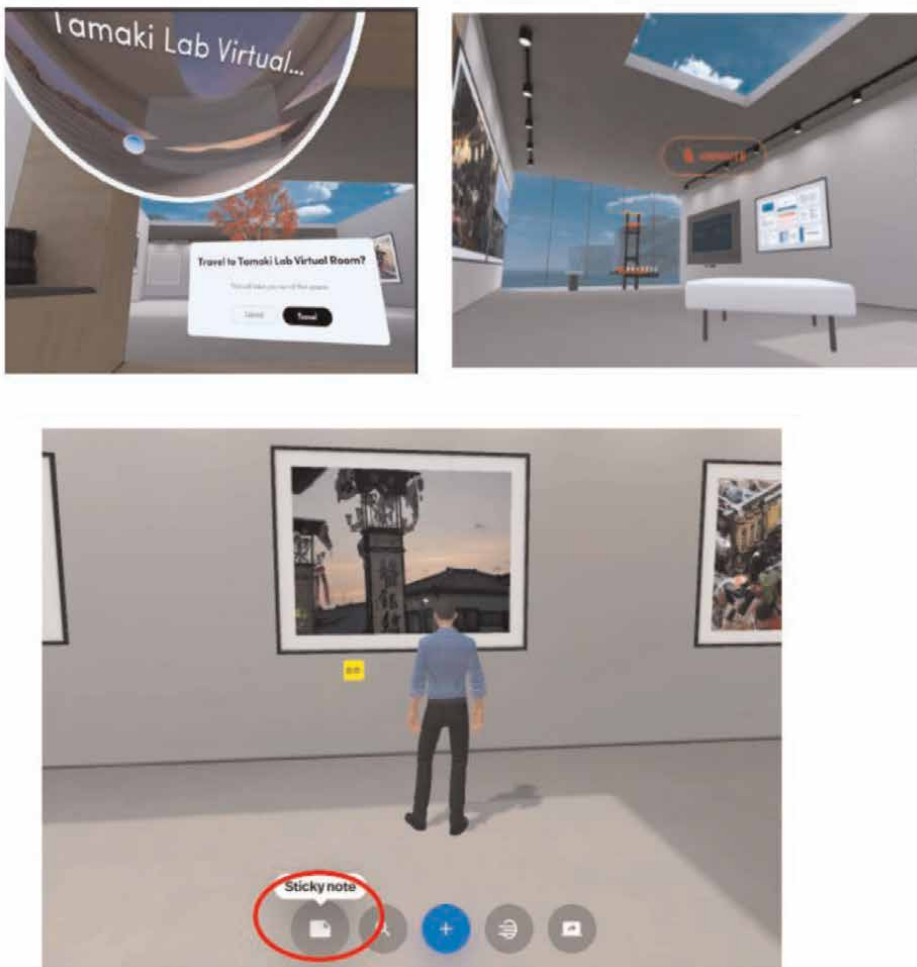


Figure 7.
Tamaki lab virtual museum in spatial (Source: Yoshiyuki Ono).

As a group work exercise in preparation for the presentation on the Spatial platform, they planned a new university laboratory design following the virtual visit experience and gave a group presentation and mutual evaluation.

6. Conclusion

In response to social issues that may arise in the future, new human resources who can formulate SDG/CE business scheme documents have become necessary and are referred to as business producers. New educational methods to train business producers to combine both PBL and AL to accommodate hybrid group work by effectively utilizing educational DX technology for a flexible response to the new normal following COVID-19. This chapter discussed curriculum design for hybrid group work exercises combined with PBL and AL and shared digital whiteboards for collaborative learning methods using Google Docs and the miro platform service. Furthermore, it discussed DX learning environment systems corresponding to regular class times and special class times by utilizing LMS and web conferencing systems, digital teaching materials, and learning support.

To address another research issue, the research team of this paper is developing an automatic question-and-answer system for learners in an online environment using an AI chatbot during and after a hybrid group work class. The system was actually incorporated into demonstration classes in 2021, and the system will continue to be improved.

As prerequisites for the four types of human resources who formulated the SDG/CE business schemes, they were taught theories and mechanisms for various advanced technologies and are referred to as “system creators.”

The practical hands-on training program was created to cover the following three subjects: (1) Micro:bit and browser-based block programming editor MakeCode, (2) obniz and MakeCode, and (3) metaverse experience: Tamaki Lab Virtual Museum on the Spatial platform. Each group presented individual avatars and evaluated other groups on Spatial.

To improve the educational quality of both programs for business producers and system creators, strengthening the structure and professional human resources of the educational management organizations to continuously maintain the established new educational methods should be enhanced. These organizations should develop new educational methods of instructional design [10], engage in continuous research and development of learning environment platforms, promote faculty development, educate teaching assistants, improve grading evaluation methods, and improve course evaluation methods.

To address future challenges with the DX project activities, it is necessary to systematize and maintain these facilities and ICT systems for new DX education, and numerous computer education devices, software, and platforms should be consolidated into one comprehensive DX education system. To make full use of the comprehensive DX education system, appropriate experiential training programs should be prepared for faculty, expert staff, and TAs engaged in the system’s operation and management. Furthermore, digital teaching materials for individual instructors and learners must be developed in practical educational sites.

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Perspective Chapter: Visible or Invisible? Arab Students in the Israeli Academic World

Omar Mizel

Abstract

Multicultural environments in academic institutions face major challenges in teaching, learning, and social integration. Although the number of Arab students attending institutions of higher education in Israel has increased, the Arabic language has little presence in the Israeli academic world. This article explores the results of teaching Arab students in their language. Can it have a positive influence on their feelings of belonging and can it enable them to integrate more successfully in academic settings? teaching in Arabic alongside Hebrew in Israeli academia enhanced feelings of belonging in Arab students. They developed a sense of belonging to their institution and their integration grew.

Keywords: higher education, multiculturalism, Palestinian identity, Israel, student integration

1. Introduction

Multicultural environments in academic institutions face major challenges in teaching, learning, and social integration. Although the number of Arab students attending institutions of higher education in Israel has increased, the Arabic language has little presence in the Israeli academic world.

