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Education at the Intersection of Globalization and Technology

Edited by Sharon Waller, Lee Waller, Vongai Mpofu and Mercy Kurebwa

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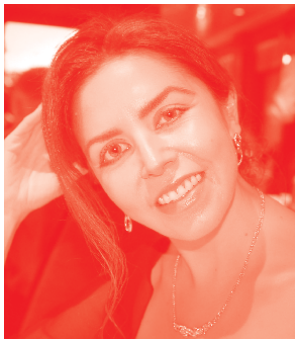

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Meet the editors

Dr. Sharon Waller joined the American University of Ras Al Khaimah in March 2015 where she is currently Assistant Professor in Education. She served as a public school teacher and an educational diagnostician for thirteen years before coming to the United Arab Emirates. She has served as the founding manager of the Office of Counseling, Testing, and Disability Services, an institutional effectiveness coordinator, and chair of the Student Success Committee. Dr. Waller obtained her bachelor's degree from Texas Woman's University, her graduate degree from the University of North Texas, and her Ph.D. from Texas Woman's University. She is a strong proponent of digital learning and an advocate for the empowerment of diverse learners.

Prof. Lee Waller joined the American University of Ras Al Khaimah in August 2014 where he is currently Professor in Education. He served as a public school teacher, community college teacher/administrator, and a university faculty/administrator before coming to the United Arab Emirates. He currently serves as Associate Provost of Enrollment Management. He earned his bachelor's and master's degrees at Stephen F. Austin State University, Texas. Dr. Waller obtained a Ph.D. from the University of North Texas. He is an experienced digital educator with substantial international didactic and administrative experience.

Dr. Vongai Mpofu is a science educationist in the Faculty of Science Education at the Bindura University of Science Education, Zimbabwe. She is a science teacher training lecturer with a Ph.D. in Science Education. She coordinates the designing of secondary school science teacher programs; teaches general and inorganic chemistry, pedagogy/methodology of sciences, history, and philosophy of science, and research to undergraduate and postgraduate students; and develops teaching, learning, and research materials. She also supervises student research including Ph.D. theses. Her main research interest is science education and research in education, including STEM education, indigenous knowledge, and school science, chemistry teaching and learning, and qualitative and indigenous research matters. Dr. Mpofu joins university work with strong experience in high school leadership.

Dr. Kurebwa Mercy is a Professor of Education in the Department of Educational Studies, Zimbabwe Open University (ZOU), where she obtained a Ph.D. in Education. She also holds an M.Ed. in Educational Administration, Planning and Policy Studies and a B.Ed. in Educational Administration, Planning and Policy Studies from the University of Zimbabwe. She also has a Certificate in Education from the Ministry of Education. Dr. Mercy taught at the primary level for sixteen years and was a lecturer and program coordinator for fifteen years in the Faculty of Education at ZOU. She also served as an

acting registrar for the then Great Zimbabwe University and head of the Personnel Department at the then Masvingo State University from 2003 to 2005. Dr. Mercy has externally and internally examined thesis documents in the Departments of Education at ZOU, University Forthare, University of Venda, University of Limpopo, and University of South Africa (UNISA). She has also assessed research proposals for the National Research Foundation (NRF) of South Africa. Currently, she is supervising several Ph.D. candidates who are at different stages of their studies. She is also a research associate with the University of South Africa and part of the editorial team for the *African Perspectives of Research in Teaching and Learning* (University of Limpopo). Dr. Mercy has published fifty-four papers in refereed journals. Her research interests include open distance and e-learning, assessment in education, and school and social issues, with a strong passion for assessment. She also has presented more than ten papers at local, regional, and international conferences.

Contents

Preface

Today's modern world is undergoing rapid reinvention with unparalleled outreach and speed. The world is not just changing, the world is changing at an explosive pace. Nations and cultures are being reinvented as technology transforms all aspects of life. Old ways of doing and acting are no longer appropriate as new ways of doing and acting emerge from the creative genius of a broad array of global perspectives. Practice that was once isolated is now widely circulated. Transformational solutions now emerge from new sources of inspiration to empower and renovate current practice. As the remnants of the Industrial Revolution yield to the mandates of the age of information, our world has become more interconnected and mutually dependent. In fact, all aspects of life are undergoing incomparable change. Education is not immune. In fact, education struggles to empower mankind and guide the utilization of these new methodologies, social morays, and cultural perspectives. The preparation of tomorrow's global society and modern workforce places education and educators squarely at the crossroads of globalization and technology. The real question is, "Where do we go from here?"

The discussion of twenty-first-century workplace skill sets is already two decades old. Today's educators struggle to prepare students for jobs that do not even exist yet. Not only are yesterday's skill sets obsolete, but today's skill sets are also no longer sufficient. Educators are required to train students today for jobs that may emerge tomorrow and then vanish as quickly as they appeared. Preparing students for career flexibility has become the norm rather than the exception. A clarion call has gone forth demanding vision and foresight to meet the yet unseen needs of our emerging world. Education cannot lag behind other disciplines, rather it must chart the course for the vessels that follow. Mankind must adapt. Even the process of changing must change. These are exciting times to be an educator!

One cannot grasp the needs of the present and the future without an understanding of the past. Today's world did not just happen. Our modern world was born through the travail of countless discoveries and myriads of associated challenges. Globalization is often described as the interaction between peoples within a shrinking, interconnected world. Globalization began when the first human decided to look over the next ridge and continues to reel beneath the expanding impact of communication and transportation technology. Grandchildren speak to grandparents on the other side of the world just as readily as travelers greet each other while walking through the local mall. The barriers of language and distance no longer constrain interactions, creating an explosion of opportunity for the astute. International trade is fueled by the fertility of the human mind and the rich exchange of ideas. In this environment, the educated mind remains the guardian genius of possibility. Education becomes the highway to a better life.

Change is not always bad. In fact, water that quits changing becomes stagnate and deadly. Fresh ideas and novel thinking serve to enliven the waters of human endeavor. Education has always been important; however, the role of education is more important now than in any previous time in human history. Educators are the heralds of opportunity and stand upon the shoulders of giants who walked before

them. This text is intended to share the ideas, perceptions, insights, and inquiries of those who struggle to understand the past and the present in order to envision the future.

Technology was once utilized as a euphemism to refer to the computer. Now technology embraces a much broader digital aspect. Just as Liber Abaci, an early thirteenth-century text, expounded the genius of the Hindu–Arabic numeral system to liberate mankind from the constraints of the mechanical abacus, the process of learning continues to embrace digital resources that threaten to transcend the computer itself. Digital has become so much more than simply utilizing a computer to enhance instruction. Digital learning now encompasses the broad spectrum of effectively utilizing any form of digital technology to enhance learning. Liber Abaci (freedom from the abacus) has become Liber Computatrum (freedom from the programmable machine). Digital learning welds together a plethora of learning tools, devices, pedagogies, and andragogy to lay the future at the feet of humanity. This text is dedicated to educators in the past and the present who lent their passion and genius to make this revolution possible. This text is also dedicated to those educators yet to come who will stand upon the shoulders of others to empower possibility and guide the future.

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Section 1

Globalization: An Historical and Modern Perspective

Chapter 1

Indian Education: Ancient, Medieval and Modern

Mangesh M. Ghonge, Rohit Bag and Aniket Singh

Abstract

Education is a platform in which young generations are trained and make them future-ready. Education provides knowledge and skills which help the person to be employable. The Indian education system is very popular and diversified among other countries' education systems due to its change in the evolution from ancient to the modern education system. During the ancient and medieval periods of education, students were trained by teachers in such a manner that they can survive and live in that era. After independence, there is a tremendous growth in the Indian education system providing teaching and training in all aspects, but it does not satisfy the global demands of the market. This chapter focuses on teaching methodology, curriculum, characteristics, methods of learning, aims of the Indian education system during the ancient and medieval period and how it differed in today's modern education and what are the things that our today's modern education need to learn and implement from ancient and medieval education. The mentioned points are used to differentiate ancient, medieval, and modern education with advantages and disadvantages. Through this chapter, students, teachers will get to know the difference in the education system and what else to be adapted in the future to overcome all the problems.

Keywords: education, learning, curriculum, ancient, medieval, modern

1. Introduction

Technological improvement has boosted the economic growth in India. Science and technology have an important role in the economic development of India. Compared to other developed countries, India has more youth manpower. Proper education will play a significant role in making youth future-ready and increasing economic growth by providing skilled persons which will also boost industrial development. In the modern era of education, every institution or university is adapting new teaching methods using their teaching methodologies. Indian education is the biggest and well-known education systems in the world. During ancient education, there were 5 big well-known universities like Takshashila, Nalanda, Vallabhi, etc., which focus on the all-round development of students and those in the medieval period there exists 2 institutions madrasah and maqtabs which mostly focus on building student religious and leaders of the future. In modern education, there are well known autonomous institutes like IITs and IIMs which are famous all around the world.

During ancient education, students live away from their parents, their education comprises of subjects like physical education, mental education, politics, economics, etc. They were shaped in a way that they can live in any condition considering how difficult the situation will be? Medieval education also followed the same protocol as ancient education in spite that their education mostly focuses on religion. In today's modern era of big institutes like the Indian Institute of Technology (IITs) and Indian Institute of Management (IIMs), everything is changed like the living standard of students, curriculum, all-round development. The principle objective of the student has been to just achieve its goal and be successful. Only the big institutes like IITs, IIMs, and some other private and aided universities have adopted modern methods of learning. There is a difference in curriculum, teaching methods, and living standards of students in every institute. The syllabus of the current education system is not industry-oriented and also not according to new upcoming trends. The main objective of education is mostly theoretical and not practically implemented [1].

The main purpose of this paper is to convey what all the things need to adopt in our current education system from ancient and medieval times and also some new trends associated with it. The paper is mainly categorized into three sections Ancient, Medieval and Modern education system, including sub-sections such as curriculum, method of learning, the aim of education, characteristics of education, educational institutes, higher educational institutes, advantages, and disadvantages of the particular education system.

2. Ancient education

During the ancient period, two systems of education were developed, Vedic, and Buddhist. The medium of language during the Vedic system was Sanskrit, while those in the Buddhist system were pali. During those times the education was of Vedas, Brahmanas, Upnishads, and Dharmasutras. From the Rigveda onwards, our ancient education started with the objective of developing the students not only in the outer body but also on the inner body. The ancient education focused on imparting ethics like humility, truthfulness, discipline, self-reliance, and respecting all creations to the students. The education was mostly imparted in ashrams, gurukuls, temples, houses. Sometimes pujaris of the temples used to teach students. The education system of ancient India has some special features and uniqueness which was not found in any other ancient education system of the other countries. The education was mostly given in forests under the blue sky, which keeps the student's mind fresh and alive. During ancient times people used to live a simple life and doing their work with devotion and hard work [2].

2.1 Aim of education

The main objective of education was to equip the students with a good quality of education. The education mostly focused on the enrichment of culture, character, and personality, development, and cultivation of noble ideals. The objective was gaining the mental, physical, and intellectual personality of students, to make the students future-ready and survive in any situation [3].

2.2 Characteristics of education

During the ancient period, the state government and the people did not interfere in designing curriculum, payments of fees, regulation of teaching hours. There was

a strong bonding between teacher and student. Every student was allotted with one teacher and more emphasis was given to the student-teacher relationship, each student used to meet teachers personally to learn and gain instructions from them. During ancient times, royal families, as well as kings of states, used to donate their wealth to improve the education system and quality. The syllabus was designed in accordance with the demands of that era. At that time students used to leave their houses and went to live with their gurus until their education was completed. During the early Vedic period, women's education was also given more emphasis. The education focuses on the physical and mental development of students. The course duration was about 10–12 years, as there were no books so students used to memorize all things, memory played a crucial role during learning. The education was imparted in forests away from cities and peoples to give students a pleasant and silent environment of study.

2.3 Curriculum

Curriculum plays an essential role in the education system. It was dynamic and not static; it was made up of different stages. The fundamental goal of building a good curriculum was to develop students physically and mentally. The curriculum consists of four Vedas, six vedangas, Upnishads, darshanas, Puranas, Tarka Shastra. The six vedangas were Shiksha, Chhandas, Vyakarana, Nirukta, Jyotisha, and Kalpawhile the darshanas were Nyaya, Baiseshika, Yoga, Vedanta, Sankhya, Mimasa. Algebra, Geometry, and grammar were also given more importance at that time. Panini was famous in the domain of grammar at that time. The curriculum of the Buddhist system consists of pitakas, Abhidharma, and sutras. Besides this medicine, Vedas were also given importance. Hindu learning was a part of Buddhist learning, although more emphasis was given to Buddhist learning. Both the systems were going hand in hand at that time. The education was totally through orals and debates, and the exams were conducted every year. The education system of the ancient period focused on subjects like warfare, military, politics, religion.

2.4 Methods of learning

The teachers at that time paid special focus to their students and teach them according to their knowledge and skill level. Teaching was basically via orals and debates, and the different methods were as follows:

- At that time books were not there, so students had the habit to learn and memorize all the things taught in the class, and teachers also helped them in memorizing.

- The students used to deep dive into the concepts taught by their teachers and explore new methods to learn it.

- Listening, Contemplation, and concentrated contemplation were some new methods of exploring the way of learning.

- The teachers used the storytelling methods to teach the students.

- Students used to ask questions about the topics taught by the teachers and these topics were discussed and then answered to the students.

- The education of that time mainly focused on practical knowledge of the topics taught in the class.

- The students got plenty of knowledge through seminars and debates conducted at frequent intervals.

2.5 Educational institutions

Gurukul was the hometown of teachers where students come after completing their initiation ceremony and learn until the completion of their study. The parishads or academies were the places of higher learning and education where students learn through discussions and debates. Goshti or conferences were the places where the kings of the states used to invite scholars from every institute to meet and exchange their views. Ashramas or hermitages were the other learning centers where students from various parts of the country used to come and learn from saints and sages. Vidyapeeth was the place of spiritual learning founded by great Acharya, Sri Shankara in places like Sringeri, Kanchi, Dwarka, and Puri, etc. Agraharas was an institution of Brahmins in villages where they used to teach. Viharas were the educational institutions founded by Buddhists where the students were taught the subjects related to Buddhism and philosophy.

2.6 Higher educational institutions

1. *Takshashila or Taxila:* Takshashila was the famous center of learning, including religion and teaching of Buddhism in ancient times. It was famous for his higher education learning comprising of subjects like ancient scriptures, law, medicine, sociology, astronomy, military science, and 18 silpas, etc. The well-known scholars from the university were great grammarian Panini, he was an expert in his subject of grammar and published his work on Ashtadhyayi, Chanakya who is skilled in statecraft both studied here. Students from Kashi, Kosala, Magadha, and also from different countries flocked into the university despite a long and arduous journey. Takshashila was an ancient Indian city currently situated in north-western Pakistan was the well-known center of learning and has been declared as an archeological site and world heritage by the United Nations Educational, Scientific, and Cultural Organization (UNESCO) in 1980.

2. *Nalanda:* When Xuan Zang came to Nalanda it was called Nala, which was the center of learning in many subjects. The students used to come here from different parts of the country and the world to study here. Different subjects were taught, including the Vedas, fine arts, medicine, mathematics, and astronomy. Xuan Zang itself became the student of Yogashastra. Nalanda which is currently situated in Rajgir, Bihar, India was also declared as a world heritage site by UNESCO. The other famous institutes around ancient times were Vallabhi, Vikramshila, Ujjain, and Benaras.

2.7 Advantages

- The system focuses on the all-round development of students.

- More emphasis was given to practical knowledge rather than theoretical knowledge.

- The students were not just involved in bringing the ranks, but their main focus was on knowledge.
- Classrooms were built-in forests which provide a pleasant study environment to the students.
- There was no pressure laid on students related to studies so that they can learn effectively.
- The government did not interfere with the formation of curriculum, kings at that time helped in the development of education.

2.8 Disadvantages

- Women were not admitted to the Gurukuls.
- There was caste discrimination as only Kshatriya was allowed, Eklavya was not given admission to the Gurukul.

3. Medieval education

During the eighth century Anno Domini (A.D) a huge number of Mohammadian invaded India. Mahmud Ghaznavi captured India and set up a large number of schools and libraries in the country by the looted wealth. Later Muslim leaders established their permanent empire in India, they brought a new system of education. The ancient education system was drastically changed. The Arabs and the Turks bought some new cultures, traditions, and institutions in India, in that the most remarkable change was the Islamic pattern of education which was different from the Buddhist and Brahmanic education system. The medieval age, education system primarily focused on the Islamic and Mughal System.

3.1 Aim of education

The main objective of education during the medieval period was the spread of knowledge and the propagation of Islam. The objective behind this era of education was to spread Islamic education its principles, and social conventions. The purpose of the education system was to make people religious minded [4].

3.2 Characteristics of education

The rulers helped in the spread and development of education. They helped in the establishment of different educational institutes and funded it, big landlords also gave them some wealth in the development of institutes. There was no control of rulers over the educational institutes and also to their management. The student-teacher relation was also good like the Buddhist and Brahmanic period, although students did not live with their teachers at that time. Teachers took interest in learning, at that time teachers were used to teaching students individually.