The language of every society reflects, and molds, that society and is part of its sociopolitical reality. In recent years, the place of the Arabic language in Israel has become a subject that is being increasingly debated. While, on the one hand, attempts are being made by certain groups and individuals in Israel to undermine its official status in the country, attempts are also being made by other groups and individuals to draw attention to Arabic's importance as an integral part of the national fabric. For example, over twenty years ago, the Israeli Supreme Court, in its capacity as the country's High Court of Justice, stated in one of its rulings: "The uniqueness of the Arabic language in Israel is twofold. First of all, Arabic is the language of a large minority group that has lived in this country for generations. It is the language of the country's Arab citizens who, despite the Arab-Israeli conflict, want to live in Israel as citizens with equal rights whose language and culture are respected. Second, Arabic is one of Israel's two official languages. Although a wide variety of languages are spoken in Israel, Arabic alone, along with Hebrew, is an official language in this country" (High Court of Justice file no. 1999/4112).

2. The Palestinian Arab population in the State of Israel

On December 31, 2021, the total population of Israel was 9.449 million, of which 6.982 million were Jews (73.9 percent of the total), 1.995 million were Arabs (21.1 percent of the total), and 472,000 (5.0 percent of the total) were classified under the category of “Others.”

There are today 58,000 college and university students in Israel who are members of the country’s Arab community and who attend Israel’s universities and academic colleges. They constitute 17 percent of Israel’s total student population, although Israel’s Arab citizens constitute 21 percent of the total population. The number of Arab college students represents a 122 percent increase from 2010.

The cultural and linguistic background of the students attending institutions of higher learning in Israel is diverse. Egalitarian pedagogy cannot exist unless the educational institution ensures the presence of the languages and cultures of its students in their particular academic settings. The ensuring of such a linguistic and cultural presence must be expressed in each educational institution’s academic vision and must be implemented in an orderly manner by the teaching staff and the administration. In their respective classrooms, the members of the academic staff must teach in their students’ particular language and must encourage their students to become familiar with their language and culture. The educational institution’s administration should encourage both instructors and students to participate in workshops designed to familiarize them with the students’ language and culture.

The encounters between Arabs and Jews in the academic world take place by means of language. In the context of these encounters, a dialog is engaged in, and in this dialog, individual students can express themselves through the words that they themselves choose. The question that must be asked here is whether the space for self-expression assigned in academia to Jewish students is similar to the space for self-expression assigned to Arab students. Some Arab students are on the seam between full expression of their identity and a relinquishing of such full self-expression through the employment of a language that is not their native tongue, namely, Hebrew [1]. This relinquishing is acceded to for the sake of interaction, dialog, and collaboration [2]. If we accept the assumption that language represents identity, we can understand the immense importance that must be attached to the legitimization of Arabic in addition to Hebrew in the academic sphere.

3. Israel’s higher education system: An overview

Institutions of higher learning are very important social agencies for many reasons. They are a central site for the creation of knowledge and for the molding of dialog. In addition to serving as a moral and ethical symbol, they are an important station along the route of the student’s development: For many young people, an institution of higher learning helps introduce them to the working world, is a mechanism of socialization, is an important meeting place for diverse social groups, and is a hothouse for the cultivation of social, economic, and political leaders. Thus, it can be said that Israel’s system of higher education is crucially important: It helps shape society and teaches students how to cope with the social gaps and political discrimination that exist in Israel.

Institutions of higher education in Israel have a special moral responsibility toward the country’s Palestinian Arab citizens, because they played a pivotal role in the

formation of the ideology that has had such a major impact on these citizens, including, of course, Palestinian Arab students.

It should be noted here that social segregation exists in the common spaces on campus and that there is invisible interracial competition in Israel's institutions of higher learning [3].

Social activities on campus represent, and are directed toward, students who are members of the majority group, and students who are members of minority groups sense that they are not part of, and do not derive any substantial benefit from, those social activities. As a result, minority group students are sometimes angry and frustrated and have a sense of powerlessness; these sentiments lead them to feel alienated, to feel that they are strangers on their own campus [4].

Often, the minority group's culture is ignored in the social expanse on campus. "White culture" is regarded as everyone's culture and therefore negates any need for the presence of any additional cultures. The curricula in "white-culture-dominated" settings place special emphasis on male, heterosexual, and white perspectives, ignoring the contribution of other cultural groups. From the visual standpoint, the multiculturalism that exists on campus emphasizes the dominant position of "white culture." Thus, for example, in America, some academic institutions give priority to their white students and exclude blacks [5]. The buildings on campus "inform" all those who enter them whether they belong or are even welcome and whether their cultural knowledge and cultural background are relevant [6]. There is a connection between ethnicity and budget levels, which express themselves in the quality of a campus building's structure. In California, white middle-class students study in new buildings, while the buildings where white working-class and black students attend classes are older. The sense of belonging to their campus that is felt by students who are members of minority groups is undermined when cultural "signs" on campus represent only the dominant culture [7]. The feeling of superiority expressed toward Hispanic culture on American college campuses creates complex dilemmas [8].

Many research studies represent Israel as a country in which ethnic origin carries much weight, as can be seen in all spheres of life in Israel. Israeli democracy is republican in nature, and there are two categories of citizenship in Israel: republican citizenship for Jews and liberal citizenship for Palestinian Arabs. However, only Israeli Jews can realize their citizenship by participating in the joint social good [9]. Academic space is not a nationalized ceiling in that sense, and the paradigms and vitality of the members of the dominant national group are heavily invested in the organizational space of academia and define that organizational space [10].

Israel's institutions of higher education are not disconnected from the broad social context in which they are anchored. The conflict between Jews and Palestinian Arabs beyond the perimeters of college campuses is replicated on Israeli college campuses and impacts the relations between Jewish and Palestinian Arab students as well as the relations between Palestinian Arab students and the administrative and academic staff members of these colleges and universities, most of whom are Jews [11].

The place of Arabic in Israel in general and in Israeli academia in particular is an important subject for research study and for discussion in academic and judicial contexts. Linguistic rights are collective rights in addition to being cultural rights; furthermore, they can be compared with the right to religious freedom. In contrast with the narrow judicial approach that grants Arabic only instrumental status, the State of Israel must provide broad support to the languages of its minority groups and must make those languages present in the country's public spaces and in the lives of the members of Israel's majority group. Neglect of the language of the country's

minority groups and prioritization of the language of the majority group could cause serious damage to the cultural identity of the minority groups [12]. Arabic plays an important role in the lives of Palestinian Arab college students; it has a symbolic dimension for all Palestinian Arabs [13].