3.3 Curriculum

During that time books were not there, therefore the students were used to write on taktis. The stress was laid on teaching the student from the beginning

that is teaching them first alphabets and then words. Calligraphy and grammar were the most important subjects taught during those days. Students also learned "paharas"(multiple of numbers), and also they memorized it while learning. Arabic and Persian were the main languages of communication and these languages were important for the students who wanted to get higher posts. The recitation of the Quran was made compulsory, the students used to learn the Quran by heart as this was an important part of their curriculum. The students at their early ages were taught to recite the first 13 chapters of the Quran as a poem. Ibn Sina, an Islamic Persian scholar, and a teacher write that students during the age of 14 should be given the choice of selecting their favorite subjects for masters, for example, reading, manual skills, literature, medicine, geometry, trade, and commerce. There were two types of education during medieval times like secular and religious education. Religious education consists study of the Quran, Mohammad, and his invasions Islamic laws and Islamic history. The secular education consists of the study of Arabic literature, grammar, history, philosophy, mathematics, geography, politics, economics, Greek language, and agriculture.

3.4 Methods of learning

- Orals, discussions, and recitations of the lesson taught were the main methods of learning at that age.
- Emperor Akbar encouraged the students to focus more on reading and writing and to reform the scripts. He wanted the education system to be systematic and advised teachers to first teach students about the knowledge of alphabets, then words-knowledge, and then sentence formation.
- More emphasis was given on practical education.
- There was no half-yearly or annual examination fixed for students, but the students were evaluated based on practical situations of life.

3.5 Educational institutions

Maktabs:-Maktabs were the center of the primary education for the children of general people. Along with religious education, students were also taught subjects like reading, writing, and arithmetic. They were also taught some romantic literature of Persian example, Laila-Majnu, Yusuf-Julekha, etc. Along with practical education, letter writing applications, and accountancy were also taught in Maktabs.

Madrasas:- After completing the primary education in Maktabs, the students were sent to the Madarsas for higher education. Madarsas were the centers of higher learning and Emperor Akbar did remarkable development in the education of the medieval era. Along with religious and practical education, Akbar stopped the tradition of the Islamic religion and instructed to teach Hinduism and philosophy in many Madrasas. The subjects such as medicine, history, geography, economics, political science, astrology, philosophy, and mathematics were taught in Madarsas. Akbar made subjects like Vedanta, Jurisprudence, and Patanjali compulsory for Sanskrit students.

3.6 Important educational centers

1. *Delhi:* Nasiruddin established Madarsa -i-Nasiria under the reign of the Shiraz Allauddin Khilji and established many Madarsas with renowned

teachers in them. Mughal emperor Humayun established many big institutions of astronomy and geography in Delhi. He also introduced institutions where subjects like Arabic, Persian, Grammar, Philosophy, and Astronomy was taught.

2. *Agra:* Sikandar Lodi established many Madarsas and Maktabs in Agra and attracted many students from other countries to come and study. Akbar made Agra the center of culture, fine arts, and crafts.

3. *Jaunpur:* Sher Shah Suri completed his education in one of the educational institutes of Jaunpur city. The main subjects of teaching were political science, warfare, history, and philosophy, Ibrahim Sharki set up many Madarsas in Jaunpur.

4. *Bidar:* Mohammad Gawan had established many Madarsas and Maktabs in this city and it became the famous center of learning. The city consists of a library that contains 3000 books on subjects like Islamic theology, culture, philosophy, medical science, astronomy, history, and agriculture.

3.7 Advantages

- Practical education was given more importance, students and teacher's relations were good. Students were taught from the basics and rulers also supported the development of education.

3.8 Disadvantages

- Religious and Islamic education was given more importance.
- The student aimed to focus on leadership for ruling the country.

4. Modern education

In the middle of the medieval age, the British invaded India and started to capture it. The modern education was introduced during the British empire. In the 1830s Lord Thomas Babington Macaulay introduced the English language. The subjects and the syllabus were limited to some extent, the main aim of modern education of the British was to spread Christianity. As time passed education started to develop and entered into the modern era that is in the twenty-first century, the era of science, technology, and innovations. And the demand and the need for education stills remain the same as it was in ancient and medieval times. In the modern era of science and technology, the industrial sector is increasing day by day. As demand increases our education sector also needs to change and adapt to that environment [5, 6].

4.1 Aim of education

The objective of modern education was to inculcate values in students such as equality, secularism, education for all, and environmental protection, etc. To understand the culture as well as people of our country, every student must be provided at least a minimum level of education and also to provide education to the people who cannot afford it, to prepare the students with the ever-increasing demands.

4.2 Characteristics of education

The student-teacher relations remained the same as it was in ancient and medieval, but students did not live in the teacher's house. As technology is increasing day by day, the education sector is also following the trend of technology by teaching the students through online lectures and Massive Open Online Course (MOOC). In Aviation and the medical sector, more emphasis is on practical knowledge as compared to other sectors. Women's education is giving more importance, and the Government has launched many programs to encourage women's education. In the modern era electronics gadgets like projectors, Light Emitting Diode (LED), and computers are used to teach the students. The Government has established many programs and there are many organizations that promote education in India.

4.3 Curriculum

The whole curriculum of a student is divided into three sections primary, secondary, and graduation. Primary education is from 1st to 10th standard, Secondary education is 11th and 12th, and in Graduation, students were given the choice to choose a field for further studies example computer, electrical, civil, etc. But after secondary education students also have choices to choose their career path. In primary education, students are taught subjects like history, geography, mathematics, science, Hindi, and Marathi. The languages may differ from state to state. At the early stages, students were taught alphabets, poem recitation, word formation, etc. Different prayers, the National Anthem is also in the schools. Along with studies different sports and extracurricular activities are also conducted in schools to keep the students fit and for their all-round development. The pupils are assessed based on the term exams conducted at frequent intervals. In secondary education, students are given choices to choose from science and commerce. According to the student's choice, they were given an education. Secondary education is an advanced version of primary education. Pupils were assessed based on term examination. After secondary education, students were given entry to the universities through some entrance examination, according to their marks scored in entrance examination they are admitted to the universities. Pupils were assessed based on semester exams or in-sem exams.

- In modern education along with studies, the emphasis is given on extracurricular activities and sports for all-round development of students.

4.4 Methods of learning

- Students mostly learn concepts through online platforms like YouTube, Coursera, and Udemy.
- Students refer to the notes given by the teacher's side by side while learning online.
- During class hours doubts are solved through discussions, debates, etc.
- Pupils were assessed based on mid-sem written exams and practical exams to check their practical knowledge.

4.5 Educational institutions

1. *Schools:* Schools are the educational institutes where children are sent for their primary education. There are many private and government schools situated

in India, primary education means education from Nursery to 10th standard. Children at their early ages are sent to schools to learn poems, grammar, prayers, alphabets, etc. besides this, the other subjects taught in the schools are English, mathematics, science, history, geography, and other regional languages. Schools are situated inside the city, also there are many cultural programs and sports events conducted in schools for the students to develop their interpersonal and physical skills. Private schools are run by organizations and the principal manages the academics and cultural activities in schools.

2. *Colleges:* After completing primary education from schools, students are sent to colleges for secondary education. After primary education, students are required to give entrance exams to take entry into colleges and according to the marks scored in entrance exams students are allotted colleges. In some states, during college, they are advised to choose a stream from science and commerce and then further carry on their secondary education. College education consists of 11th and 12th standard. Different subjects taught in secondary education according to their streams are physics, chemistry, geometry, algebra, accounts, and many other regional languages.

3. *University*: After the secondary education, students are required to give the entrance exams like Joint Engineering Entrance (JEE) and other state-level exams to take admissions in universities. Students are given choices to choose a stream like a computer, electronics, civil, and Mechanical and then start their career in it. The University provides undergraduate and postgraduate course comprising of course duration of 4 and 3 years, different universities in India are Savitribai Phule Pune University, Mumbai University, and many other aided non-aided and private universities. There are many cultural and sports events conducted in universities for giving students some time to joy and relax from studies.

4.6 Higher educational institutions

1. *Indian Institute of Technology:* It is one of the greatest universities in India for higher education like undergraduate, postgraduation, and many more streams. There is a total of 23 IIT colleges in India, every year lakhs of students compete to take admissions in these IIT's. JEE-Mains and JEE-Advance are the two entrance examinations to take admission in these IIT's, according to the All India Rank (AIR) and marks students are allotted IIT's. Due to its high level of educational teaching and curriculum, IIT is famous all around the world.

The other top universities are Birla Institute of Technology and Science (BITS), National Institute of Technology (NIT), Indian Institute of Science (IISC).

4.7 Advantages

- Use of technology in learning, students is learning free-lancing and many other new technologies.

- Many programs and missions have started to increase the employment of India.

- Top class universities and colleges with good infrastructure and environment.

4.8 Disadvantages

- Interference of government in education, management, and syllabus.
- Lack of quality teaching as well as the environment in government schools and colleges.
- Increase in fees of schools and colleges of private institutes.
- Lack of practical knowledge orientation.
- Due to the increase in fees, the family, which is below the poverty line cannot afford education and hence there is an increase in the number of laborers in India.
- Lack of connectivity of the students who lived in rural areas.

5. Conclusion

In the modern era, industries and technology are increasing day by day. Every industry sector is looking for a person who best suits their industry. With the ever-increasing demand for industrial sectors, our current education system also needs to be upgraded. In universities, students are learning just for competing with each other to come first, no practical knowledge is gained. There is a lot of pressure and burden of work and studies on them, due to this student are committing suicide. Our education system needs to learn from ancient and medieval education system regarding the implementation of practical knowledge, student-teacher relations, ways of life student lived in that age, the contribution of kings towards the education, there was no stress laid on students and much more. The future of industries and commercial sectors will be very tough and ever demanding, so our government has to provide such an education system which will bring all-round development in students and make them future-ready and also teach them to live in any critical situation.

Conflict of interest

The authors declare that there is no 'conflict of interest'.

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Chapter 2

Globalization, Technological Advancement and the Traditional Library System: Implications for Information Utilization and Learning

Patience Uzezi Otolo

Abstract

Libraries are crucial part of teaching and learning in educational institutions. The emergence of technology and its incorporation into libraries have improved learning through a well strategized information management model. This has relegated series of antiquated routine practices of the traditional or conventional library. The innovative approaches to information resource utilization introduced by technology have significantly promulgated the relevance of libraries to education. This has also diversified the learning pattern of students and faculty and the management of scholarships within institutions of learning. The crux of this discourse revolves around answering questions like; how has globalization impacted library services? Can globalization mar or improve libraries? Has it changed the learning configuration and reading perspective of students with regards to patronizing the library as a vital information hub or knowledge repository? Since libraries (mostly academic, public and special) have become reference centers for learning, teaching, research and development processes, the contributions of technology and globalization in traditional libraries is reviewed. It proficiently looked at the current integration of modern technology into the library and how it has facilitated optimum learning experience in universities. The challenges that accompanied its emergence of technology and the extended learning services were discussed.

Keywords: Traditional libraries, technological advancement, use of libraries, globalization, information utilisation, learning, ICT, innovation

1. Introduction

1.1 Conceptualizing globalization

The definitions for the word 'globalization' is inexhaustible with no definite consensus as several authors have provided their uniquely diversified perspective based on their field of endeavor and understanding of its distinctive impact on human subsistence, survival and social co-existence in antiquity and contemporary times [1]. For some, globalization is simple the transfer and unhindered relocation of people,

resources, and services across the globe in a manner that it integrates and blends cultures effortlessly, open up trade and interaction between nations and economies. Tonca [2] also opined that concept of globalization is multi-faceted, cutting across different disciplines and that it deals with the integration of economic, technology, educational and cultural aspects of human endeavor. The physical presence of human is now been expanded beyond its limits through a technology-powered globalized world. Misra [3] averred that the globalization which is a cross border integration of people, businesses and capitals was made possible through the flow of information, technology and exchange of ideas. This makes today's type of education easy, where people obtain international degrees from institutions in other continents or countries from the comfort of their bed. Thus, this makes globalization a major tenet of human civilization in the past decades. Summarily, globalization is simply the interconnection of different parts of the world in a concept tagged as '*global-village*'.

1.2 Defining libraries, technology and its role in the globalized era

The library is a training and research center [4] and several technology based functions have been introduced to support this feat. Some of which include the library management system, e-books, mobile technology, artificial intelligence, virtual reality, the Internet [5] to mention but a few. Libraries are at the center of information utilization in higher education [6], hence are crucial components of any educational system. Library services which are a major tenet of the education sector have become increasingly applicable by virtue of the newly established electronic means of information resource processing which is complimenting the conventional methods of teaching. The basic function of libraries is to broaden the learning, literacy and reading abilities of students and researchers in educational institutions and have successfully moved from a collection institution to connecting educators and learners physically, remotely and effortlessly [7].

The constantly growing evolutionary trends with technology (advancements) in a digitized world (globalization era) is now making it possible for people to conveniently access books and other information resources for any educational course of choice through the library. Libraries - information hubs for researchers and academia have also been greatly hit by the force of technology and globalization. At several levels of interest, libraries have been greatly improved, making learning easier and fluent. Technology has further enhanced the freedom of information usage and research and learning collaborations across the globe. Libraries have aided all educational and research ventures of universities. They give priority in serving the information needs of students and staff and then industries and the general public [8]. Libraries provide a unique opportunity and learning platform for students and staff of tertiary education.

In a globalized world as ours, libraries have stood to become a reservoir for information resources for which information exchange for learning is efficiently managed. The education (service) sector is one which fosters national growth within the auspices of teaching, training, research and development. Libraries (especially in most academic institutions) have become a pavilion for the storage, and distribution of vital information. They support all forms of learning in educational institutions even with the advent of technology. Technology has reshaped the manner with which information is accessed, retrieved, utilized and managed for educational purpose. Technology driven services in libraries have made the following possible for effective learning according to [9];

1. Facilitate remote access to information resources in libraries.

2. Improve the velocity and conditions of access to scholarly information.

3. Provide a room for experimenting data recombination, flexibility and reformatting.

4. Enhance access to unlimited information and data from diverse sources.

5. Create a means of accessing information resources all day round.

6. Access regular updates on global library practices and policies.

7. Access updated information on any research or career field.

8. Connect experts from diverse fields of research.

This paper will deliberate on libraries in tertiary institutions which serve a vast majority of information seekers. The emergence of technology in libraries and its subsequent use for library services are discussed herein.

2. Technology, globalization and improved library services

Although, online stores like Amazon is chasing traditional book stores out of the market place, however, Ross [10] averred that only public libraries may end up like that. Academic libraries have had a better impact of the introduction of technology in modern human civilization. Technology has made services easy for library users e.g. the GPS navigation app that help students and other users locate an information resource in the library. The use of information and communication technology (ICT) in libraries has created a novel model for information seekers to strive whilst utilizing library resources, products and services for learning. In [11], it was clearly stated that information technology expanded the access to information which was earlier gotten from television, books, teachers and information professionals and usually in discrete forms or in bits. Timely delivery of information was almost unachievable before the emergence of technology. So many libraries, starting with the academic libraries which are domiciled in tertiary institutions (university, colleges, monotechnics and polytechnics) have enjoyed this innovation.

Public libraries were not left out in the intellectual transformation powered by technology as self-service, equitable access to public documents and effective assessment can be carried out effortlessly. Self-services like easy check-in and –out and return services using access control technologies, created a more flexible working environment. ICT has continually made impact on information storage, processing, acquisition and dissemination in the modern library in so many ways. Some of the important reformations introduced by the technology-powered globalization for information utilization were listed by [12] to include

1. The collaboration and information sharing among libraries in a network.

2. Easy retrieval of information resources by students and other users.

3. Reduction in time consumption and travel space when consulting library material.

4. Multiplication of information services rendered in libraries for researchers and patrons.

5. Provision of quick and timely access to learning resources.

6. Integration of the library (as an educational outfit) with other industry based organizations.

7. Provision of non-stop information services especially via remote sources.

8. Reducing the man hour and work load of library staff.

Across the globe, specific technology powered innovations have been recorded in different libraries. These innovations have improved and enriched learning through ease of information utilization. According to [13], some of the innovative technologies available in American libraries to support learning and other educational functions as opposed to the traditional library system without technology include mobile applications that help students on a library resources tour, robots for book delivery, GPS (Global Positioning System) to aid in locating materials inside the library and 3-D printing services for hi-tech and dimensional modeling during learning or teaching. Below gives detail of three core library services that have been improved upon by technology.

2.1 Institutional repositories

Libraries share experiences and integrate policies with international bodies, a feat made possible through globalization. There has been a change in the practice of librarianship from this integration or access to information resources. Two of such apparatus modified by the technology driven globalization are digitization and repository storage of library resources which have defined a futuristic function of the library. The digitization efforts will be discussed later in this text. Specifically looking at the University of Toronto Library, a huge online repository has been developed for students to access dissertations, thesis, digitized books and 5500 past questions (in PDF format). The repository through the library's information technology services, share its resources through the Dspace open source platform [14]. These services were never in the traditional libraries since this web based technology was not in existence. This has been replicated in several other libraries even in developing countries like Nigeria. For example, the University of Nsukka, Nsukka, and the University of Ibadan, Ibadan libraries host a large repository of information resources for students, researchers and faculty. With Internet powered smart device, one can access the materials in the institution's website for free.

2.2 Library solution/RFID technology

Radio Frequency Identification Device (RFID) technology which uses radio waves to identify library items through barcodes is a self-service software developed and adopted for libraries to track students use of library materials, payment of fines, and for the security of books when borrowed to students and other library patrons [6]. One of such development is "*Dootrix*" now in Suffolk Libraries in the United Kingdom. This technology helps libraries and users to effectively work during extended library-open hours in educational institutions and take inventory of readers, and returned books including library staff activities [13]. Most analogue techniques in libraries like classification and cataloging and book returns can be tracked and traced using special technology like the OPAC and RFID technologies.

In an interview with Mick Fortune, a Librarian with the British Library and Sirsi-Dynix Company, he mentioned that two of the thing technology has introduced into libraries are the RFID as earlier mentioned and discussed briefly and the Near Field Communication (NFC) [15]. The NFC, a similar radio-frequency technology is an alternative to the RFID in terms of function, application and usage [16]. It allows smart devices to exchange information through a wireless model across small distances of 4–10 cm. It has inherent security codes for activities like ticketing, electronic passport, payment and access control. This has advanced the traditional library system in information utilization to a smart library. Library transactions are performed using student's phone by integrating the NFC technology. Using an application compactable with the library management system (LMS), NFC can be used within the library to scan, search, borrow, return and track information resource use history both for the library and the student. Books in the library are given a NFC tag which is programmed with every search item on the book. All transactions of borrowing or payments are automatically stored in the LMS.

2.3 Library management system

The new technological interface called 'Enterprise' and 'Symphony' was developed by Sirsi-Dynix Company for libraries for an integrated library system. It is currently available at the Louisiana Library Network of The Louisiana State University [17]. This interface allow students access online catalog across libraries in the network.

3. The traditional library and its technology supported innovations

Okiy [18] mentioned that globalization has been beneficial to libraries in countless ways. Some of which include a fascinating transformation of the traditional (conventional) library to a modernized multi-purposed civil and technology burdened library. Most of the procedures adopted in the traditional library were modified through the use of information technologies. **Table 1** gives a summary of these changes.

4. Technology transformed services and products in libraries

For students in tertiary institutions, technological transformations in the library have aided learning and research greatly. Vijayakumar and Vijayan [19] opined that technology has played a significant role in the automation of libraries, its management, networking and technical communication patterns. Automation has reduced the level of human intervention in the daily routine of libraries e.g. the use of OPAC allows a student on their own locate a book or material in the shelf without seeking permission or guidance from a library staff. In managing the library, the various means of efficient and prompt communication between library heads, subordinates and students has increased. Mobile phones, e-mailing and virtual conferencing makes such feat possible. Some are discussed herein;

4.1 Acquisition of library materials

Technology has improved the way students and other users of library acquire information resources for academic or personal need. The list of available books,

S/N	Library services	Traditional methods	Technology based methods
1	Information dissemination patterns	Listing, bibliographies, abstracting, and print copies hand distribution	E-mailing, electronic document delivery, computer conferencing, telefacsimile
2	Information retrieval	Checking Catalogs and indexes	Database management system (e.g. OPAC), online and offline information retrieval
3	Information Storage	Books in shelves, manuscripts, print media	Institutionalized repository, hard drives, Internet, Google drive, cloud drives, electronic publishing, magnetic storage,
4	Generate information	Hand typing using typewriter, hand writing	Word processing, text editing, character recognition, scanning, voice recognitions,
5	Information processing	Classification, cataloging and indexing	Electronic data processing, artificial intelligence,
6	Information resource destruction	Physical weeding or disposal	Magnetic erasing, recycling of medium, optical erasing, deleting to recycle bin.
7	Users enquiry for information	Physical presence	Call through dedicated contact number, e-mailing
8	Security of information resources and systems	Human presence	Close circuit television (CCTV), access control (e.g. turnstiles), RFID, library solutions
9	Student registration	Physical presence followed by manual filing.	Online registration from any remote source
10	Knowledge management	Face to face mentoring, meetings, forums, discussion, seminars, bulletin and memo writing	Social media, teleconferencing, video conferencing, telephony,
11	Marketing of information resources	Point of sales display, face to face marketing, book shelve display	Social media, Internet, microblogs

Table 1.
Modifications in traditional library services with technology intersection.

journal and other resources for every institution (department, faculty, school and college) can be gotten through e-mails (Yahoo, Hotmail, Google, Rocketmail) reducing the time consuming correspondence and paper wastage whilst improving access to information at the click of a button [20]. There is also provision for reminders, receipts and acknowledgment at the online acquisition platform. Subscription for hard and soft copies of academic journals can be done from the comfort of the home or office.

4.2 Cataloging and classification

Apart from acquisition services, the Internet and web based technology has aided correspondence with book sellers, publishers and authors, which was originally carried out through hardcopy mailing services. Other improvements include, reminders for scheduled meetings, ordering of library resources, access and download of bibliographic records and creation of online book stores like *Amazon*. Manuel classification of information resources was upgraded to networking of

resources now available online, creation of an online classification scheme, and use of search engines like Yahoo for Dewey Decimal Classification. Collection development has been enhanced using online subscription for print and e-forms for research journals, quick delivery for orders and online pay-per-use services. There are online catalogs like the WebOPAC, and WorldCat for easy search and retrieval of information. With these improvements, students and researchers (library patrons) can have unlimited access to e-books, e-journals, preprints, directories, films, patented documents, encyclopedias, magazines, newspapers and letters [21]. OPAC, which is the acronym for Online Public Access Catalog, is an online database for library materials stocked for its users to access from one library or another. In this platform, the library catalog is made available online. OPAC is a new technology that has helped library users to have remote and immediate access to teaching, research and learning materials. With a single keyword search on authors, title, date of publication or publisher can fast track retrieval of archived materials from an online database or catalog. This feature has enhanced access to information by students in the library, saving time and stress of rigorous physical search.

4.3 Reprographic technology

Four important technologies that have been engaged the libraries are printing, duplication, photocopy and facsimile. Due to the increase in the number of students and dependence on the limited information resources in the library, library materials frequently gets damaged in the form of wear and tear. The advent of reprographic technology has helped in the preservation and duplication of limited information resources for students and staff. The medium has also helped to generate revenue for the funding of libraries [22]. Manuscripts, textbooks, reports and graphic files can be reproduced. The xerography machine is a good example.

4.4 Internet and web technologies

The Internet is a vital substratum and facilitator for a series of technology driven services in libraries in this period of globalization. Since its invention in the late 1980s or early 1990, it has powered so many library services (cataloging, classification, information resource acquisition, circulation, reference services, document delivery, and dissemination of information and technical services) expanding it beyond the physical boundaries and four walls of the library in a bid of appreciate knowledge acquisition [21]. Information is stored in the Internet in different formats and can be transmitted in the speed of light from one platform to another, and from one location to another. The Internet aided the formation of information search and retrieval tools like Google, and Wikipedia at the blink of an eye.

4.5 Information retrieval system

Students who use information resources domiciled in libraries can now retrieved information remotely, through what is regarded of a digital/virtual library. The digital library is a collection of information resources and devices stored in a local or remote reserve and can be assessed through a computer network. Details of this library are further discussed.

4.6 e-Library

In America, 14% of students who do not have Internet access in their homes, can comfortably access the Internet at their school libraries, the Internet powered

section of libraries with computers is referred to as the e-library. Others get free WiFi to network to improve the learning performance [23]. This library provides e-journal and e-mailing services to student and faculty in their bid to get more information or data for research in higher education institution [6].

4.7 Digital/virtual libraries

Since the introduction of technology into the education sector, libraries have evolved from being traditional book collection houses to online store of information resources. The development of digital or virtual libraries has made it also possible for one to access the store of resources in a United State University library from a Nigeria library. The virtual libraries do not need a physical building but a remotely accessible store of e-books. In the University of Utah Marriot Library, a digital library was created for the collection of digital scholarship to enable students and faculty of the institution have open access dataset for research in a project called "*Digital Matter*" [24]. This newly developed digital library has hosted several workshops, conferences and reading programs at the University to enable the creation of a viable community of cross-disciplinary researchers in a synergistic manner. In 2016, the digital library started an amazingly robust program to make available digital newspaper repository for students, digital asset management system which now olds over 765,000 objects, 2.5 million files, 4 million newspapers and 20 million articles.

4.8 Digitization of print media

The digitization of paper-based information resources is another giant effort powered by technology in libraries across the globe, as some UK libraries have digitized all records from 1990 till date [25]. Through the use of a scanning machine and Optical Character Recognition (OCR), print media can be digitized and documented in electronic form for remote access in repositories. Libraries collect digitized information and can be made available to users from anywhere and at any time in the globe. Learning at higher education is made easy with this functionality in university libraries most importantly.

4.9 Library guide mobile apps

Since the purchase of smart mobile phones is on the rise, and on a frequent basis, mobile apps are been developed, to make learning through the library easier. Most libraries now engage the service of software developers to create mobile apps specific to their libraries that will meet the circulation functions of the library. Since, there is reported evidence of people spending more time on mobile phones, hence libraries have adopted the use of mobile applications (e.g. LibGuide) to guide users for remote access to information resources and contact to library personnel [26–28] Several mobile applications are currently been developed in different libraries (as revealed in [29, 30]). Fortune [15] mentioned the application called "*Solus*" which is operational in libraries in Australia and Britain is currently been used for their libraries. The University of Manchester has an android application to help students self-issue a material at the library without the participation of library staff. These mobile apps have been a source of encouragement for library users and have improved the access to information for their learning.

5. Extended library services powered by technology

The Library Consultant, Garland John in his online article listed diverse range of new technology powered services offered in libraries for the betterment of education in the western world. Most of which have been adopted and implemented in the developed countries to include coding clubs, digital storytelling, digital maker laboratories, and virtual reality. These technologies support learning, reading and research in different areas of endeavor.

5.1 Coding clubs

In this club domiciled in libraries, children and young adults are taught the rudiments and technicalities in using technology for coding in any format using *microbits.* The *microbits* are computers programmed with software to learn coding, do design thinking, for ideation and to solve human related problem. These *microbits* are currently in Plymouth Libraries, England and can be borrowed for free [31].

5.2 Digital storytelling

One of the vital information stored in libraries are written stories in microfilms, web pages or print media. The introduction of technology has made it possible for writers and coders to build new stories with an interactive design to immerse reader into a virtual reality of the depicted fiction. These writers and coders are also allowed to manipulate the narrative pattern and the systematic flow of the story line to make more meaningful realistic backdrop. Some of such libraries that have ventured into this line of thought are the Guildford Libraries in Surrey where a Gothic Story Jam was carried out to depict and embolden the interest of people on the creative art/fiction of Frankenstein and Emily Bronte [31].

5.3 Digital maker laboratories

Libraries especially in the United Kingdom have started offering 3D and 2D printing and help small business to develop prototypes for their products to enhance market visibility. The digital maker laboratories domiciled in libraries allow customers to learn cutting-edge technology for designs on print media, fashion and instructional materials [31].

5.4 Virtual reality (VR)

Libraries today enhance the learning performance of customers by incorporating virtual reality technology to encourage library patronage [32], learning and playing. Virtual (augmented and mixed) reality is an experience for which a physical user is made to enter a three dimensional virtual world using a headset, computer-powered imaging or mobile device [33]. Several virtual reality devices are now available in academic libraries, e.g. the Sony developed PlayStation VR, VIVE by HTC, Cardboard by Google, Oculus Rift by Facebook, and GearVR by Samsung [34]. These devices are used in teaching students information literacy, used for storytelling, virtual travel tours, gaming and the development of new skillset. The Ryerson University Library, Toronto currently uses the Oculus Rift. The University of Utah Library offers workshops once a week on the use of VR. VR is already been used for training medical students in University of New England and others on

different types of surgical procedure inside the library through a virtually seemingly real experience [35–38].

Library users can visit a new universe right in the comfort of their local libraries. Library guide or tours have been built into virtual reality for library users and increasingly used for workshops and training in educational institutions e.g. California State Library and the Wonder Laboratory inside the Fergusson Library of Stamford, Connecticut teaches students to code their own virtual reality games from the start point. Frost et al. [39] conducted a survey on the expanded use of virtual reality services in Harold B. Lee Libraries in Brigham Young University Idaho, United States with data showing overwhelming positive perception on the importance of virtual reality for learning inside the library. In their survey, they found that 81% love it for the sound fun, 9% personal learning, 5% for research, 2% do assignments with it, while 6% for other purposes and students and staff prepare using VR for experimentation.

5.5 Artificial intelligence (AI) in libraries

In September 2018, the University of Rhode hosted that first cross disciplinary AI facility (laboratory) in their main library and it was made open to all students and staff of the institution. The laboratory was hosted in the library to facilitate research into robotics, and ethics in technology. The Cambridge Public Library, Harvard metaLAB and Massachusetts Institute of Technology (MIT) Library also partnered to install an AI enabled "*Laughing Room*" where students play different laugh tracks once the algorithm perceives any statement to be comic. The MIT library is already on the plan to building a collection of information resources that is readable by robots through a voice prompt for students to easily locate and access scholarly articles. A text-to-text or text-to-speech software called Chatbot is been used at the University of Oklahoma Library to assist students to find subject specific databases [40].

5.6 Telephony in libraries

The Cumberland Public Library has a server called the Windows NT 2012 R2 server for the sharing of printers, documents and other files between libraries or with the public for any academic or research purpose. Their telephone system was upgraded to Voice-over Internet protocol (VOiP) technology and a Nook HD^{+} tablet to allow patrons access e-books if they do not have a smart device of their own [41].

5.7 Social media in libraries

A recent technology based change that have occurred in libraries is the use of social media (Twitter, Facebook, WhatsApp, Blogs, etc.) for easy and prompt communication with library users in academic environments [42]. This promotes immediate use of information when requested, induces participatory activities of students, create an atmosphere of openness and bridging the gap in decision making of library managements. Book and focal discussion groups using Blogs is made possible, and update on product and services can be noticed timely. Social media at libraries also helps in building the information literacy or train students on information seeking competence.

5.8 Libraries-ready-to-code initiative

In partnership with technology giants like Google, one of the achievements of the American public libraries is to build and promote 21st century skills in a

Libraries-Ready-to-Code Initiative [40]. This initiative with others at the United States has help to bridge the digital literacy divide among students (teens and young adults). For example, the Hinsdale Public Library has developed a system where teens, junior grades and new adult new books are delivered in boxes at residential address through subscription economy technology. Each month those who have subscribed to this service in the library pick up their books.

5.9 Support for entrepreneurial activities

Libraries have been part of enterprising network facilitating innovation and creativity among young one. The State Library of Victoria has become an information hub for innovators [23]. The Pattee and Paterno Library in recent times have started students with patentable ideas through the technology driven information services available at their disposal [43].

6. Challenges with the use of trending technology in libraries

Apart from the enormous benefits that came with the intersection of technology in libraries, there are several complimentary. These include the lack of technical know-how, frequent break down of technical infrastructure, cost of maintenance [12], poor electrical power supply in developing countries, cybercrime (e.g. computer systems hacking), digital rights management strangulating information dissemination, and forced placement of paraprofessional librarians on redundancy list. Fortune [15] mentioned that the lack of basic technical skills to utilize technology powered services is a major threat that accompanied the emergence of technology in libraries. Vijayakumar and Vijayan [19] opined that lack of funding, inadequate staff with ICT skills, high annual operational costs hinder the disadvantageous use of technology as well as its potentials in creating unemployment. Khan [9] listed poor funding technological infrastructure, inadequate electrical power supply in developing and underdeveloped countries, high cost of bandwidth and the recent digital and intellectual property rights issues pose threat to the effective use of technology in libraries. There is also the issue of library patrons privacy where data is breached, identity is revealed or stolen with trending technology. However, McAndrew [44] has suggested the use of a library virtual privacy network (VPN) to protect online users of library resources using an encrypted tunnel in the library user devices, although, this may come with paid charges. Okiy [18] highlighted that training and re-tooling of library staff and inclusively, the government has a role to play in funding libraries to appropriate the full specifications that comes with globalization of libraries through technological empowerment. She complained of poor communication infrastructure, low technical skill, and lack of collaboration between libraries, government and non-governmental agencies has a blockade to the sustainable use of technology in libraries. In [45], it is submitted that globalization has led to decline in budgeting for research libraries in Australia, hence, technology and globalization is known to be caused some form of unemployment, and under funding for librarians and information professional, although some authors do not agree with this fact. It is clear from several authors that these challenges are uniform and universal and needs urgent attention.

7. Conclusion and recommendation

Today, due to the effect of globalization, teaching curricula have been standardized, methods in practical courses optimized and unified and access to information available

in other organizations made possible. The libraries now serve as a repository for information resources in parent institution and others. Although, as perceived by some authors and information professionals, the emergence of technology is currently in the process of making libraries and librarians obsolete by cutting down on the relevance of human resources in the management and distribution of library resources. The availability of e-books, repositories, archives and digitized information has spurred creativity in the management of libraries, library services are still been shaped by innovative technology. These former traditional bookstores with dusty card files have been rebranded by the technology powered globe. Since the introduction of technology into library, learning with library resources have had a touch of dynamism, 'psychologically and environmentally friendly' for example the availability of free e-books and databases. Libraries across the globe have increasingly demanded for computers and smart devices to offer customer friendly services to users which are mostly students. Today libraries offer wireless Internet services in their digital library (popular known as e-library) section.