Palestinian Arab students have no Arab institution of higher learning budgeted for any Arab community in Israel. Apparently fearing political repercussions, Israel has decided against the opening of an Arab University in Israel. Recently, Tel Hai Academic College has been recognized as a university; in establishing Tel Hai University, Israel has dramatically increased the number of Jewish universities in the country; as a result of this move, the language, the culture, and the identity of Palestinian Arab students cannot develop, cannot be enriched, and cannot occupy a dignified place in Israeli society.

4. Arabic and Arab culture in Israeli universities

4.1 The adjustment problems of Arab students

The encounter between Arab and Jewish students in Israel's colleges and universities can be at times emotionally charged because of the cultural and national differences between the country's Arab and Jewish populations. For Arab students, the first year of college or university studies can be especially traumatic because these students are dramatically brought face-to-face with the sociocultural differences between these two populations. The vast majority of Arab college and university students in one research study noted that they had to invest much more time and energy than their Jewish counterparts in order to achieve progress in their studies. In comparison with the Jewish students, over 50 percent of these Arab students found it much more difficult to meet the demands of their academic courses, and on the whole, Arab students had more adjustment problems. Because of these difficulties, many Arab students in their first year change their study majors or abandon their studies altogether. Another problem is connected with language: Arab students find it difficult to read academic material in languages with which they are not so familiar, namely, Hebrew and English. The principal obstacles hindering the social and academic integration of Arab students are the teaching methods, which demand independent study, and academia's open, liberal atmosphere [14].

The educational gap between Arab and Jewish students stems from the gap between the country's Arab and Jewish education systems at the elementary, junior high, and secondary school levels. Furthermore, the fact that all of Israel's universities are Jewish hinders the sociocultural integration of Arab students in the country's institutions of higher learning.

The degree of knowledge of Hebrew has a major impact on scholastic achievement, particularly in the Arab student's first year on campus. What can be done about this issue? One very effective solution would be to give Arabic a strong presence as a language of study, especially in the first year of college/university studies.

4.2 The integration of Arab students in Israeli academia: Social aspects

The unique characteristics of Arab society in Israel strongly influence the ability of Arab students to integrate into Israeli academia, their aspirations for scholastic excellence, their social expectations before and during their studies, and their scholastic

achievements. The impact of the students' social environment on their scholastic aspirations can be seen in the fact that when they arrive at university, they form a minority group on campus and must face the challenge of dealing with a new culture and with the majority group in their institution of higher learning [15].

Regarding the majority-minority relationship and the Palestinian-Israeli dispute and their influence on the integration of Arab students in their respective college or university, it must first be noted that the most significant characteristic of Israeli society that impacts the country's Arab minority and the integration of Arab students in Israel's academic world is the fact that Israel is still entangled in a national conflict. The conflict impacts the scholastic achievements of Arab students and the nature of the country's school system, which is split into a Jewish education system and an Arab one [16].

In the relevant professional literature, there is considerable discussion of a country's education system as an effective tool for enabling the country to control its minority groups [17]. In the case of Israel, the use of the education system to control the country's Arab minority preserves that group's social, economic, political, and cultural inferiority through the establishment of educational goals that are not suited to the Arab population, thereby promoting the discrimination of the Arab education system in terms of resources, programs, and services.

The language-related challenges facing Arab students in Israeli academia include difficulties in understanding the lectures in Hebrew, an insufficiently rich vocabulary in Hebrew, the constant need for translations, difficulties in writing papers in Hebrew, and the lack of self-confidence and the awkwardness that Arab students invariably experience when they must express themselves in a language that is not their mother tongue.

In the past decade, the place of Arabic in Israel has been widely discussed. While, on the one hand, there have been attempts to undermine the official status of Arabic in Israel and to fortify the status of Hebrew as the country's sole official language; many people are advocating the increased presence of Arabic in Israel's academic world in order to make it easier for Arab students to adjust to that world, especially in their first year of academic studies.

Intercultural encounters in the academic sphere create an opportunity—sometimes the first opportunity—to turn university education into a positive experience. In order to promote such opportunities, Arabic and Arab culture should become far more prominent on Israeli college and university campuses, especially because, as noted above, colleges and universities are invaluable and highly influential social institutions and are vitally important in the molding of the society of which Arab students, like their Jewish counterparts, are an integral part.

Many research studies have shown that students who are members of minority societies tend to feel, during their period of postsecondary studies, that they are, as it were, living in a besieged city and that they are not welcome in their academic setting [18, 19]. From these studies, it can be concluded that in many respects, academic institutions are custom-tailored to meet the needs of the students who belong to the country's dominant group and that the absence of the language and culture of the Other creates an unfriendly, cold climate for those students who are not members of the dominant group [20].

The concept of the "cold climate" first appeared in the research study of Hall and Sandler (1984) [21], who wanted to understand the nature of the various obstacles in the academic world. The term "climate" refers to the attitudes, approaches, and emotions in a given setting [22]. It can be said that the term also expresses a complex

organizational phenomenon whose features are replicated in the conduct of the persons in the organization. The assessment of an academic institution's climate can provide decision-makers with a better understanding of the manner in which the campus is experienced by various groups of students [23]. Such an understanding is essential because the climate impacts the scholastic achievements of the members of minority groups on college and university campuses [19].

The question that one must ask is: "To what extent does the climate on college and university campuses in Israel meet the needs of Arab students from the standpoints of language and culture?" In order to answer that question, one must review what is being done on college and university campuses in other countries that are dealing with the problems of students from minority groups in the academic world. The most prominent research studies focusing on similar issues are those that have been conducted in America and that are concerned with questions such as the structuring of college and university campuses and the inclusion of minority groups in the academic world. These studies base their findings on analyses that employ concepts related to race and on the examination of mechanisms in institutions of higher learning that replicate the inequalities existing in society as a whole. We can utilize these studies in order to better understand the Israeli college/university campus.

Special attention should be given to the Critical Race Theory, which centers on institutional racialization. This theory can be used to examine academic institutions from the standpoint of their mechanisms promoting "whiteness" and to consider the manner in which such institutions are built. The central argument raised by scholars utilizing this theory is that in the past, "whiteness" was a social category that was neither diagnosed nor marked, in contrast with "colored" categories, and this created a mental blindness regarding the role of the majority society and its institutions in the inclusion of the members of minority groups in academia.