It is very true that technology and globalization has come to stay in the education sector, but as regards libraries and information collection centers, the role of librarians and libraries cannot be over emphasized. Technology in itself, undoubtedly has been of immerse help to learning and libraries. The authenticity of information from technological platforms cannot be guaranteed as misinformation has become a leading problem in recent times. Access to technological device also poses a threat to education. With the speed at which technology is transforming libraries and information management in higher educations, developing countries are yet to imbibe this new culture of learning. The use of technology has brought about privacy concerns for both libraries and its main patrons (students). Efforts and collaborations to solve these issues need to be place for a smooth sailing of educational activities in institutions of learning where libraries are resident.

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Conflict of interest

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Section 2

Charting a Global Course

Chapter 3

Global Policy and Local Implementation: A Papua New Guinea Experience

Anna Joskin

Abstract

This chapter presents a report of global education policies driving reforms locally. The report is from a qualitative case study of an 'Outcomes-based English Curriculum's Implementation' in two local school contexts in Papua New Guinea (PNG). Evidence was drawn from the author's PhD thesis that used the constructivism and interpretivism lenses to give meanings to findings derived deductively and inductively. Data was both primary and secondary and consisted of: classroom observations, document analysis, field notes, structured interviews, post-observation interviews, and focus group discussions. Findings revealed: 1) Impacts of global agenda on local context, and, 2) Sustainability issues. Thus, this chapter stresses the need for collaborative professional development between stakeholders to sustain global education policies locally with the '*Kibung Framework*'.

Keywords: Papua New Guinea, education reform, curriculum policy and implementation, outcomes-based education

1. Introduction

It is said that global agenda drives relationships with national and local contexts, and one example of that relationship was captured in the Global Education Reform Movements (GERM) of the 1980s and 1990s [1–4]. The GERM gained momentum across the United States, United Kingdom, Australia and New Zealand [5, 6]. Seemingly, developing countries in the Pacific Islands were also influenced by the GERM influence [7, 8], and, Papua New Guinea (PNG) a Melanesian island country had no immunity to that influence [1, 9, 10].

Developments of Globalised Education Policies (GEP) such as the Universal Basic Education (UBE), Education For All (EFA), and Universal Primary Education (UPE) guided reforms for National Education Systems (NES) world over [1, 6]. Moreover, according to the literature, GEP placed emphasis on: Having a pre-determined education model/curricula to meet market oriented demands [4, 11, 12]. The GERM, arguably, was achieved world over when NES adopted a common education model (Outcomes-Based Education), and its subsequent Outcomes-Based Curricula (OBC) [1, 13–15]. The intentions were to improve educational performances and outcomes by using a universal framework advocating for quality education.

However, literature shows that reforming NES because of global policy mandates for implementation of a universal education model and curricula is not simple and straight forward [1, 11, 16]. Arguably, the process can be a highly complex one because of different factors and actors involved [2, 17]. Moreover, it is also stressed that trying to describe exactly where any reform agenda went according to global policy intentions could be problematic as, 'No one shoe size fits all' [3, 18]. Thus, there is an urgent need to document relationships of the GERM on local contexts, as Fullan [11] calls for more situated studies on global educational changes.

This Chapter hopes to answer the question: *'How has global educational policies influenced reform in a local context?'* This paper reports findings of research done on 'An Implementation process of a reform curriculum' in Papua New Guinea (PNG) [2], so as to illustrate the relationship of global education policies on a local context. Firstly, I will outline the theoretical lenses used; secondly, I will describe the global climate that drove the education reform. Thirdly, I will document how PNG embraced the GERM. Fourthly, I present the methodology used; then discuss two case studies' findings as results of GEP impacts on local contexts. Lastly, I will conclude by way of argument that the Global Education Reform Movement relationship with PNG was problematic, and not sustainable.

2. Literature review

This section discusses the theoretical lenses for understanding global education changes. Then it describes the climate driving global education reforms. Next it highlights processes of policy and implementation; and, last, gives descriptions of a scenario showing relationships between global agenda influencing local settings. The terms - 'Innovation', 'change' and 'reform', are used interchangeably here to refer to educational changes.

3. Diffusion of innovation theory

Rogers' [19] diffusion of innovation theory offers three broad stages for making sense of how global education policy can influence local contexts. They are: Initiation, Implementation and Continuation.

3.1 The initiation phase

The Initiation stage describes beginnings or diffusion of innovations/changes of something new like a reform agenda that will attempt to improve society. Changes may come from either external means (globally), or, internally from with systems or from both factors [5, 16]. If external donors drive reforms under development packages; timings and objectives could be constraints as projects have certain periods [14]. Thus, receivers of change need clarity from those initiating reforms from the onset; because, there could be sustainable issues, should subjective interpretations occur [20].

Decision makings here influence reform agendas [5]. Those dialogues can range from top-down, bottom-up, or from a combination of both approaches [21]; each has respective challenges and strengths. For example, in curricula reforms, priority considerations would need to go to: (a) Curriculum planning and policy statements, (b) Learning aims, and achievable strategies, (c) Project implementation (resources and staff development), and, (d) Classroom implementation (teaching and

evaluation skills) [16, 22]. Seemingly, Initiation stages have numerous tasks, and, can be overwhelming when going into Implementation stages.

3.2 The implementation phase

The Implementation stage happens after the initiation processes. Accordingly, implementation takes time to be embedded into systems [20, 23]. As approximations, the first three years of reforms are considered implementation periods [5, 16]. Interestingly, rejection or acceptance of reform agendas is possible in the implementation phase; both could affect reform continuation [20]. However, if the latter occurs, recipients of change may have adapted and modified practices. That illustrates surface adoptions of reforms; probably, without deep reflections of consequences [22]. Interestingly, records show political lobbying can be more influential, than rational thinking at this stage [5, 16]. Hence, the challenge of reform sustainability looms.

3.3 The continuation phase

The Continuation phase captures sustainability of reform agendas. This stage provides spaces for research, monitoring, and evaluation [5, 16]. Two outcomes are possible here – taking ownership or retaining old ways. Outcomes may depend on the Initiation and Implementation stages which influence sustainability of reform agendas. For example, in curricula reform situations, if considerations were given to factors like teachers' beliefs, attitudes, understandings or short trainings; then, the reform agenda could be sustained at school levels [2]. However, should resistance occur; then, literature suggests using Professional Development (PD) as intervention strategies to sustain curriculum implementation processes [23, 24]. The Continuation phase is equally challenging as; and interactive with the Initiation and Implementation stages of the diffusion of innovation theory.

In closing, the three lenses of the diffusion of innovation theory are used to examine relationships of global educational policies on a local context.

4. Global educational policies driving changes

The UN developed numerous global policies for guiding operational matters worldwide. For instance, 'Article 26' of the Universal Declaration of Human Rights', showed beginnings of global agenda driving national and local developments. Interestingly, the idea of UPE is entwined into - 'Article 26′, and, thus; the notion of UBE was borne [25]. That hindsight was a global direction for countries to follow by providing quality basic education for children as obligations under the Convention on Children's Rights [1, 15, 25].

Subsequently, the issue of UBE was given prominence on the world stage by international educational reformers in the mid-1990s (Delors [5, 26]). Apparently, EFA was the global agenda reiterating calls for countries to provide accessibility to education for all at basic levels so that retention rates could be decreased [17]. EFA was a treaty signed in 1990 in Jomtien, Thailand, and re-asserted in 2000 in Dakar, Senegal; EFA emphasised UBE; it is argued that UBE is a global indicator set by the UN to measure countries' achievements of the Millennium Development Goals [1, 8, 13]. Educational changes that drive accessibility to learning opportunities refer to expanding education opportunities in countries [3, 17]. Seemingly, that was the common denominator of global education influence on local contexts which was also supported from the World Bank's Reports [13, 17, 27]. In short,

global education agenda guided UN member countries to align their national education frameworks within international requirements.

The literature reveals that different things on a global and local scale can also motivate educational reforms world over [5]. Some reasons include: Structural, organisational, systemic and pedagogical changes [3, 17]. For changes to take place; decision making processes are made either through top-down, bottom-up, or a combination of both [14]. Educational changes may be initiated from both outside influence as from a global perspective, or within local contexts [2, 15]. Interestingly, other reports on education reform do indicate that global education policies like the UBE and EFA had significant influence on education reforms in local contexts [3, 5, 17].

Mandated educational policies driving change are said to be top-down approaches. For instance, Education Ministries can instigate organisational changes and pass on decisions to stakeholders within their systems [3, 21]. This type of change is common in systems world over, like the Pacific Region with more centralised control from Education Ministries. Top down changes would require political will and the administrative processes within systems to drive change agendas. The discussions here show that policy of a common cause connects global and local contexts.

5. Policy and implementation

Policy and implementation as concepts connote relationships. Policy resonates with governance, and, is created to improve social systems [21]. Thus, official documents are deemed public policies because they are instruments guiding implementation of mandated agendas at different spheres of society. Implementation also captures meanings of Policy *Intentions*, and *Outcomes* [21]. Implementation is a process; and for it to occur, societal issues would need to motivate policy developments [21]. In short, it is said that the policy and implementation are factors that push global education reform [5, 9].

Public policy evolves through three stages:

1. Governance - Refers to 'authority' [21]. This is the political decision making arena for policy development and application. This may eventuate through top-down, bottom-up, or a co-construction approach [14]. The top-down approach involves legislation from the hierarchy which is then passed down to subordinates via channels of communication within organisations. The bottom-up approach gets people working together to rectify issues. The co-construction approach refers to all stakeholders working together to develop solutions to social issues [23].

2. Policy - Is a legal document developed to improve social issues. Hence, mandating policy is intentional because objectives have to be achieved. Because many actors are involved in embracing policy, interpretations of it may vary and tensions may arise.

3. Implementation – Connotes an act of doing (implementing), which means that the activities have not yet been completed. Alternatively, it may refer to the state of having been done already (implemented) [21].

In summary, public policy has governance and implementation entwined in it and it can be clothed in different guises across different social contexts.

6. Curriculum as a policy instrument

The GERM was pushed as policy mandates through the Outcomes-Based Education (OBE) model and it subsequent OBE curricular (OBC), [3]. A curriculum contains courses planned for studies in education systems [2]. However, that view, is narrow, as curriculum designs have inbuilt variables for understanding; before implementation can proceed. For instance: Curriculum aims, theoretical underpinnings of education model, teaching and learning theories, and developers' intentions are few examples that illustrate a curriculum is not a single entity but contains processes that would need unpacking for clarity [2, 11]. As caution, subjective interpretations of policy curricula can happen during classroom implementation [1, 24]. Hence, that may impede continuation of reform processes.

According to literature, curriculum changes arise when there are perceived needs and, subsequently, curriculum reforms are undertaken with aims for improvement [11]. However, implementing a large scale curriculum change is not simple and straight-forward, but is a highly complex phenomenon [2]. For instance, Hall and Irving [23] noted in the New Zealand context that having a curriculum that is mandated to operate based on valid sound research could still have problems, if the policy makers, experts and practitioners are not working together to ensure that the curriculum (or curriculum innovation) not only "operates" but actually "works"; the distinction between "operating" and "working" draws attention to the need to ensure that the goals of the reform curriculum are achieved.

Furthermore, Markee [16] argues that implementing curriculum change is not just mandating policy for practices, but includes pedagogical changes to classroom practices, and; that possibly requires new teaching and testing approaches, involve new materials/resources, and possibly see alterations in teachers' belief systems. Markee's views show that curriculum change is complex and having one curriculum model (OBC) being championed globally can be problematic as the outcome can swing the other way as not expected. Furthermore, sometimes the intended meanings of curriculum developers may not be clearly understood by teachers who also have personalised teaching beliefs [5, 22] and this could impede practice, as Hall and Irving [23] observed in the New Zealand context. In closing, initiators of curriculum change would need to give close attention to teachers as they are vital for implementing in the classrooms any mandated reform agenda.

7. Papua New Guinea context

This section describes pre and post - independence educational issues in PNG to show relationships to global affiliations.

7.1 Pre-Independence tensions

Educational issues in PNG have been prevalent since the 1970s. Documents from the 1974 'Eight Waigani Seminar' held at the University of Papua New Guinea, showed national educators debating educational issues [2]. For instance, the type of education model adopted was considered foreign from colonial influence [28]. Assertions rose that indigenous students were alienated from village life after formal education [28, 29]. Consequently, the Matane Report (1986) was put together 11 years later to address the pre-colonial educational concerns (Ibid). The Matane Report, became the Ministerial Policy, and the *'Philosophy of Education'* triggering directions for large scale national reforms for PNG [10, 30]. Basic educational levels in the 70s and 80s had content based curricular [2].

7.2 Post-Independence reform

PNG's reform from the onset was aligned with the 1990s global educational agenda, as a UN member [5, 14]. Thus, Australia through its developmental aid assisted PNG on adopting the OBE model for the national education system and embracing the OBC through a 'Curriculum Reform Implementation Project' (CRIP) [31, 32]. There are different interpretations of the OBE. Its champion, asserts that OBE has three main premises. It is an: 1) Education theory, 2) Instructional strategy, and, a, 3) Systems theory. Thus, having understandings of those three are crucial, as each; can influence the introduction and implementation processes of the OBC.

Seemingly, as an education theory, and, instructional strategy, OBE would resonate with student centred theories of teaching and learning. OBE discourages traditional direct instructions in classroom learning. Moreover, it asserts links with performance-based education, or an SCA way of teaching [33]. Arguably, OBE relates with principles of constructivism theory that believes students need to be proactive learners. That is, experiences and ideas from social environments are used to create new knowledge and meanings within classroom interactions. Mildly speaking, attests that schools determine successful learning outcomes. However, that comment applies to constructivism and behaviourism theories as well; so, is not only unique to OBE. Discussions here show that having both theoretical and content knowledge of curriculum model and pedagogy in subject specifications are requirements for implementing any reform curricula.

Arguably, as a systems theory, OBE rode on the mantra of global developmental frameworks, like the Paris Declaration on effective aid delivery into PNG [2, 10]. Subsequently, OBE was seen as a '*quick fix solution*' for educational issues in third world countries like PNG; [1]. Interestingly, some Pacific nations had also adopted OBE through educational aids around the same time as PNG. Those included: Solomon Islands [7], and Fiji [8]. Discussions here showed the spread of the OBE model as a global mandate into local contexts.

In summary, there is a relationship between global and reform in a local context. As seen here, both external and internal factors drove educational reform into the PNG national education system.

8. Methodology

Since, the paper's aim is to understand relationship of global educational policy on a local context (PNG), the constructivism theoretical lenses was used to interpret findings from data. It is said that knowledge is socially constructed, but subjective as in relationships, and embedded in people; so that premises underpinned the chosen framework for this paper.

8.1 Research design

This paper was derived from my PhD thesis grounded in a qualitative case study [2]. Two urban secondary schools; termed School 1 (S1) and School 2 (S2) in Port Moresby, PNG were the research sites. The former is in the north-east of the city, whilst the latter, north-west. Both schools were level nine schools with accessibility to policy information about the education reform [33]. One 'W' research question was asked to elicit detailed responses about the relationship of global education policy on the chosen local context. The question raised was: *How has Global Education Policies influenced reform in Papua New Guinea; and why?*

8.2 Data collection and analysis procedures

There were two parts to data collection: the first part consisted of reviewing literature both online and offline around global educational changes, the Outcomes-Based Education Model, and curriculum reform policies. The key words scanned were global education reform policies and literature reviewed included: *Learning: The Treasures Within*, (Delors Report), Fullan [11], *The New Meaning of Educational Change* (5th Ed.), *United Nations decade of education for sustainable development*, UNESCO [25], *Understanding Education Quality in EFA Global Monitoring Report*, and *United Nations decade of education for sustainable development*, and OECD [3] - *Education Policy Implementation: A Literature Review and framework.* The content and thematic analysis were used to identify themes in these international documents by me applying the grounded theory principles of giving interpretations and meanings to the data [34].

Phases two consisted of data drawn from my PhD thesis which consisted of multiple data collection methods. Primary data consisted of: One to one 15 minutes semi-structured interviews (Two) with the principals, two one hour focus group discussions, eight lesson observations (40 minutes per lesson - total 320 minutes), observation field notes, and two 10 minutes post-observation interviews. The secondary data included: Document analysis of the PNG National Department of Education (NDoE) policies, teachers' prepared worksheets, and literature reviews.

The data analyses in phase two involved transcribing all audio recorded interviews; focus group discussions, classroom observations, document reviews, and field notes. Content, discourse, thematic analyses were used to interpret data. Meanings were guided by the research question following a deductive approach, as well as, letting concepts rise from data using a grounded theory approach. Results from the two research sites were compared against policy intentions and described separately. Lastly, a cross-case analysis was done through triangulation to give validity and reliability to the findings.

8.3 Participants and ethical issues

There were 10 direct participants (teachers), and 90 indirect participants (students) who had taken part in the study; all were given code names. Participants were two school principals (P1-S1 and P2-S2), six focus group English teachers (FGT1-S1, FGT2-S1, FGT3-S1, FGT1-S2, FGT2-S2, and FGT3-S2), two grade nine English class teachers (ET1-S1 and ET2-S2), and about 90 students from the two observed grade nine classes (C1 and C2). Ethical clearance was sought both from the Ethics Committee of the Education Faculty at Victoria University Wellington (March 2009), and the NDoE in PNG (July 2009). Staff participants signed consent letters to be in the research, while, parents of the observed grade nine classes signed consent letters for the student participants as they were between 15 and 16 years of age.

9. Findings and discussions

Three concepts are discussed showing how global education policies influenced a local context (PNG). Those are: Factors facilitating change, little alignment, and, suggestions for improving curriculum reform.

10. Impacts of global agenda locally

Findings from both phases of data collection revealed that both global and national factors drove the PNG education reform. Seemingly, global development discussions of the 1990s influenced worldwide educational reform, and so PNG was no exception to that. For instance, the Paris Declaration Framework for effective aid delivery to third world nations influenced reforms through the UBE and EFA agendas. Consequently, OBE as a favoured educational model was championed globally, as it was considered economically viable to be used [8, 14, 35]. External partners supported educational aid to developing countries, and PNG was no exception [1, 13, 16]. In corroborating with that argument, participants from phase two data collections also spoke on that: *"The reform that they're trying to bring about in our system"* (FGT1 – S1). The word, '*reform*' indicates policy governance from global and national influences, whilst, the pronoun, *'they'* is representation of the development partners (AusAID/CRIP) and the PNG National Department of Education. In short, global developmental frameworks directed national reforms globally because of unequal economic and political relationships between developed and third world countries [13, 14]. Hence, PNG was a recipient to that relationship.

Furthermore, findings also showed that nationally, PNG had issues recommending educational reforms from the pre-independence era [36]. However, due to financial constraints, reforms were stalled till external influence in the forms of bi-lateral relationships helped [1, 9, 10]. Internally, PNG used systemic practices to drive her education reform. Deeply embedded practices like - Top-down decision making processes (of the NDoE dating back to its 1970 inception); hastened reform activities [2]. That corroborated what other PNG scholars described about 'how' change began [9, 10]. Seemingly, in top-down decision making, schools would have little say; being on edges of decision making formalities. That meaning is seen here: *"We had to go ahead and implement it because our superiors said so"* (FGT2 - S1). The remark echoed passiveness and compliance to top-down leadership and management styles ("superiors") of a bureaucratic organisation ('*implement*') [21]. Arguably, the PNG education reforms occurred due to political lobbying [2], more so than rational thinking [5, 16]. Hence, may pose sustainability challenges as trying to meet global requirements could mean over-looking flaws in local systems.

In summary, global policy guided the PNG education reform. Interestingly, PNG went through hassles of initiating and implementing the OBE curriculum reform in the early 2000s, but had it shelved in 2013, because of political decisions. That political action also raises questions about PNG's decision making processes, and, systemic abilities for sustaining large scale curriculum reforms driven by global agenda.

11. Classroom practices

Whilst, the reformed curriculum looked encouraging for PNG as she would be seen to be meeting global and national requirements [2, 13]; actual classroom practices revealed otherwise [2]. This revelation is important for others to consider when global and national policies instigate educational changes for lower levels in social systems.

First, findings showed mismatches between policy intentions and observed practices in two areas - teaching theory, and, classroom practices (**Table 1**).

Evidence from eight random lesson observations indicated features of Teacher-Centred Lessons (TCLs). This was despite policy intentions wanting changes to teaching practices. TCLs describe traditional approaches of teacher 'talk and

Policy Intention	Observation finding
A student-centred approach allows teachers to be more flexible in determining the most effective ways to help all students … ([33], p, 20).	All four observed lessons from C2 and two from C1 were all teacher-centred, grammar lessons taught in isolation (Field notes).

Source: Joskin [2], p, 250.

Table 1.
Teaching approach.

chalk' teachings. Observations noted direct transmission teaching; this implicates teachers' world views as being sources of knowledge, while, students were passive participants in their learning. That finding contradicted global policy intentions for a SCA for classroom implementation at a local level [2].

Second, the TCLs ideas were also found in the triangulation process (field notes, speech patterns, interviews, post observation interviews and focus group discussions). Evidence indicated that teachers' theoretical preferences and worldviews were still entrenched in TCLs acquired presumably from teacher training [2, 10]. Furthermore, this finding supports literature's contention that processes of implementing curriculum change is complicated, and, takes time to become systemic practices [5, 20, 23]. Moreover, it could also show that if deeply entrenched practices were deemed not compatible with reform agenda; then classroom implementation was challenging [22].

Third, a mismatch of policy intentions to practice was also noted in teachers' behaviour. Policy required an SCA, but, teachers' preferences were the TCLs. The gist is captured here: *I'm still in the old system (FGT1-S1).* The meaning is probably of individual defiance at institutional levels; due to not knowing how to implement the reform curriculum. Hence, that may illustrate rejections to policy's intentions [16, 22]. That commentary (FGT1-S1) also corroborated a principal's remarks: When asked how his school implemented the curriculum; he said, *"Teachers sort of find their way through it"* (P2-S2). Both citations projected agony teachers experienced when probably trying to take curriculum ownership of reform agenda locally [2].

Interestingly, the discussions here imply that the Initiating and Implementing phases of global education agenda [5] was not systematically and effectively managed at the local level in PNG [2, 37]. Thus, the findings contradicted the OBE champion, who says that governments need to resource systems, and train practitioners appropriately, before accepting the OBE. Arguably, teachers' claimed the reform curriculum was insufficient as seen here: "*But where are the materials to help us to disseminate that information?*" (FGT1-S2). In short, the influence of global educational agenda into PNG had challenges; thus, posing sustainable issues.

Because discussions here showed 'little alignment' between global policy intentions and local practice in the first three years of aligning national education with a global educational agenda [2] – Intervention strategies are proposed to help with knowledge gaps.

12. Suggestion for sustaining global agenda locally

Discussions here revealed that knowledge gaps existed in relationships concerning alignment of national education reform principles with intended global requirements. Therefore, evidence here suggests using PD as an intervention strategy to purposefully embed and sustain large scale curriculum changes; irrespective of curricula model [2, 5, 11, 24]. Moreover, it is also recommended that regular PD trainings are done to help foster professional learning cultures into systemic

practices [1, 23]. Evidence showed that practitioners were committed to national directives underpinned by global agenda. For instance: *"It is a policy that is going to be here, so whether we like it or not, we need to implement it"* (P1-S1). That excerpt neatly captures systemic practices of subordinates conforming to a central administration. Therefore, this paper offers a local model to assist with implementation of global curriculum policy locally.

13. Kibung framework

The *Kibung* Framework (KF) is a locally developed model that will help sustain global education policies locally using professional development (PD) [2]. Kibung is a local term in the PNG Tok Pisin, one of three official languages spoken in country [30]. It is pronounced/ki:bung/ and has meanings of 'coming together' and 'meeting' or 'talking about issues' formally or informally [1]. The practice of kibung resonates with other Melanesian practices such as Tok Stori in the Solomons Islands.

The KF also resonates with western literature discussions on using PD to embed global education policies. In support, Fullan [11] and Hall & Irving [23], also argue that, for any educational change to survive in institutions, continuous PD practices need to be inbuilt into school environments to foster a culture of professional learning for practitioners who are the most important agents of any mandated reforms. Interestingly, using the Kibung Framework to run PD sessions link well with Rogers [19] Continuation phase of the diffusion theory to assist curriculum changes.

For instance, participants in Joskin's [2] study understood that the OBE as a policy curriculum was an instrument of governance: "It is a policy that is going to be here, so whether we like it or not, we need to implement it" (P1-S1). This citation shows subordinates conforming to a central administration, who despite various personal reactions would ultimately implement the OBE Curriculum. Thus, the Kibung Framework borrows from Hall and Irving's [23] PD suggestions as originally taken from eight identified factors for successful PD to embed global agenda locally.

Figure 1 below illustrates the seven attributes of the KF that would need to be taken into consideration when a local context like PNG tries to align curriculum reform with global agenda.

Kibung framework application: The 'Kibung' PD framework draws on Hall and Irving's [23] suggestion for using eight factors for facilitating PD as developed by Mitchell and Cubey (2003, p. 81). These are:

- Incorporates participants' own aspirations, skills, knowledge and understanding into the learning context.
- Engages participants in analysing data from their own settings. Identification of discrepant data is a mechanism to invoke revised understanding.
- Involves critical reflection enabling participants to investigate and challenge assumptions and extend their thinking.
- Helps participants change educational practice, beliefs, understandings and/or attitudes.
- Helps participants gain awareness of their thinking, actions, and influence on others.

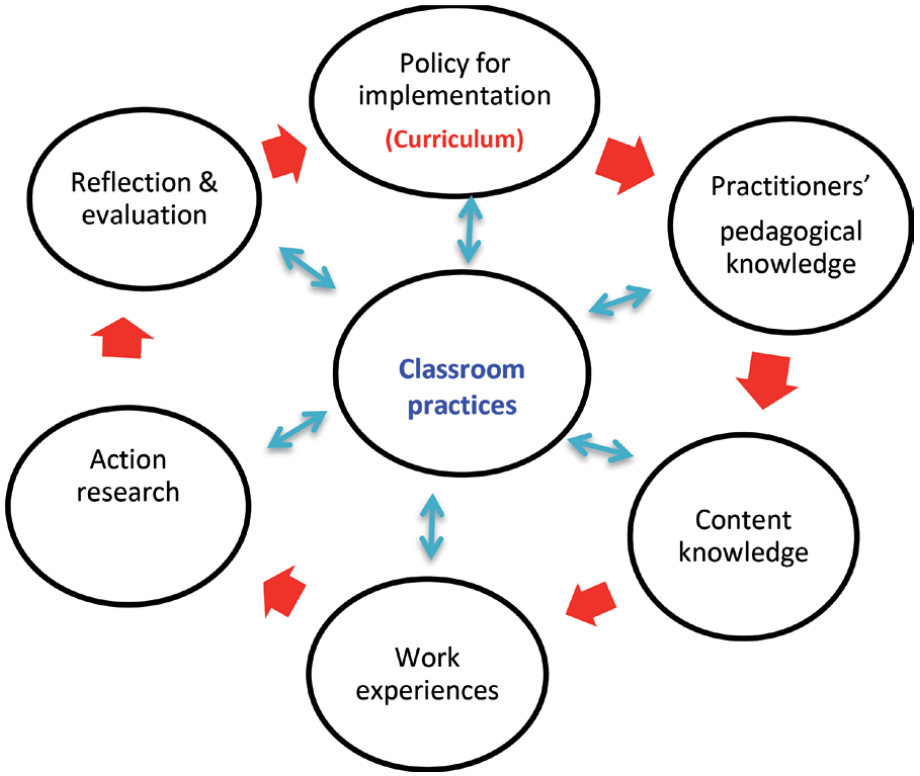

Figure 1.
Kibung professional development framework.

- Focuses on the need for inclusiveness.
- Involves engagement with pedagogy, and
- Involves engagement with theoretical knowledge and alternate practices.

In closing, teachers would need to view PD as something that will not only change their educational practices, but would give them insights into being reflective learners, and help contribute to sustainable education.

'How has global educational policies influenced reform in a local context?'

14. Conclusion

In conclusion, the discussions in this Chapter have revealed that global educational policies do have impacts on relationships with education reforms in local contexts. *Thus,* to answer the question - *'How has global educational policies influenced reform in a local context?'* Findings and discussions revealed that global education policies like the UBE, UPE, and EFA played significant influences on reforms in local educational contexts. In the case of Papua New Guinea in her attempts to align with global affiliation saw her national education system adopting an OBE model and curriculum during the reform periods of the 1990s – 2000s. That action was consistent with the global education reform movement agenda. The experience in Papua New Guinea was challenging because practice observed had little alignment with policy expectations [2]. To adhere with global intentions, the National

Department of Education applied education reform as 'inputs' to improve education quality; but the 'processes' of having little subject specific professional development sessions, and little resources impacted classroom practices not to be aligned with policy intentions. Consequently, affecting teaching and learning practices that needed to be in tuned with the reformed curriculum within the national education system. That illustrated that the global policies had little alignment with local realities. Hence, as a way forward, the Kibung Framework offers the use of professional development as an intervention strategy to help sustain global education policies locally [1].

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Chapter 4

Development Strategies towards a Reputable International Program: Special Focus at International Program for Islamic Economics and Finance, Universitas Muhammadiyah Yogyakarta

Dimas Bagus Wiranatakusuma

Abstract

Internationalization is unevitable in the midst of globalization era. Higher education, not exception, must welcome the internationalization agenda by setting up some strategic programs and approaches through various and innovative internationalization activities. Universitas Muhammadiyah Yogyakarta (UMY) is one of premier universities in Indonesia which is continuously committed to promote internationalization agenda, shown by the setting up the long term roadmap to internationalization. Technically, the internationalization process is executed by some international programs, such as International Program for Islamic Economics and Finance (IPIEF) which structurally is under department of economics, faculty of economics and business. In consonant with internationalization, IPIEF refers to stipulated vision and mission by department of economics, which is in line with university's road map, namely to move as a reputable international program. Practically, IPIEF has set some programs which indicate some serious efforts and commitments which is based on integration between Islamic and conventional values in its curriculum. Surely, the integration intends to cover the notion that internationalization is not merely to equip students and staffs with pragmatic-based aspect, but also value-based aspect. A set of international instruments are developed which are divided into five separated pillars and buffered by some activities within its respective pillars. Finally, IPIEF proposes a masterplan as a raw model consists of standardized business models, including input, process, and output, tied with solid vision and mission. In turn, internationalization agenda is expected not only as a showcase of university agenda as part of international community, but also as a tool to promote impacts in community at large.

Keywords: internationalization, UMY, IPIEF, yogyakarta, Indonesia

1. Introduction

The internationalization of higher education is of increasingly importance to many universities in the world. Some analyses come out on the main forces driving

the internationalization of higher education. Inevitably, globalization is believed as a driving force. In a networked environment in which a higher education is accessible to every other, the weight of global dimension is increasing. Thus, it is no longer possible and relevant to a higher education to seal itself off from global effects. Connected with globalization in higher education, Cantu [1] states that there is a marked differentiation and relationship between globalization and internationalization. The former is comprehended as a social and economic progress, while the latter is described as strategies by which a higher education institution responds to globalization. In that regards, internalization basically arose as a dynamic response to diversity and multiculturalism in an effect to create and achieve global competencies.

However, there are some unsettle issues pertaining the essence of internationalization its self in the higher education institution. Jones and Killick [2] for example suggest on two main types of rationale for internationalization: a value-based and a pragmatic-based. According to them, the former refers to issues of social responsibility, ethics and justice, which are linked with social problems, such as poverty or social injustices. The latter draws attention on the acquired skills and qualities that students need for living and working in a globalized world. In consonance with the issues, interesting to figure out the Top 10 universities which are ranked by the Quacquarelli Symonds (QS) World University Rankings[1]. In general, these Top 10 universities agree to actively engage with the design of policies, plans, program, strategies and approaches at various levels of decision making so as to further promote the process of internationalization in the higher education. In other words, the spirit of internationalization requires active policy making, not merely drift. In details, the practices of internationalization at these 10 Top universities as follows:

According to **Table 1**, approaches to internationalization dominantly carry out a value-based compared to a pragmatic-based. The top 10 universities engage for collaboration which shared impacts, not merely fulfilling their own internationalization performance indicators. **Table 1** also shows that majority of the Top 10 universities are located in United States of America. Cantu [1] reveals three strategies of internationalization were used, as follows: (1) promoting study abroad program, such as student outbound program, and impact-based intership program on global engagement; (2) international students, such as recruitment the best quality students through reduced fees or scholarship; and (3) internationalizing the faculty through internationalizing curriculum fitted with global demand. Correspond to **Table 1**, Universitas Muhammadiyah Yogyakarta has been trying to engage actively with internationalization agenda by frequently sending students, lecturers and alumni abroad, meanwhile organizing collaborative program such as joint research, joint conference, and visiting fellows.

Universitas Muhammadiyah Yogyakarta (UMY) is an established university with a track record of educational excellence and research and with a dynamic programme of collaborative arrangements with many international counterparts. Specific for internationalization agenda, UMY has developed as called "Road Map for Strategic Development 2015-2040" which is based on "Catur Dharma" (Teaching, Research, Community Services, and Islamic Character Building). In the first term (2015–2020), UMY has been working intensively towards a reputable international university. Practically, the university has set strategic goals, indicators, targets, and specific programs particularly for achieving a reputable internasional

[1] The rank is arranged according to six metrics: (1) academic reputation (40%), (2) employer reputation (10%, (3) faculty/student ratio (20%), (4) citations per faculty (20%), (5) international faculty ratio (5%), and (6) international student ratio (5%).