It can be concluded that from the theoretical perspective, scholars analyzing mechanisms promoting "whiteness" assume that instead of examining the obstacles preventing the members of minority groups from effectively integrating themselves into the academic community, attention should be directed toward the mechanisms that create and then perpetuate "whiteness" or priority for members of "white" society. According to these scholars, the academic world is "racialized" and cannot be considered neutral from the racial standpoint. The paradigms and ideas of the members of the dominant racial group are invested in, and define, the academic institution's organizational space [24]. It should be emphasized that the racialization of the academic space is not carried out deliberately and that the privileges of the group for which the academic space is unconsciously molded are perceived as self-understood and not as a subject that is problematic.

The results of this racialization transform the academic space into a sphere that offends, and has many negative implications for, the members of minority groups who are students in a racialized college or university. In a racialized academic institution, students belonging to a minority group are liable to experience discrimination—open or concealed—as well as rejection; lack of support, protection, or self-confidence; even fear of physical injury [19]. In the United States, even if an institution is not explicitly racist, it bears within its walls a history of racial exclusion that continues to linger [25].

Scholars in this field have noted that success in the creation of a supportive climate for students from minority groups is generally linked to the position of the academic institution regarding the integration of the members of minority groups [26].

In Israel, the country's academic institutions were founded by Jews and for Jews, and the privileges these institutions provide to Jewish students perpetuate the inequality between Jews and Arabs. This inequality is particularly prominent in the considerable number of Israeli colleges and universities that do not promote the presence of Arabic and Arab culture on campus.

4.3 The place of Arabic on Israeli campuses

The importance of language goes far beyond the transmission of messages. Language is not just a collection of phonological, morphological, and syntactical structures, not just a vehicle for the transmission of messages but is rather a social and political declaration. In other words, a language is a message in itself [27]. Language is a basic tool for the expression of every human and social activity, expresses culture and identity, and has verbal and nonverbal aspects that embody a given cultural and social reality [28].

The place of a language in any context is sensitive and emotionally charged because, in its creation of systems that will institutionalize and preserve its language, a minority group depends on the majority group. The state has certain duties regarding the language of an aboriginal minority group. In contrast with aboriginal language minorities, which have comprehensive language rights, immigrant language minorities have limited language rights [29].

4.4 The culture of a minority group in academic settings

Students who are members of a minority group experience social and cultural alienation because they sense that their academic institution discriminates against their culture. They note that there is social segregation in the common spaces on campus and that there is invisible interracial competition. As noted above, since social events on campus represent, and are oriented toward, the students who belong to the majority group on campus, the members of the various minority groups sense that they are excluded from these events, and as a result, they experience feelings of anger, frustration, and powerlessness.

The culture of a minority group is often transparent on a "white" campus. As noted above, "white" culture is perceived as neutral, as the culture of "everyone," which eliminates the need for the visibility of any other culture. The minority group's feeling of belonging to the academic space is undermined when the cultural "markers" represent only the dominant culture on campus.

4.5 The extent of Arabic and Arab culture's presence on Israeli campuses

In Israel, ethnic origin is extremely important and is expressed in all spheres of life. Institutions of higher learning are closely connected to the national sociopolitical context in which they are situated. The conflicts and tensions between Jews and Arabs outside the walls of the country's academic institutions are replicated on campuses in Israel and strongly influence the relations between Jewish and Arab students, as well as between Arab students and their academic institution's administrative and teaching staffs. The lack of sufficient communication between Arab students and administrative and teaching staff members is directly related to the fact that the knowledge of Arabic among these staff members is either inadequate or nonexistent.

A discussion of the place of Arabic in Israel in general and in the academic sphere in particular is particularly relevant to the issue of Arabic's presence on Israeli college and university campuses.

Arabic plays a highly important role in the life of Palestinian Arab students in Israel. Among Palestinian Arab students in Israel, Arabic has a vital symbolic aspect, which, for these students, is the language's most significant aspect [13].

In the reality of Israel today, the use of Arabic on college and university campuses in Israel is not always received with welcoming arms. Arab lecturers who speak Arabic in the classroom often face opposition from the Jewish students sitting in that classroom and receive no backing from their superiors [30].

5. Conclusion

Despite the increase in the number of Palestinian Arab students, the Israeli academic world has not yet made Arab language and culture visible on the country's college and university campuses, except for a few isolated institutions of higher learning that display sensitivity toward Arab language and culture.

Generally speaking, the climate in Israeli college and university campuses is cold with regard to Palestinian Arab students. On these campuses, one clearly senses the presence of a history of ethnic exclusion, and special privileges are enjoyed by the Jewish students, for example, in the structure of the academic year, in the curriculum, in the attitudes of administrative and teaching staff members, and in the meager reporting on issues connected with the relationship between Arab and Jewish students.

The small number of research studies on the issue of the difficulties and cultural exclusion of Arab students attending institutions of higher learning in Israel is evidence either of a general lack of interest in this issue or of a reluctance to place it on the agenda. For example, there is little material in the professional literature on the role of teaching faculty and decision-makers with regard to that issue. The questions that therefore must be asked are: What role are Israeli academic institutions playing in the development of a comfortable multicultural climate that could enable Arab students to feel at home on the country's college and university campuses? Should they also play a role in the cultivation of a multicultural civic discourse between all the students who attend these institutions, a discourse that could serve as a model for a parallel discourse in Israeli society as a whole?

I have tried here to present a picture, even if only a partial one, of the problems involving the integration of members of minority groups in Israeli academia, but I have not attempted to offer immediate solutions to these problems. In light of what I have presented above, here are some ideas that might help decision-makers formulate such solutions:

1. Promotion of a feeling of belonging among Arab students through the hiring of Arab-speaking administrative and teaching personnel and through the increased visibility of Arabic on college and university campuses.
2. Orientation workshops for administrative and teaching staff members aimed at increasing their effectiveness regarding, and sensitivity toward, the members of different national groups.

3. Provision of a multicultural character to learning material and to the discourse on college and university campuses in order to increase cultural sensitivity in Israeli academia.
4. Inclusion of questions regarding cultural sensitivity on the evaluation questionnaires that students fill out on their lecturers.
5. Support for first-year students belonging to different national groups in the acquisition and reinforcement of essential academic skills.


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Perspective Chapter: The Case of Trinity University – An Examination of Vulnerable Students’ Academic Performance in Gateway Courses and Possible Solutions

John R. Hermann

Abstract

The study examines the factors that contribute to deficient grade rates and potential solutions to mitigate the issue at Trinity University. Using 9070 students’ grades in STEM-related gateway courses between the fall 2015 and spring 2020 academic semesters, the findings indicate that first-generation, underrepresented, and PELL eligible students struggle the most. Taking multiple gateway classes in the same semester increases student deficient grade rates as opposed to taking one. The creation of a Quantitative Reasoning Skills Center holds promise in helping students academically succeed and decreasing deficient grade rates in gateway courses, including those who are most vulnerable.

Keywords: higher education, pedagogy, student success, gateway courses, STEM-related classes, academic support resources

1. Introduction

Gateway courses—lower division, required courses characterized by high enrollment, high failure, and withdrawal rates that serve as a significant barrier to further study, degree completion and, ultimately, the professions [1, 2]—are front and center in preventing students from earning the coveted college degree. Students view gateway courses as a mechanism for weeding them out from some of the most notoriously challenging majors (e.g., Engineering, Physics) and pre-professional programs (e.g., pre-med, Accounting). Gateway courses also affect students differently: First-generation, underrepresented students (FGUS) and PELL eligible students are more profoundly and adversely influenced by their academic performance in gateway courses than their non-FGUS and non-PELL eligible counterparts ([3], p. 54). Finally, students in the United States who take out college loans are faced with the prospect of having secured debt, meaning that student loans are not forgivable in a bankruptcy court.

Faculty, academic support staff, and administrators are also concerned that students are not developing the skill set and knowledge needed to succeed in many of the gateway courses and the most challenging academic pathways of study. For example, these types of courses “represent roadblocks to student persistence and timely graduation ... [and discourages] students from continuing higher education” ([3], p. 54). It is difficult to discern the relative influence of student retention in relation to student persistence when considering student performance in gateway classes. Administrators also lament that it costs more to attract new students than retain the current ones. Cuseo ([4], p. 1) notes that, “retention initiatives designed to manage student enrollment are estimated to be 3–5 times more cost-effective than recruitment efforts, i.e., it takes 3–5 times as much money to recruit a new student than it does to retain an already enrolled student.” It is fair to conclude that improving the rates of students earning a post-secondary degree has been a national priority for over a quarter of a century with little improvement shown (e.g., [5, 6]).

The article is divided into four sections. First, the purpose of the study is explored by addressing the study’s research questions, providing a brief history of Trinity University and its experience with gateway courses, and reviewing the literature on gateway courses that generates testable hypotheses. Second, the study details the research methods (data collection, conceptualization, and operationalization of variables) and the descriptive statistics used. Third, the study discusses the empirical results of Trinity University’s experience with gateway classes. The study also fits the findings into the context of the gateway class literature. Fourth, the study offers a discussion that provides the implications of the findings and avenues for future strategies to reduce deficient grade rates in gateway courses.

2. Purpose of the study

The purpose of this study is to answer three questions. First, Do Trinity University’s FGUS and PELL eligible students have disproportionately higher deficient grade (D/F/W) rates compared with their non-FGUS counterparts in gateway courses? Second, does taking more than one gateway class (as opposed to taking one) at Trinity during the same semester increase deficient grade rates? Third, does the creation of a Quantitative Reasoning Skills Center (QRS) at Trinity reduce the deficient grade rates in gateway courses, particularly among those who are FGUS and PELL eligible? Prior to answering these questions, a short background of Trinity University and its experience with gateway courses are provided.

Trinity University is a small liberal arts university with a few select graduate programs located in the historic Monte Vista district in San Antonio, Texas. Trinity recently celebrated its 150th anniversary and has a total enrollment of approximately 2400 students. While Trinity has Presbyterian roots, it has been a secular university since 1969. For almost 30 years, Trinity has been consistently ranked first in the western region among universities offering undergraduate and master’s degrees.

After the financial crisis in 2008 in the United States, institutional data revealed that Trinity needed to strengthen its approach in helping first-year students succeed. In particular, students struggled in a series of STEM-related courses known as gateway courses. In 2015, Trinity created its first Student Success Center later named The Tiger Learning Commons. It included a director of student success and an academic coach. Trinity also decided to use its Quality Enhancement Plan (QEP) titled *Starting*

Strong to try to reduce its deficient grade rates in gateway courses. Since 2003, the Southern Association of College and Schools: Commission on Colleges (SACSCOOC) reaffirmation of the accreditation process mandates that higher educational institutions within its region undertake and complete a QEP once every 10 years. SACSCOC’s defines a QEP as a “topic that is creative and vital to the long-term improvement of student learning [that] ... focuses on learning outcomes and/or environment supporting student learning” ([7], p. 49).

Among other strategies, *Starting Strong* created a Quantitative Reasoning Skills Center to use best practices to help mitigate the high deficient grade rates in STEM-related gateway classes. To lead the QRS Center, Trinity hired a Director in January 2019. The Director is tasked with “supporting STEM faculty efforts to assist students facing quantitative reasoning challenges” ([8], p. 35). The QRS Director’s responsibilities include:

1. Overseeing The Quantitative Reasoning Skills Center;
2. Implementing and overseeing software support (i.e., ALEKS);
3. Overseeing Mathematical Placement;
4. Providing meaningful interventions with students struggling in STEM-related courses;
5. Organizing the Summer Bridge STEM course, which includes overseeing peer mentoring;
6. Teaching Pre-Calculus, Calculus, Introduction to Modern Mathematics, and A Mathematics Peer-Educator Course;
7. Expanding Awareness of resources and reducing stigma associated with accessing academic support resources;
8. Coordinating with faculty teaching STEM-related courses; and,
9. Encouraging students struggling in STEM-related courses to engage in a help-seeking behavior by meeting for one hour per week with a trained peer tutor for the remaining part of the semester ([8], pp. 35–36).

The QRS Center is focused on reducing deficient grade rates in STEM-related gateway courses at Trinity. First-year students, who are in the process of learning the norms and expectations of college, also take most of the STEM-related gateway courses. The Tiger Learning Commons and the QRS Center were the main strategies Trinity used to reduce deficient grade rates in STEM-related gateway courses. Active learning, institutionalizing peer tutoring, improving course design, increasing interactive and small-group learning environments, and introducing a STEM-related Summer Bridge class for students less prepared to succeed in STEM courses are all strategies developed by Trinity University to lower deficient grade rates in STEM-related gateway courses.