Rank	University	Approach to Internationalization
1	Massachusetts Institute of Technology (USA)	The university addresses three important agendas, including (1) conducting international activities that can best contribute to advancing the frontiers of knowledge in science, technology, and other areas of scholarship, (2) helping by bringing forefront knowledge to bear on solving the world's most challenging problems, and (3) contributing to educating future leaders with values that would be ingredient for the betterment of humankind.
2	Stanford University (USA)	Managed to have Center for Global Business and the Economy which exposes students and faculty members to interact with global leaders by developing a perspective on the business, political and social climates within country visited as well as understanding of the opportunities and challenges facing business in that region.
3	Harvard University (USA)	Promoting programs that have impacts to the society through internships in the regions, for example affordable housing projects, health, and education programs.
4	California Institute of Technology (USA)	Promoting international activities based on technological advancement that focus varieties of areas, including research, social, education, health to either individual or institution who in need.
5	University of Oxford (UK)	Promoting deeper engagement with key countries/regions, international collaborations, international educational experiences for all students, integration of international academic, staff and students and international student recruitment and funding. In addition, it seeks to attract students of the highest quality and does not set target for international student numbers.
6	University of Cambridge (UK)	The university prioritizes in learning and teaching. The strategies are (1) conducive educational environment, such as facilities, (2) attract and support outstanding students from UK and overseas, (3) research-active staff, (4) knowledge and skill development which are relevant to students' career and life, (5) producing future leaders.
7	ETH Zurich – Swiss Federal Institute of Technology (Switzerland)	Promoting academically-driven education and research collaborations including (1) Faculty and staff mobility, (2) the commitment of alumni networks, (3) participation in various international large scale facilities as co-host, and (4) subsidiaries at foreign institution leading to sustainability issues.
8	Imperial College London (UK)	Carrying the results of their work out into practice through (1) measurably increase college's societal impact, (2) support a culture and incentivize activities that lead to impact, (3) grow and diversify funding for research and education, and (4) create opportunities for expanding research, innovation, and translation capabilities.
9	University of Chicago (USA)	Attracting best talented students and staff contributing towards strategic collaboration whose ideas bring impact outside of the USA.
10	University College London (UK)	Promoting known globally for interdisciplinary expertise which sensitive to the social and environmental impacts of economic growth through recruiting excellent and diverse students as well as expanding opportunities for collaboration.

USA = United States of America; ETH = Eidgenössische Technische Hochschule; UK = United Kingdom. Source: Various Publications (2019).

Table 1.
Approach to internationalization.

university. For example, UMY targets to be ranked QS, ASEAN University Network-Quality Assurance (AUN-QA), international standardized curriculum, and broadened international collaboration, including building program enabler institution, called International Program (IP).

The IP is created under department level and becomes swing to promote the spirit of internalization at both faculty and university level. Until 2020, UMY has established 8 IPs which are coordinated under Vice Rector of Internationalization and Cooperation. One of earlier mature and established IPs is the International Program for Islamic Economics and Finance (IPIEF). IPIEF is an international swing of Department of Economics, Faculty of Economics and Business. It was established in 2009, in cooperation with Department of Islamic Economics, Universitas Airlangga, Surabaya, Indonesia. Hence, the IPIEF is selected as case study to describe internationalization program in UMY by referring into five inter-related reasons which will easily help to deliver the global engagement strategy in details conducted by UMY, as follows:

First, IPIEF has been intersifying the efforts to recruit excellent and diverse students. According to **Figure 1**, over 10 years since its establishment, IPIEF has roughly 214 active students and more 100 alumni, which have been spread across Indonesia and overseas. In addition, over the last 4 years, IPIEF received full time international students from Thailand, Saudi Arabia, Sudan, and Yaman.

Second, IPIEF has adopted the local and global knowledge in the curiculum to expand partners and increase relevant to conduct joint research, teaching, and enterprise activities. IPIEF curriculum is quite unique in the sense that it attempts to integrate between the modern and Islamic knowledge. The curriculum consists of three spirits, including integration, Islamization, and internationalization, represented in 145 credit hours or around 60 courses. The courses for sure capture either substance and methological aspects covering the three spirits.

Third, IPIEF has been working out to facilitate the extended and expanded partnerships both at faculty and university levels. Over the last two years, IPIEF has facilitated a number of memorandum of understandings (MoUs) and Memorandum of Agreements (MoAs) signing with some strategic foreign and domestic institutions.

Forth, IPIEF has sufficient staffs with international capabilities and competencies. IPIEF is supported by 18 permanent lecturers who have been graduated from prestigious universities around the globe, namely Indonesia, Malaysia, Thailand, Australia, Switzerland, United Kingdom, and Saudi Arabia.

Fifth, IPIEF has broadened the scope the internationalization agenda coordinated by International Relation Office and Cooperation UMY as the supporting unit. The collaboration agendas are of in the form of students mobility program (inbound and outbound), joint research, joint conference, and visiting fellow.

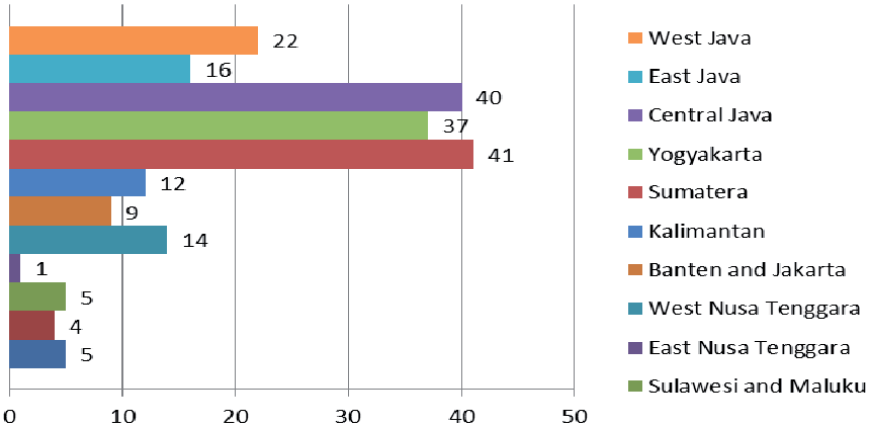

Figure 1.
The number of IPIEF's students based on regions. Source: Admission bureau UMY (2019).

Having discussed the brief implication of globalization in higher learning institution, and UMY's response towards internationalization, there are however still lacking information and study on what does constitute as a good "global higher learning institution", whether in terms of fortering students' skill (pragmatic based approach) or the spirit of academic impacts for a sustainable future (value-based approach)?

Therefore, this paper attempts to put above issues by proposing the balancing approach between the pragmatic and value-based approach by looking at IPIEF as a case study. The paper conceptually contributes towards nationally impact factor as the running process of internationalization. In other words, internationalization of higher learning institution does not hurt the spirit of betterment of humankind under Islamic values.

Systematically, the paper comprises of four chapters. Chapter 1 shares introduction. Chapter 2 contains literature related with internationalization and its components. Chapter 3 elaborates the development of IPIEF responding internationalization agenda of UMY. Chapter 4 ends with conclusion and recommendation.

2. Literature review

Internationalization is a response of existing globalization. It implies that free people, free information, and free market exist and become connected each other. The issues are then on how the higher learning institutions can retain to its role as academic power house for future generations. Some arguments pose that university should broad up its role into equal access with quality. Therefore, this chapter discusses the definition of internationalization, integration process through internationalization, measuring internationalization, and design of internalization.

2.1 Defining internationalization

According to Cerna [3], Internationalization refers to university strategy in interacting with national policy. **Table 2** shows very interesting condition between state and university corcerning internationalization process. The university needs to ensure a proper facilities, such as strategy, financial and human resources, and commitment. Meanwhile, state is requested to provide favorable immigration policies, funding for universities, clear internationalization policy. Both elements must be in place synchronously in order to ensure the positive synergy and push the internationalization up to a higher level. However, this ideal combination does no longer exist always in the current dynamic global environment. Mismatch or clash condition sometimes happens and it requires the resilience of university in responding such dynamic situation as facilities given by state is considered as external or exogeneous factor [4]. In other words, the progress of internationalization depends highly on respective university in setting out the strategies and goals in whatever conditions [5].

In addition, according to Higher Education Academy UK, internationalization represents the preparation of all UK higher education graduates to live in, and contribute responsibly to a globally connected society. Cantu [1] identifies internationalization as a response of globalization which facilitates higher education to promote study abroad program, recruiting international student, and the internatiolization of faculty.

Therefore, according to above definition, internationalization is basically seen as possible response towards globalization in a way to promote higher educational

University State	Facilitates Internationalization (Clear strategy, sufficient resources, and autonomy)	Hinders Internationalization (No Adequate funding, no clear strategy, lack capacity, and limited autonomy)
Facilitate Internationalization (Favorable immigration policies, funding for universities, clear internationalization policy)	Positive Synergy	Mismatch/Clash
Hinders Internationalization (Restrictive immigration policies, insufficient funding, no clear international policy)	Mismatch/Clash	Negative Strategy

Source: Henard, Diamond, and Roseveare (2012), in Cerna [3].

Table 2.
Interaction between national policies and university strategies towards international students.

institutions more connected and finally contribute to global society, culture, economy, and labour markets.

2.2 Integration process through internationalization

Internationalization does not merely encourage higher education to more globalized but also ensure integration into the culture, heritage, and identity with a smoothly formed. Hence, the essential part of the internationalization is to promote the inclusion of international students and staffs in diverse communities and classes. Spencer-Oatey and Dauber [6] construct a number of different spheres related to integration as an aspect of internationalization results:

1. Social Integration denotes interaction and social cohesion among students and staff looking at their surrounding which in turn can influence academic performance. It happens when some students conduct inbound or outbound programs. Gradually, they will be part of new communities with various background and be forced to adapt and adopt particular tradition which is no found in their previous environment. If they can personally adapt the new environment, obviously they enjoyed the process and unconsciously embed into their new habit which then form their academic performance.

2. Academic Integration refers to cohesion of students and staff from diverse backgrounds within both classroom and courses which in turn provides the foundation for equipping with global graduate skills.

In consonant with above integrations, there is a remarkably scenarios for technically executing the integration, namely by combining harmonically between cooperation - competition and international – national nexus. Looking at European experience, cooperation is seen as an embedded element of internationalization associated with promoted academic exchange with quality and intercultural learning. In addition, European higher learning realized that education is a public good where it should be transparent and upgraded time by time. In other words, there is no conflicting measure between cooperation and competition by taking special attention on mutual benefits and shared positive impacts. However, higher education keeps realizing that national interests must be preserved and elevated towards

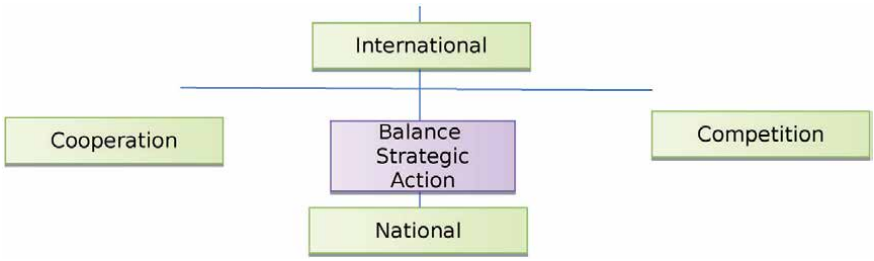

Figure 2.
Strategic options for enhancing global Competiton. Source: Wende [7].

more globalized concern and ultimately serve the betterment of humankind. On this regards, a set of regulations promoting internationalization should be packaged and guided by a strategic vision – derived into strategic actions, so that come up with a good balance between global competitiveness and national priorities and interests (**Figure 2**).

2.3 Measuring internationalization

A number of instruments are released to measure internationalization. Some European Universities set indicators that can be used to assess their level, reflected through their students and staffs participation in the internationalization agenda. For example, Spencer-Oatey and Dauber [6] set some measure indicators which corroborate the goal dimension, namely to create a well prepare student for life and work in the intercultural and globalizing world, as follows:

1. Student body affected with internationalization – out of all active students in the unit, what is proportion studies abroad in a given year?

2. Commitment for Internationalization – Does the unit have clearly defined strategy for internationalization?

3. Proportion of International Student – Out of all international students in the unit in a given year, what proportion are counted as exchange or mobility program students?

4. Medium of instruction – Out of all courses offered in a given semester, what is the proportion of courses delivered in English?

5. English Proficiency – In a given year, what proportion of the unit's academic staff members follows an English course and obtain minimal sufficient score of English Proficiency test?

6. Supported Facilities – Are all facilities provided by the unit to regular and domestic students also available to international students?

7. Student inbound – What proportion of students from the unit participates in outbound program in a given semester or year?

8. Visiting Fellow – Out of all academic staff members in the unit, what proportion are visiting fellow member from abroad?

9. Buddy or Liason Officer – Does the unit provide a mentoring or "buddy" for international student support?

10. International program – Out of all degree or postgraduate program offered by the university in a given year, what proportion are international/joint/double/multiple degree program?

In addition, there is another approach to measuring the internationalization agenda by benchmarking organizations whose professionally rank universities for their degree of internatiolization. The most parameters used are notable international composition of students and staffs as well as in the numbers involved in international movement and research. **Table 3** shows some parameters counted in Times Higher Education (THE), QS University Ranking, and U-Multirank. These organization basically agree that internationalization are measured by a proportion or percentage of involved students, and staffs against total students or staffs in a particular year. In other words, students and staffs mobility programs are the important ingredience to measure the degree of internationalization in a higher learning institution.

2.4 Design of impacting internationalization

The higher education should lead towards a broader agenda of societal impact [8]. However, to arrive that goal, a higher education should build its international trajectory in order to gradually move towards a reputable international university or program. According to Spencer-Oatey and Dauber [6], the road towards reputable international university needs to develop a subsequent trajectory which is described into stages of internationalization. Initially higher institution starts with Pre-Internationalization which is characterized by culturally homogenous campus community. As higher education increasingly diverse and heterogenous, the higher education achieve structural internationalization. Once it has part of international community, the higher education commences to be transformed as community internationalization. Given an active and dynamic international interaction by for example explore the experience of students and staffs who are in the front line of the internationalization, the competency internationalization is achieved. Therefore, the stages of internationalization require a solid commitment which is able to connect between integrated communities and global education, supported by continous effort of students as well as staffs (**Figure 3**).

Parameters	**Organization**		
	THE	**QS**	**U-Multirank**
Composition International Students	✓	✓	
Composition international staff	✓	✓	✓
Composition international diversity		✓	
Inbound and Outbound Student mobility		✓	✓
International student support (religious facilities)		✓	
International Joint Publications	✓	✓	✓

Source: Spencer-Oatey and Dauber [6].

Table 3.
Parameter for internationalization.

Having elaborated subsequent steps, the higher education shall develop a system approach to impact. The innovation model is proposed by Spencer-Oatey and Dauber [6] that include application of research and experimental education across the private, public, third sectors, and broader community (**Figure 4**).

Technically, the model requires dynamic interaction and flows of people, knowledge and technology. In terms of people, the model requires talented students and staffs dealing with internationalization agenda. In terms of knowledge, it needs scientific publication through joint research, international joint conference, and visiting fellow. Finally, in terms of technology, the talented students and staff combined with impactful research and publication are packaged with technological advancement, leading to commercialization (**Figure 5**).

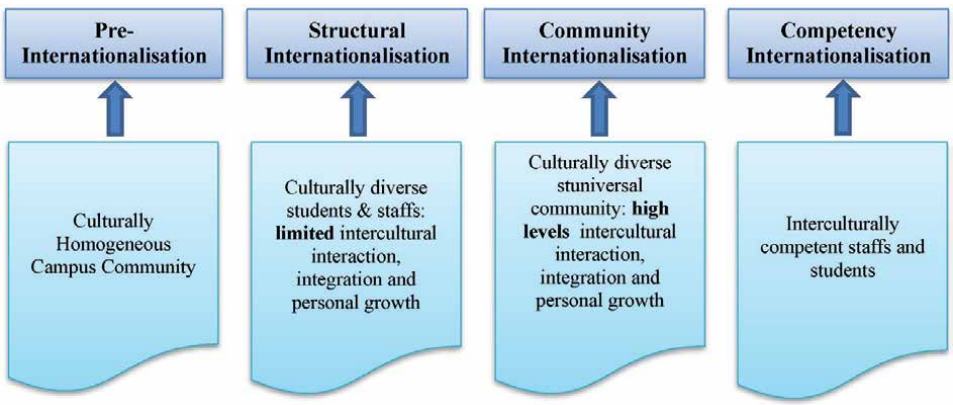

Figure 3.
Development stages of internationalization. Source: Spencer-Oatey and Dauber [6].