To contextualize the purpose of the study, an examination of the extant literature is explored, which generates four testable hypotheses.

Gateway courses have generated much scholarly attention (e.g., [9, 10]). Some scholars explore deficient grade rates in gateway courses and their influence on student persistence and retention rates (e.g., [11]). Other scholars explore the root causes of sub-standard performance in gateway classes. For example, it is well chronicled that FGUS and PELL eligible students face daunting challenges in succeeding in and completing gateway classes (e.g., [12, 13]). This leads to the first testable hypothesis in the study:

H1: FGUS and PELL eligible students are more likely to struggle in gateway courses in comparison to their non-FGUS and non-PELL eligible counterparts.

Lack of college preparation is another contributing factor to high deficient grade rates in STEM-related gateway courses. As Nunn ([14], p. 3) points out: “A great number of U.S. high schools do not adequately prepare students for the demands of college academics.” From her teaching experience, Nunn notes that she was exasperated by “the performance gap between students in my class who attended excellent high schools and those who did not” ([14], p. 9). While college preparation is certainly an important factor in determining performance in gateway classes, the data are not available to test this hypothesis.

Still, a different set of research examines the possible solutions to high deficient grade rates in gateway classes. For example, there is literature that suggests that the more gateway courses taken in a semester lead to higher deficient grade rates across those types of courses (e.g., [15, 16]). The only thing that is more challenging than taking one gateway class is taking multiple ones in the same semester. This leads to the second hypothesis:

H2: If a student takes more than one gateway course in a semester, it leads to higher deficient grade rates than taking one gateway class.

Finally, scholars have shown that there are best practices and strategies to improve student performance in gateway courses. Types of teaching techniques (lecture/chalk talk vs. active learning), improving course design (e.g., early alerts and low stakes assignments), offering bridge and preparatory classes (e.g., Summer Bridge STEM-related course), and improving academic support resources (e.g., academic coaches) are strategies that Trinity employed with the hiring of the QRS Director and the creation of his Center [16]. This leads to our third and fourth hypotheses:

H3: Deficient grade rates should decrease in gateway courses with the creation of a QRS Center in the Spring 2019 semester.

H4: FGUS and PELL eligible students' deficient grade rates in gateway classes should decrease with the creation of a QRS Center.

To test these four hypotheses, the study's methods of data collection and research methodology are outlined.

3. Data collection and research methodology

The time period under analysis is between the Fall 2015 and Spring 2020 academic semesters. For a course to meet the requirement of a gateway course, Trinity University's QEP titled *Starting Strong* defined the course as a gateway class during

its development phase. After all, one of the central reasons Trinity chose *Starting Strong* is to reduce deficient grade rates in the most notoriously challenging classes. The classes included in the analysis are in the subject areas of Math (Calculus 1 and Calculus 2), Life Sciences (Integrative Biology 1, General Chemistry, Introduction to Chemistry, and Organic Chemistry), the Physical Sciences (Introduction to Mechanics, Introduction of Electricity, Magnetism of Waves) and the Social Sciences (Principles of Microeconomics 1). The total enrollment of students taking STEM-related gateway classes during the Fall 2015 and Spring 2020 semesters is 9070. The data were ascertained from the Office of Trinity University’s Institutional Research and Effectiveness with the permission of the Associate Vice President of Academic Affairs: Student Academic Issues and Retention.

Appendix A conceptualizes and operationalizes the independent and dependent variables. The study uses the following methods. The three independent variables are binary (dummy): First, if the student is first generation or PELL eligible, the independent variable is coded as a 1; otherwise, it is coded as a 0. Second, if the student takes more than one gateway class in the same semester, it is coded as a 1; if the student takes only one gateway class, it is coded as 0. Third, if the QRS Director and the creation of his Center are present (spring 2019–spring 2022), it is coded 1; otherwise, it is coded as 0 (fall 2015–spring 2019). The dependent variable is also dichotomous. If a student earned a deficient grade in or taken a withdrawal from a course (D/F/W), the dependent variable is coded as a 1; otherwise, it is coded as a 0. To discern the influence of the independent variables on the dependent variable, the study will use descriptive statistics.

4. Results

Table 1 reveals the results for FGUS’ deficient grade rates in Trinity University’s gateway courses during the Fall 2015 and Spring 2020 academic semesters. Overall, the average deficient grade (D/F/W) rate is 19 percent for all students taking gateway classes. However, among FGUS, the deficient grade rate spikes 7 percentage points to 26 percent—over one-quarter of the students. By contrast, if the student is a non-FGUS, the deficient grade rate drops to 18 percent. The study’s findings are consistent with the findings in the literature. FGUS face daunting challenges when tackling the most challenging academic pathways [11, 12]. It may be due to lack of preparation of college-level work. And, FGUS do not always have similar support systems as their non-FGUS counterparts.

Like FGUS, **Table 2** shows that PELL eligible students also face difficulties in gateway classes. While it is not as pronounced as for FGUS, PELL eligible students have an overall deficient grade rate of 23 percent. In comparison, non-PELL eligible students

First-generation student	Deficient grade rate (%)	Frequency
Yes	26	1198
No	18	7162
All Gateway Classes	19	9070

Missing Cases: 710.

Table 1.
The deficient grade rates of students who are first generation.

PELL-eligible students	Deficient grade rate (%)	Frequency
Yes	23	1550
No	18	7516
All Gateway Classes	19	9070

Missing Cases: 4.

Table 2.
The deficient grade rates of students who are PELL eligible.

only have a deficient grade rate of 18 percent—a 5 percentage point difference between being Pell and non-PELL eligible. The study’s findings are also consistent with the literature regarding PELL eligible students [12, 13]. The purpose of PELL grants is to equalize the playing field among those who apply to and attend college, creating access and upward mobility for less affluent students. While it is a noble policy, the findings here show that PELL eligible students are less likely to succeed than traditional college students. The reasons for PELL eligible students not succeeding at the same rate as non-PELL eligible ones may be due to the choice of the schools attended. The findings indicate that PELL eligible students are more likely to choose schools with lower retention rates than non-PELL eligible students. However, even in the case of attending universities with higher retention rates, PELL eligible students are more likely to fail out than traditional students, which may also be due to college preparatory issues ([17], p. 1). With higher deficient grade rates in gateway classes, FGUS and PELL eligible students do not graduate at the same rates as traditional college students. In many instances, it means that FGUS and PELL eligible students often must pay back student loans when they have not received the return on investment of those who have graduated from college.

Table 3 focuses on whether taking multiple gateway courses in the same semester is likely to cause higher deficient grade rates than only taking one gateway class. The logic is that too many gateway classes taken at the same time affects overall performance, because the students may be overwhelmed by the challenging course work—something they were not accustomed to when in high school (e.g., [12]). In the case of Trinity University, taking multiple gateways courses (as opposed to one) in the same semester slightly increases the likelihood of earning a deficient grade. As **Table 3** indicates, Trinity students who took more than one gateway course (21 percent) during the semester were 4 percent more likely to earn a deficient grade than those who only took one gateway class (17 percent). If possible, it is prudent to spread out gateway courses over a longer period of time. At the very least, students should avoid taking multiple gateway classes during their first year of college when they are learning the norms and expectations of college.

Multiple gateway courses	Deficient grade rate (%)	Frequency
Yes	21	4991
No	17	4079
All Gateway Classes	19	9070

Table 3.
The deficient grade rates of students taking multiple gateway courses in the same semester between Fall 2015 and Spring 2020.

QRS director	Deficient grade rate (%)	Frequency
Pre-QRS Center (Fall 2015–Fall 2019)	21	7417
Post-QRS Center (Spring 2019–Spring 2020)	10	1653
All Gateway Classes	19	9070

Table 4.
 The deficient grade rates of students before and after the creation of the QRS center in STEM-related gateway classes.

Due to the struggles of students in STEM-related gateway courses, Trinity chose its QEP titled *Starting Strong* to strategically and intentionally help first-year students academically succeed. One of the featured strategies of the QEP was to create a QRS Center with a director who has a background in higher education pedagogy and STEM. Employing best practices, the objective was to decrease deficient grade rates in our STEM-related gateway courses. Our director started the QRS Center in the Fall 2019 academic semester. **Table 3** compares the deficient grade rates before and after the creation of the QRS Center. Prior to creation of the QRS Center, the average deficient grade rate for students in gateway classes was 21 percent between the Fall 2015 and Fall 2019 academic semesters. After the creation of the Center, the deficient grade rate precipitously dropped to 10 percent between the Fall 2019 and Spring 2020 academic semesters. This dramatic drop of 11 percentage points occurred during a global pandemic. COVID-19’s disruption affected all areas of the globe in a myriad of ways, including higher education. Yet, the QRS Center’s strategies helped mitigate one of Trinity’s most challenging academic issues (**Table 4**).

Table 5 compares the difference in deficient grade rates between FGUS and non-FGUS before and after the creation of the QRS Center. Prior to the creation of the QRS Center between the Fall 2015 and Fall 2019 academic semesters, the deficient grade rates for FGUS were 27 percent. In comparison, for non-FGUS during the same period, the deficient grade rate drops by 7 percentage points to 20 percent. After the hiring of the Director and the creation of a QRS Center between the Spring 2019 and Fall 2020 academic semesters, the deficient grade rate for FGUS decreased by 13 percentage points to 14 percent. And, similarly, for non-FGUS, the deficient grade rate dropped 11 percentage points to 9 percent, the lowest percentage for either group during the time period studied.

QRS director	Deficient grade rate (%)	Frequency
Pre-QRS Center (Fall 2015–2019) for FGUS	27	1015
Pre-QRS Center (Fall 2015–Spring 2019) for Non-FGUS	20	6214
Post-QRS Center (Spring 2019–Spring 2020) for FGUS	14	183
Post-QRS Center (Spring 2019–Spring 2020) for non-FGUS	9	1445
All Gateway Courses	19	8857

Missing Cases: 213.

Table 5.
 The deficient grade rates of FGUS before and after the creation of the QRS center in STEM-related gateway courses.

QRS center	Deficient grade rate (%)	Frequency
Pre-QRS Center (Fall 2015–2019) for FGUS	25	1281
Pre-QRS Center (Fall 2015–Spring 2019) for Non-FGUS	20	6132
Post-QRS Center (Spring 2019–Spring 2020) for FGUS	9	269
Post Hiring of QRS Center (Spring 2019–Spring 2020) for non-FGUS	10	1384
All Gateway Courses	19	9066

Missing Cases: 4.

Table 6.

The deficient grade rates of PELL eligible students before and after the creation of the QRS Center in STEM-related gateway courses.

Table 6 shows a comparison between PELL eligible and non-eligible PELL eligible students prior to and after the creation of a QRS Center and the hiring of the Director. Prior to the creation of a QRS Center between the Fall 2015 and Fall 2019 academic years, the deficient grade was 25 percent for STEM-related courses. For non-PELL eligible students, the deficient grade drops 5 percentage points over the same period. After the hiring of the Director and the creation of a QRS Center between Spring 2019 and Spring 2020 academic semesters, the study finds the most marked decrease among PELL eligible students in their deficient grades by 16 percentage points to 9 percent in STEM-related courses. In fact, the PELL eligible group of students outperformed the non-PELL eligible students (10 percent) by 1 percentage point during the same period.

In an interview, this researcher asked the QRS Director what factors contributed to the improvement in student performance in Trinity's STEM-related gateway courses. He attributed the initial success to three factors. First, while STEM peer tutors are not centralized, departments that have bought into the QRS Center's strategies have helped create a minimum quality standard for the performance of peer tutors. The QRS Director noted that peer tutors are a high-impact educational practice, and that peer tutors need to be properly trained prior to helping struggling students succeed. Second, the QRS director created a peer-tutoring advisory board for STEM-related fields. This makes faculty members stakeholders in peer tutoring and academic student success [18].

Third, the Summer Bridge Math program has also been a valuable strategy in helping students in STEM-related fields with preparatory issues prior to beginning of the student's first semester. Summer Bridge Math is a one-credit hour class that provides a review of the math skills used most often in STEM-related courses. The QRS Director collected data on the 1-week Summer Bridge program for incoming first-year students prior to the beginning of their first semester. He found that those students who accepted the invitation to attend the Summer Bridge Math program did better in STEM-related gateway courses than those who did not attend [18]. Research has reaffirmed the QRS Director's impressions that Summer Bridge programs are an effective strategy in preparing students for the rigors of college [19].