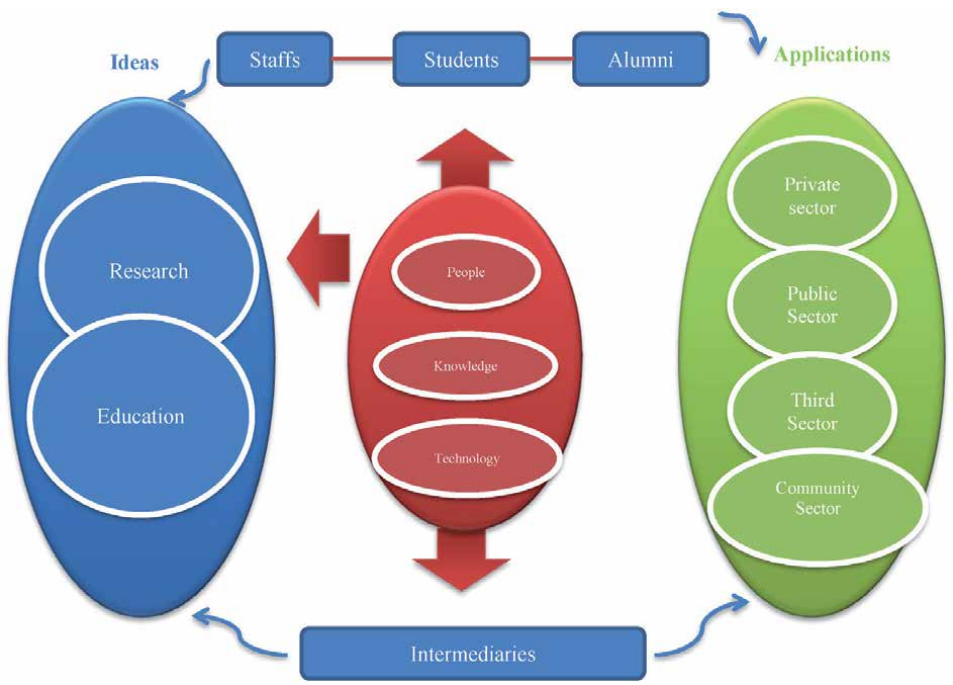

Figure 4.
Societas impact system. Source: Spencer-Oatey and Dauber [6].

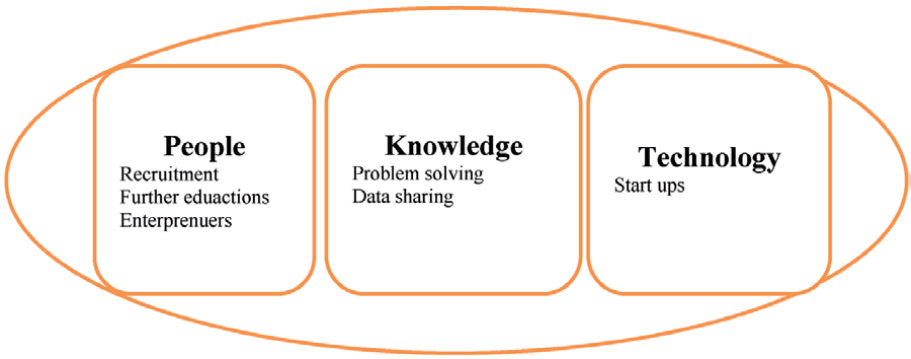

Figure 5.
Pathways to societal impact. Source: Spencer-Oatey and Dauber [6].

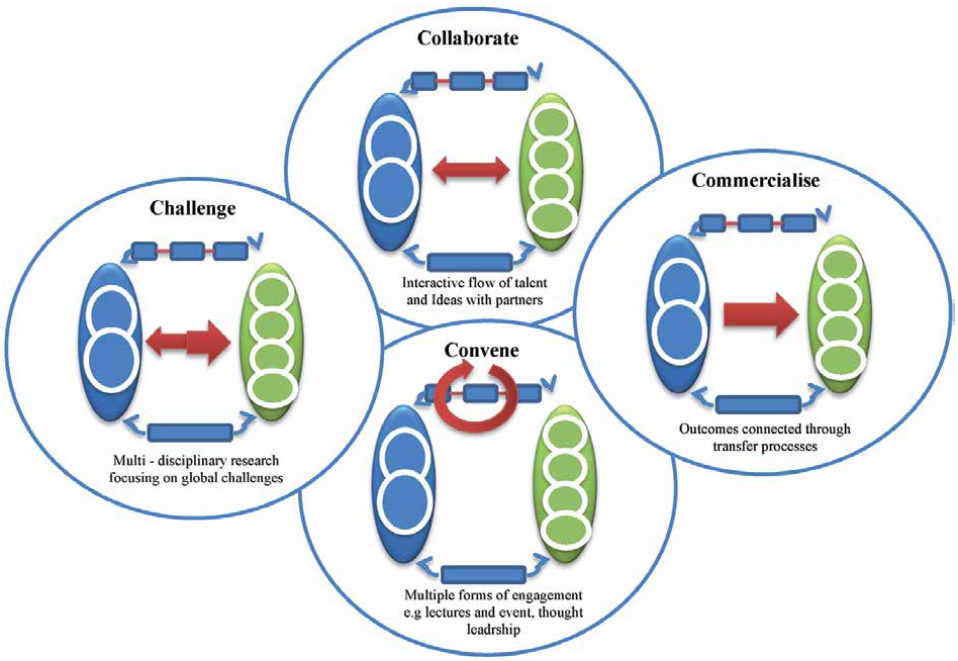

Figure 6.
Mechanism for societal impact. Source: Gann et al. [8].

Once the model has been set up and run, the mechanism through which ideas flow for internationalization is designed. The flows are to ensure the sequence stages of internationalization are achieved through colliding productivity growth among parties. In this regards, the flows consists as follows (**Figure 6**):

1. Convene – Promoting multiple form of engagement such as lecture mobility. Conference, and student mobility which is packaged with active engagement between ideas (research and education) and its applications (related parties).

2. Commercialize – The ideas through research and education are pathway as transfer of technology to have potential value in the societies. Every research and education would create not merely results and output, but also outcome where it can connect through internationalization process.

3. Challenge – Research projects should be able to discover and solve problems and global challenges with participation of all related parties (private, public, third, and community sectors).

4. Collaborate – The collaboration involves longer term partnership coupled with joint work between universities and external partners. The partnership would create mutual benefits, the results of one parties would strengthen body of knowledge, another parties would share impacts to their communities.

3. Internationalization at international program for Islamic economics and finance

3.1 Brief history

International Program for Islamic Economics and Finance (IPIEF) was initiated by Dr. Mashyudi Muqorrobin and was officially launched in 2009, in collaboration with Department of Islamic Economics, Universitas Airlangga, Surabaya. IPIEF is structurally under Department of Economics, Faculty of Economics and Business, Universitas Muhammadiyah Yogyakarta. IPIEF is among the first international program for Islamic economics and finance in Indonesia. It is full time program with the length of study around 3–4 years. It provides outstanding scheme, both for theoretical and practical applications of Islamic economics, banking, and finance. The curriculum, with its emphasize on research experiences, are designed to give students the competitive edge either in academics, private market, or public sector. It offers strong traditional program in economics, banking, and finance, as well as Islamic knowledge that combines subjects to meet real world career goals. Its partners are from among the best universities in the world in which students have a great opportunity to involve in student exchange and student mobility programs. The learning environment is structured around professional study requirements and students whom graduated from IPIEF. Therefore, IPIEF's graduates are expected to have the ability to generate and apply knowledge as well as the capacity to actively engage in the community and lead towards productive lives.

3.2 Vision, and mission

IPIEF's Vision is derived from University and department's vision. IPIEF envisions towards a Reputable International Program on Economics, Banking and Finance in ASEAN. To achieve such vision, IPIEF sets four missions, as follows:

1. Fostering national and international cooperation towards the leading and reputable program in enhancing the development of Islamic Economics and finance (Internationalization)

2. Providing an academic and Islamic education to create perfectly-behaved Islamic Economics scholars *(akhlaq al-karimah)* who hold a strong economic theory, analytical rigor and globally competitive (Academic Excellence)

3. Conducting intensive research and continued development in Islamic Economics and finance for betterment of the *ummah* (Research Core Based)

4. Dedicating and empowering people to deliver impact towards societies (Empowering People)

		Internal Factors and Strategies		
		Strengths		**Weaknesses**
		1. The Department of Economics has set the vision for promoting internationalization which is properly planned until 2025 in ASEAN. This vision is supported by the lecturers who are majority PhD holders from prestigious universities, both domestic and overseas. 2. The Department of Economics has been acredited "A" (Very Good) by Ministry of Higher Education, Republic of Indonesia until 2023.		1. The lack of international publication among lecturers in reputable international journals, including journal's citation. 2. The limited international collaborations, particularly in terms of joint research and publication with the top rank universities.
External Factors and Strategies	Opportunities	1. The continous support from top leaders and management of University pertaining internationalization agenda 2. The positive recognition to UMY as among top ranked university by Ministry of Higher Education Indonesia.	Internal Strategies: a. Intersifying the research camp among lecturers as well as sharing session with experts on publishing in indexed-journals. b. Extending collaboration with top 500th universities in the world.	c. Inviting more international full time students by providing full scholarship. d. Promoting collaborative international programs that are recorded as transfer credit program, such us through summer course program e. Promoting team teaching between internal lecturers and lecturers of partner universities which can trigger the joint research and publication.
	Threats	1. The higher competitive environment among universities in the world. Moreover, in the midst of virtual learning platform, it could diminish the role of offline learning activities by academic institutions. 2. The higher qualification of university's graduates in labor market so that it threats graduates opportunity who have lacking of skills linked to job market.	External Strategies: a. Equipping students with certification competence released by qualified certification agencies, either national or international. b. Equipping students with intentive Foreign English program, example English and Arabic and ensuring their language proficiency measured by TOEFL (English) and TOAFL (Arabic)	c. Standardizing the curriculum into an international standardized curriculum. d. Promoting link and match program between university and industrial sectors, for example through a structured internship program. e. Promoting dual degree or joint degree program between home university and partners.

Source: Author.

Table 4.
Swot analysis and strategy.

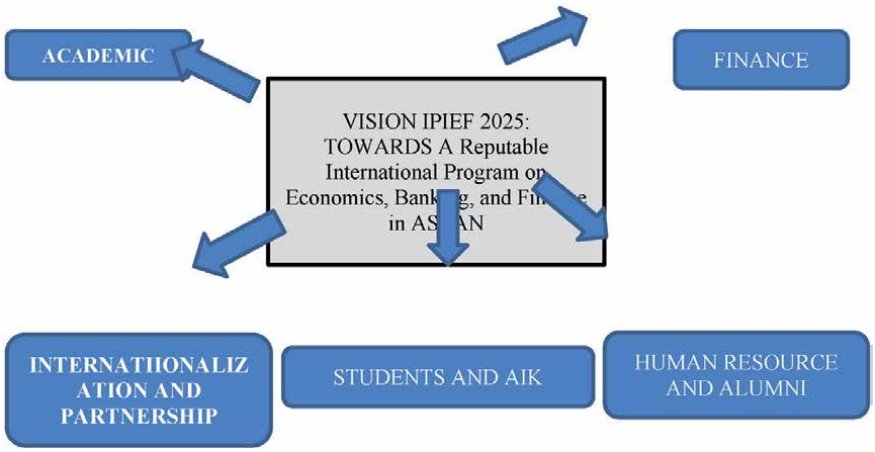

Figure 7.
Strategic pillars of IPIEF. Source: Author.

3.3 According to above vision and mission

IPIEF attempts to integrate between value-based and pragmatic based concerning approach to internationalization through developing SWOT analyses, followed by some proper strategies, as follows (**Table 4**).

3.4 Programs for internationalization

Given that the vision towards 2025 must be catched up, IPIEF arranges five strategic pillars which consist of Academic, Internationalization and partnership, Student and Al Islam Kemuhammadiyahan (AIK), Human Resource and Alumni, and Finance sectors (**Figure 7**).

The pillars are then specifically elaborated into various programs as shown in **Table 5**, as follows:

3.5 Steps forward

According to previous discussion, IPIEF has been attempting to locate its self as an reputable international program by referring to roadmap set by university. However, to further strengthen its position and smoothly run towards global competence program, IPIEF proposes the masterplan which emphasizes the ideas of standardizing its input, process, and output. In turn, the standardized flows would result a such quality and more globalized impacts in the society at large. According to **Figure 8**, the steps forwards must be priorized on:

1. Student enrollment by standardizing admission and promotion procedure and strategy. This is to seek the best talented and qualified students as raw material in joining internationalization agenda.

2. Academic process by standardizing the catur dharma (teaching, research, social empowerment, and inculcating Islamic values). This requires talented and committed staffs which could be recruited either nationally or internationally.

3. Alumni and Cooperation which is based on alumni and the spirit of sharing in a globalized world.

Academic Pillar			
Strategy	**Main Strategy**	**Indicator**	**Work Plan**
Academic excellence through research and society empowerment based on local wisdom	Curriculum development leads to competitive competence by referring to international learning standard	Availability of standardized international course outline	Workshop on curriculum standardization and course outline development
	Research development which can strengthen the multidimensional research discipline	Roadmap on research development	Workshop on roadmap development Launching and Managing International Journal of Islamic Economics and Finance (IJIEF)
	Development of the uniqueness in study program to promote international academic reputation.	Promoting research commercialization	Copy right and patent
Human Resource and Alumni Pillar			
Strategy	**Main Strategy**	**Indicator**	**Work Plan**
Human Resource development who has work hard spirit and integrity for implementing catur darma.	Capacity building for implementing catur darma based on Islam and professionalism with the technological support.	Complete Databases on all things related to study program	Official website development
	Rewards based on work performance	Complying with indicator of achievement strategies set by university	Achieving the performance indicators set by university once a year
	Promoting the tracing graduates career by comparing between graduate competence and job sector.	Minimal 50% of graduates are working linier with their competence obtained from study program	Regular focus group discussion with graduates and job providers Regular tracer alumni survey among graduates
Finance Pillar			
Strategy	**Main Strategy**	**Indicator**	**Work Plan**
A transparent and accountable financial management	Completing financial management report with the principles of transparent, professional, and accountable.	Matching financial reporting with program	Regular monitoring and evaluation on financial reporting twice a year by finance board officer
Students and AIK Pillar			
Strategy	**Main Strategy**	**Indicator**	**Work Plan**

Academic Pillar			
Strategy	**Main Strategy**	**Indicator**	**Work Plan**
Promoting a high qualified student with integrity and morality for nation development.	Upgrading admission system which enables to receive a high quality new student, either from domestic or foreign source.	The fulfillment of stipulated quota of new admission students into IPIEF	Targeted and intensive promotion into Islamic boarding schools Strengthening institutional branding through intensively uploading international exposure achievement into IPIEF's social medias
	Developing students' achievement which have global and Islamic paradigm.	Students are able to reach Cumulative Grade Point Average (CGPA) by minimum 3,50 and English score (TOEFL) minimum 500.	Intensive English program during the study program (3 years English program) Intensive academic motivational program through intellectual discussion and coaching program.
	Internalize Al Islam and Muhammadiyah Values into academic curriculum and learning program	Students are able to pass the Muhammadiyah course which is put into the curriculum	Providing related book of Muhammadiyah movement and history
Cooperation and Internationalization Pillar			
Strategy	**Main Strategy**	**Indicator**	**Work Plan**
Promoting IPIEF as a reputable international program in ASEAN	Developing and extending international network and collaborations with various parties for the attainment of the reputable international program	Number of foreign languages capability Graduates with English Proficiency higher than 500 Numbers of International member association among lecturers Percentage of full time foreign students against total students Percentage of foreign lecturers against total lecturers Percentage of outbound and inbound students against total students The degree of foreign languages practiced in learning process	Organizing International conference once in every two years Organizing international summer course program once a year Promoting transfer credit program to universities' partner Conducting team teaching with foreign lecturers

Source: Author.

Table 5.
IPIEF program 2017–2025.

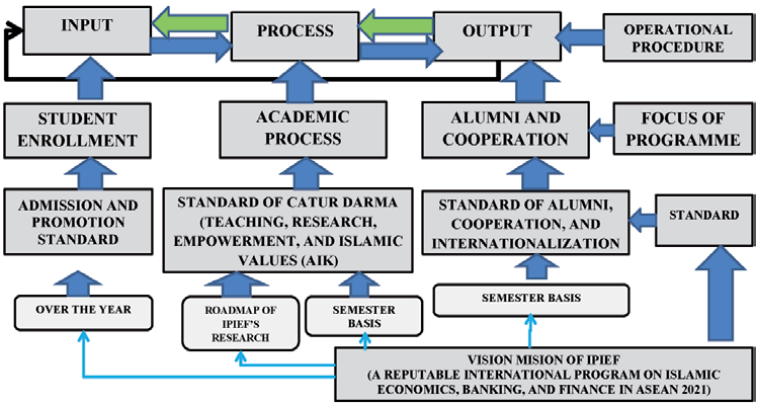

Figure 8.
A masterplan for internationalization. Source: Author.

Therefore, by promoting the three items, the internationalization of university will be smoothly done and always move forwards aligning with university's map, namely excellence and Islamic.

4. Conclusion and Recommendation

The spirit of internationalization is inevitable as a response of globalization. The higher learning institution must response by gradually set some strategies and policy actions which finally promote the spirit of sharing and leaving the impacts. Universitas Muhammadiyah Yogyakarta, as a committed university in promoting internationalization, has been attempting to set a long term map which was initiated by locking its position as an International Reputable University by 2020. For sure, this spirit must be supported by all units, including International program for Islamic Economics and Finance (IPIEF), which is under Department of Economics, faculty of economics and business. In practices, IPIEF has been implementing continous that in line with university's vision. Referring to the vision, IPIEF has transformed its self by addressing the program into 5 specific pillars, namely academic, internationalization and partnership, human resource and alumni, finance, and student and AIK. Technically, IPIEF arranges some targets and is monitored every years in consonant with internationalization agenda. However, IPIEF proposes a masterplan for further paving the way the long journey of internationalization agenda in university. The masterplan encompasses the ideas of standardization of three aspects, namely input, process, and output, whereby these three are practically interconnected each other and flow under a stated vision and missions. Finally, internationalization is a must and university has pursued it by actively promoting the role of international program, such as IPIEF. Finally, IPIEF has strong commitment to move forward towards a reputable international program on economics, banking and finance in ASEAN by 2025 by putting impact and values together as the core in pursuing internationalization agenda.