5. Conclusion

Consistent with the literature on gateway courses, the study finds that students at Trinity University struggle with gateway courses in STEM-related fields. Academic

performance varied among the student cohorts. FGUS and PELL eligible students faced more daunting challenges in gateway classes compared with non-FGUS and non-PELL eligible students. One of the central findings of the study is that students who took multiple gateway courses struggled with deficient grades more than those who took only one gateway course. Additionally, the creation of a QRS Center helped to mitigate deficient grade rates among all groups in STEM-related gateway classes in its first three semesters. The findings regarding the Director and his QRS Center are still in its preliminary stages. The findings, however, reveal that universities are not powerless to help students succeed in its most challenging academic pathways. It requires financial and personnel resources coupled with a strategic and intentional plan that uses best practices with an understanding of the academic culture of the university.

Even though Trinity has made progress in decreasing the deficient grade rates in its STEM-related gateway courses, there is still notable room for improvement. There are three strategies that may help student performance in gateway courses in the future. First, course redesign with a special focus on student preparatory issues, particularly at the beginning of STEM-related gateway courses, could prove fruitful. Three immediate tweaks to a syllabus may include more low stakes assignments, early alerts, and learning objectives/student-learning outcomes. Second, Supplemental Instruction (SI) has demonstrated to help reduce high deficient grade rates in gateway courses. SI was created by Deanna Martin at University of Missouri, Kansas City, in 1973. It uses peer-assisted study sessions to improve student success and retention within targeted historically challenging courses [20]. As Dawson et. al. ([21], p. 609) point out, “SI is correlated with higher mean grades, lower failure and withdrawal rates, and higher retention and graduation rates.”

Third, co-requisite instruction is another long-term solution, which requires students enrolled in a class “to also attend a 1–3 credit hour co-requisite course that is aligned with, and offered alongside, the appropriate college-level course” [22]. Some students enrolled in gateway courses do not need to take a remedial course before taking a gateway course. Yet, they are still not yet prepared to take the class without a meaningful intervention. Co-requisite instruction appears to resolve this issue. In highly sequential majors, such as Physics at Trinity University, co-requisite instruction seems to be a strategy that holds promise.

Given the exorbitant cost of higher education, it is vital that universities prepare students for the rigors of college once accepted to the institution. It is not only a student-centered approach. It also helps universities retain students and provides upward mobility for students from underrepresented backgrounds.

A. Appendix A: definitions and operationalization for gateway classes

A.1 Definitions (Conceptualization)

Gateway Classes are lower-division, required courses characterized by high enrollment, high failure and withdrawal rates that serve as a significant barrier to further study, degree completion, and ultimately, the professions [2].

Gateway Classes at Trinity: The time period under analysis is between Fall 2015 and Spring 2020. For a course to meet the requirement of a gateway class, at least 15 percent of the students (on average) had to receive a D/F/W. The classes under analysis are in the areas of Math (Calculus 1 and Calculus 2), Life Sciences (Integrative Biology 1, General Chemistry, Introduction to Chemistry, and Organic Chemistry),

the Physical Sciences (Introduction to Magnetism, Intro to Elec, Magn, and Waves), Computer Sciences (Principles of Computer Science 1), Engineering (Mechanics 1), Business (Fundamentals of Accounting 1), and the Social Sciences (Principles of Microeconomics 1). The total enrollment of students taking these classes during the time period under analysis is 9070.

Multiple Gateway Classes are when a student takes more than one gateway course in the same semester.

First-Generation Student (FG): The first student in the family that will graduate from a 4-year college.

PELL Eligible Student (PE): The Federal Pell Grant is usually awarded to undergraduates who have a high degree of unmet financial need. Students whose families have a total income of up to \$50,000 may be *eligible* for the need-based funding, though most Pell grant money goes to students with a total family income below \$20,000.

Quantitative and Reasoning Skills (QRS) Director: As a result of Trinity's Quality Enhancement Plan titled *Starting Strong*, the university hired a QRS Director. The Director is tasked with supporting "STEM faculty efforts to assist students facing quantitative reasoning challenges" (*Starting Strong*, 2018, p. 35). Additionally, the QRS Director implements software support, oversees mathematics placement, and tutorial software (i.e., ALEKS), provides meaningful interventions with students struggling in STEM-related courses, assists in offering the Summer Bridge Summer STEM course, teaches Calculus 1 (Math 1311), and oversees peer tutors, among other activities (Ibid, pp 35–36).

A.2 Operationalization of definitions

Gateway Classes: If a student earned a D/F/W in the course, it is coded as a 1; otherwise, 0.

Multiple Gateway Classes: If a student took multiple gateway courses in the same semester, it is coded as a 1; otherwise, 0.

FG Student: If a student is first generation, it is coded as a 1; otherwise, a 0.

PELL Eligible Student: If a student is PELL Eligible, it is coded as a 1; otherwise, a 0.


QRS Director: After the hiring of QRS Director (Spring 2019), it is coded as a 1; otherwise, 0.

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COVID wrought havoc on the world's economic systems. Higher education did not escape the ravages brought on by the pandemic as institutions of higher education around the world faced major upheavals in their educational delivery systems. Some institutions were prepared for the required transition to online learning. Most were not. Whether prepared or not, educators rose to the challenge. The innovativeness of educators met the challenges as digital learning replaced the face-to-face environment. In fact, some of the distance models proved so engaging that many students no longer desire a return to the face-to-face model. As with all transitions, some things were lost while others were gained. This book examines practice in the field as institutions struggled to face the worst global pandemic in the last century. The book is organized into four sections on "Perils and Promises", "The State of Online Education", "Goals and Challenges of Online Learning" and "Innovations in the Age of COVID". It presents various perspectives from educators around the world to illustrate the struggles and triumphs of those facing new challenges and implementing new ideas to empower the educational process. These discussions shed light on the impact of the pandemic and the future of higher education post-COVID. Higher education has been forever changed, and higher education as it once was may never return. While many questions arise, the achievements in meeting and overcoming the pandemic illustrate the creativity and innovativeness of educators around the world who inspired future generations of learners to reach new heights of accomplishment even in the face of the pandemic.

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