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Chapter 5

The Concept of Entrepreneurship

Halliru Shuaibu, Yusri Bin Kamin, Umar Muhammad Isa and Abdullahi Musa Cledumas

Abstract

The chapter examined the concept of entrepreneurship in technical education; types of entrepreneurs such as craft-men, promoters and opportunists; profile of an entrepreneur like originality, hard-work drive, task result oriented, among others; relevance of entrepreneurship to technical education students or graduands such as creating necessary awareness and motivation to excel in students/graduands so as to promote self-reliance and self-employment which is an alternative to salary and wages; challenges in the implementation process of entrepreneurship in technical education, example conglomeration of contents like financial accounting, commerce, economics, among others. In summary, entrepreneurship has been viewed from the standpoints of the psychologist (behaviourist), the economist, and sociologist. Furthermore, the objective of the chapter is to provide literature synthesis on the concept of entrepreneurship. The methodology was meta-synthesis of 15 relevant studies obtained from conference proceedings, text books, and online data bases. Scope of the study included higher and secondary education which are selected as the focus groups of the study in order to encourage assimilation and implementation of entrepreneurship education curricula and development. Data acquired were quantified using descriptive statistics (percentages on bar chart). The result of the study signifies definitions, characteristics, and importance of entrepreneurship needed for improvement of knowledge in enterprise curricula aside from skills and competencies. Higher and Secondary education are selected as the focus groups of the study in order to encourage assimilation and implementation of entrepreneurship education curricula and development.

Keywords: entrepreneurship, entrepreneurs, challenges of implementing entrepreneurship education

1. Introduction: the concept of entrepreneurship

The concept of entrepreneurship is elusive, that is difficult to define and taking various meanings as it is viewed differently by different scholars with regard to the context it is employed for. For example, the psychologist (behaviourist) see it as "the need for achievement, perceived locus of control, and risk-taking propensity". The economist looks at it as bringing together the factors of production (land, labour, capital, and entrepreneur) and bearing the risk of buying at a certain price and selling at uncertain prices. While the sociologist views it as the ability to recognize and act upon market opportunities in order to provide social services. Neither of these approaches is sound and all-embracing because each focuses upon some aspects of entrepreneurship and leaving some untouched. However, four different definitions of the term entrepreneurship by different scholars are stated below:

i. Entrepreneurship education is the willingness and ability of an individual to seek out investment opportunities in an environment and be able to establish and run an enterprise successfully [1].

ii. Entrepreneurship education is seen as the process of creating something different with value by devoting the necessary time and effort, assuming the accompanying financial, psychological, and social risk, and receiving the resulting rewards of monetary and personal satisfaction [2, 3].

iii. Entrepreneurship education is viewed as an attempt to create value through recognition of business opportunities, communicative, and management skills to mobilize human, financial and material resources necessary to bring a project to function [4].

iv. Entrepreneurship education is the process of identifying, developing and bringing a vision to life. The vision may be an innovative idea, an opportunity, or simply a better way to do something. The end result of this process is the creation of a new venture, formed under conditions of risk and considerable uncertainty [5].

On the other hand, an entrepreneur is someone who assumes the financial risk of beginning and managing a new venture. The venture can be based on totally new idea, new way of doing things, a new location, or attempting something no one else has done before. In other words, an entrepreneur is seen as a person who detects a previously untapped opportunity to make substantial profits (either by lowering the cost of producing existing goods/services or by creating brand new products) [6].

In summary, an entrepreneur is an innovator who implement change within the market through carrying out new combinations. The carrying out of new combinations can take the several forms: the introduction of a new good or quality thereof; the introduction of a new method of production; the opening of a new market; the congress of a new source of supply of new materials or parts; the carrying out of new organization of any industry.

2. Types of entrepreneurs

Entrepreneurs are categorized differently based on their characteristics, profession, social class, and educational background. However, there are three (3) broad categories of entrepreneurs, viz:

i. Craftsman entrepreneurs: These are artisans who possess manual dexterity (skills, techniques, and expertise) to provide service or product directly to the market. They are small business owners and self-employed persons. Their technical know-how or skills is seen as a result of training in vocational or technical centres/schools. They are found in business like joinery, carpentry, hair dressing, tailoring, welding, electronics repair-work, among others. They desire autonomy.

ii. Promoters: These are also called traditional entrepreneurs. They establish, grow, develop, and sell different businesses or business ideas in the pursuit of profits. They usually initiate idea, develops it and later relinquishes it for profit.

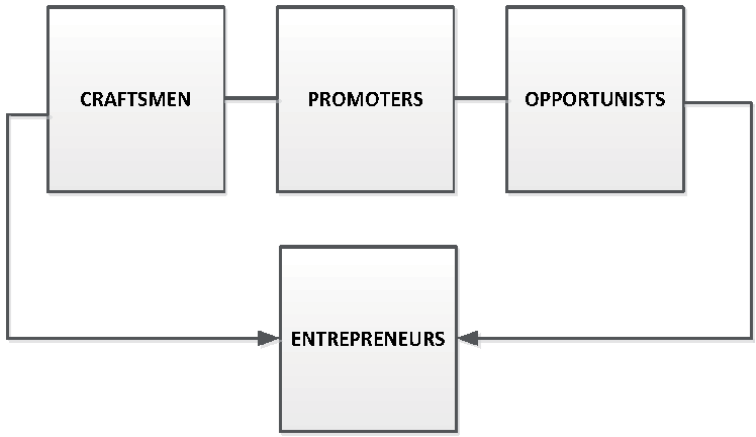

Figure 1.
Types of Entrepreneurs.

iii. Opportunist entrepreneurs: They have structural approach to establishing an enterprise, i.e. they start small business, nurse and expand it to transform into big/large scale enterprise. They are professional, versatile, educated, and experienced. Their primary concern is in the production, sales, marketing and financial control of industrial setting. They are skilled in the management of both human and material resources, earn high social status due to successful business management and thus highly paid. These categories of entrepreneurs are also known as managerial entrepreneurs (**Figure 1**).

3. Profiles of an entrepreneur

According to [7] the profiles of an entrepreneur refer to characteristics, traits, qualities, and features of an entrepreneur. They include:

i. Self-confidence: Belief in own ability, individuality, optimism, and independence.

ii. Risk-taking: Accommodate all challenges of the business.

iii. Originality: Innovative, creative, resourceful, versatile, knowledgeable and flexible (open-minded).

iv. Leadership: Gets along well with others, responsive to suggestions and criticism, concern for others and excellent communication.

v. Hardwork-drive: Puts longer hours than usual in business.

vi. Independence: Autonomous and being their own boss.

vii. Goal setting: Sets goals and work towards achieving them.

viii. Task result-oriented: They are persons who are inclined to achievement orientation, profit orientation, energetic, and initiative.

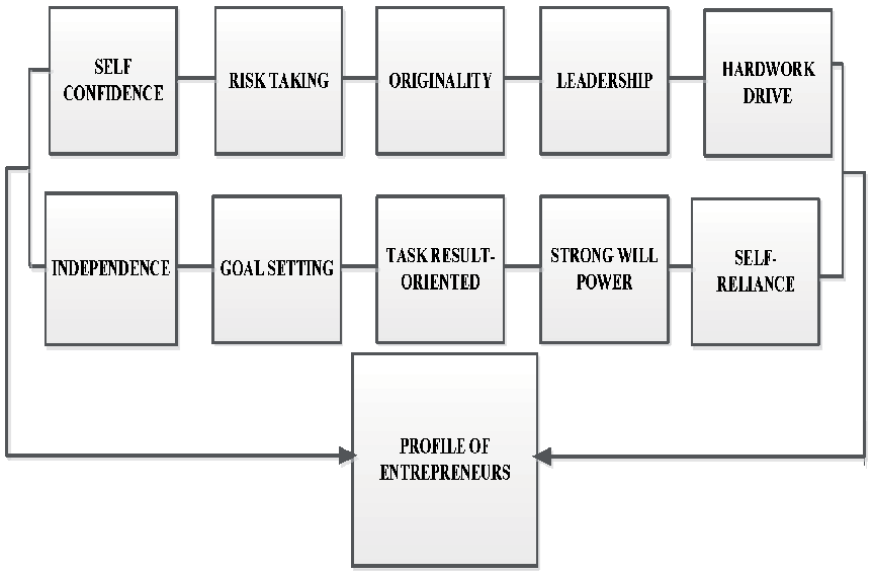

Figure 2.
Profile of Entrepreneurs.

ix. Strong will-power: Persons with persistence, perseverance, and determination.

x. Self-reliance: The urges to do it alone (want to carry it out) (**Figure 2**).

4. Relevance of entrepreneurship to technical education students

i. Creating necessary awareness and motivation to excel in students so as to promote self-reliance and self-employment which is an alternative to salary and wages.

ii. Identify students with entrepreneurial trait, motivate and developed them in managing their own small scale businesses.

iii. To increase the quantity and quality of goods and services in the society and consequently bring about improved standard of living in the people.

iv. To contribute effectively to the economic development of a given country.

v. To develop in the students, attitudes and interests for self- reliance and self-employment.

5. Challenges in the implementation process of entrepreneurship education in technical education

[7] itemized some challenges of implementing entrepreneurship education in technical colleges as follows:

i. Dearth of local learning materials. Variety of downloaded learning materials with peculiar experiences from various countries.

ii. Inadequate professional teachers/lecturers who specialized in entrepreneurship due to low turn-out of graduates from universities.

iii. Multi-dimensional approach in the course (in contents) which resulted in teachers from faculties of law, business education, psychology, and technology being appointed to teach the course.

iv. Conglomeration of subjects. For example, financial accounting, economics, commerce, and office practice that need to be classically related to respective trades (Building, Electrical/Electronics, Plumbing, Automobile, and Metalwork, among others).

6. Methodology

Literature synthesis refers to survey of literature having seven (7) methodological approaches, namely: (i) Determination of work, (ii). Determination of target for the work, (iii). Reading other works, (iv). Identification of related works, (v). Interpretation of other works, (vi). Synthesis stage, and (vii). Interpretation of synthesis. Literature synthesis leads to the development of theory and or generalization of findings from practice through high level summarization of related literature. It is also described as meta-ethnography which may be used to integrate both quantitative and qualitative studies [8]. Literature synthesis is selected as the research design of this study because it falls within teaching-learning environment. Focus was made on two groups from general literature as the scope of the study. The two groups are higher and secondary education. The reason for selecting higher and secondary education is to acclimatize entrepreneurship with curricula. Data collection was made from preceding studies on entrepreneurship education and analysis was processed using percentages on bar chart. 15 articles were sampled from conference proceedings, text books, and online data bases. The following key words were used to search for the articles: entrepreneurs, implementing entrepreneurship, challenges of teaching entrepreneurship in technical education. All publications obtained were recorded.

7. Result and discussion

Table 1 shows the studies consulted and their focus on the concept of entrepreneurship education.

Table 1 shows that the present study is limited to entrepreneurship education in higher and secondary schools. Exposing the potentials of entrepreneurship education for inclusion and enrichment of the schools' curricula is the reason why selection of articles is limited to higher and secondary education. 15 studies revolving around definitions, characteristics, importance, and challenges for implementation of entrepreneurship education were accessed (**Table 1**) and the result indicated that 4 studies (26.66%) discussed definitions of the term entrepreneurship, 4 studies (26.66%) deliberated on the characteristics of entrepreneurship, 3 studies (20%) explained the importance of entrepreneurship education, while 4 studies (26.66%) argued over the challenges for the implementation of entrepreneurship education. These findings are good feedback because entrepreneurship education can help students develop generic skills apart from specialized skills enshrined in the school curricula. However, future studies can be extended to include other areas such as rural and vocational centres. Other aspects like delivery/instructional methods may

Author	Title	Focus of Entrepreneurship Education	Remark
Ben and Boujelbene [9]	Assessing the impact of entrepreneurship education.	Entrepreneurship intention, employability, and competence have positive impact on the respondents.	A qualitative study that highlighted entrepreneurship as effective means of self-reliance and financial independence.
Bellotti et al. [10]	Designing a course for stimulating entrepreneurship in higher education through serious games.	Entrepreneurship Serious Games (eSGs) provide conceptual basis for extending entrepreneurship education at lower school level using SG-experimental teaching plans.	A study emphasising upon the importance of entrepreneurship in higher education curricula using simulation for teaching and learning concepts.
Goldstein et al. [11]	Using the action research process to design entrepreneurship education at Cenderawasih University.	Action research process facilitates the integration of entrepreneurship education as compulsory curriculum subject at the university of Cenderawasih.	A study that synthesised literature on higher education entrepreneurship curriculum.
Din et al. [12]	The effectiveness of entrepreneurship education program in upgrading entrepreneurship skills among public university students.	Significant impact on business plan, risk thinking, and self-sufficiency. While low impact on need for achievement and locus of control were advanced in this study.	Definition of entrepreneurship evolved in this study with focus group from higher education.
Kirkwood et al. [13]	Students' reflection on the value of an entrepreneurship education.	Graduates gained increased confidence, ideation, entrepreneurship skills, and problem-solving skills in this study.	Qualitative study enumerating traits of entrepreneurs.
Lans et al. [14]	Learning apart and together: Towards an integrated competence framework for sustainable entrepreneurship in higher education.	Provide framework for sustainable entrepreneurship education in school-based environments. Highlight opportunity recognition and exploitation.	Quantitative study that provided a curriculum framework for inclusion in higher education. The framework entailed variety of entrepreneurs and their activities.
Moberg [15]	Two approaches to entrepreneurship education: The different effects of education for and through entrepreneurship at the lower secondary level.	Education focusing on non-cognitive entrepreneurship skills has a positive association with pupils' level of school engagement; it also has a negative association with their intentions of pursuing a career as self-employed. The opposite is true for education focusing on cognitive-oriented entrepreneurship skills.	Quantitative study in secondary school that determined association of non-cognitive entrepreneurship and students' school engagement.
Ndou et al. [16]	Entrepreneurship education in tourism: An investigation among European universities.	Positive impact on entrepreneurship target groups, content, teaching approaches/pedagogy, and stakeholders' involvement.	A survey that investigated impact of entrepreneurship on content knowledge, pedagogy, and stakeholders.

Author	Title	Focus of Entrepreneurship Education	Remark
Premand et al. [17]	Entrepreneurship education and entry into self-employment among university graduates.	New tract of business training and personalized coaching for students on business and entrepreneurship skills, and personality dimensions. Option to graduate with a business plan instead of the traditional thesis is also offered.	A survey of graduates self-employment viability through entrepreneurship training.
Ruskovaara et al. [18]	Head teachers managing entrepreneurship education: Empirical evidence from general education.	Promising impact, implementing entrepreneurship education in schools is independent of Head-teacher's' gender, business experience, and work experience, but it is more affected by the Head-teachers' training in entrepreneurship education.	Quantitative research on the impact of entrepreneurship curriculum alone, without including professionalism and experience of head teachers.
Robinson [19]	Ethnographic evaluation of entrepreneurship education in higher education: A methodological conceptualization.	Emphasis on personalized process that is rooted in practice and involves personal information. Students' centred learning with teacher acting as a facilitator. Align students' expectations, content, and methods of teaching the courses. Reflection and learning from experience highly encouraged.	A qualitative research seeking practical means of transmission and exchange of entrepreneurship education in higher education.
Sufian [20]	Entrepreneurship education in an engineering curriculum. 7th International Economic and Business Management Conference.	Setting up student enterprise and cooperative society to provide essential goods and services to people on campus.	A case study for enterprise activities in disseminating goods and services to residents.
Testa and Frascheri [21]	Learning by failing: What we can learn from un-successful entrepreneurship education.	Students have understood ways in which personal knowledge may be used in self-employment. Followed by learning how to write business plans.	Qualitative study revealing low level of desire for self-employment. Hinged on secondary education asking attitudes, values, and beliefs that make entrepreneurship attractive.
Yaghouberi [22]	Study barriers to entrepreneurship promotion in agriculture higher education.	Need to expose university students to entrepreneurial thinking because the existing curriculum in higher agricultural education has been successful in developing entrepreneurship skills of graduates.	A quantitative study on impediments towards internalization of entrepreneurship skills from school's curriculum.
Zamberi et al. [23]	An evaluation of teaching methods of Entrepreneurship in hospitality and tourism programs.	Combination of several teaching methods in order to provide students with wide range of required skills and up-to-date knowledge. Increase students' awareness of entrepreneurship as a career possibility.	A quantitative study hinged on entrepreneurship implementation processes, relevance of content knowledge and skills for livelihood.

Table 1.
Brief literature synthesis from the focus of entrepreneurship education.

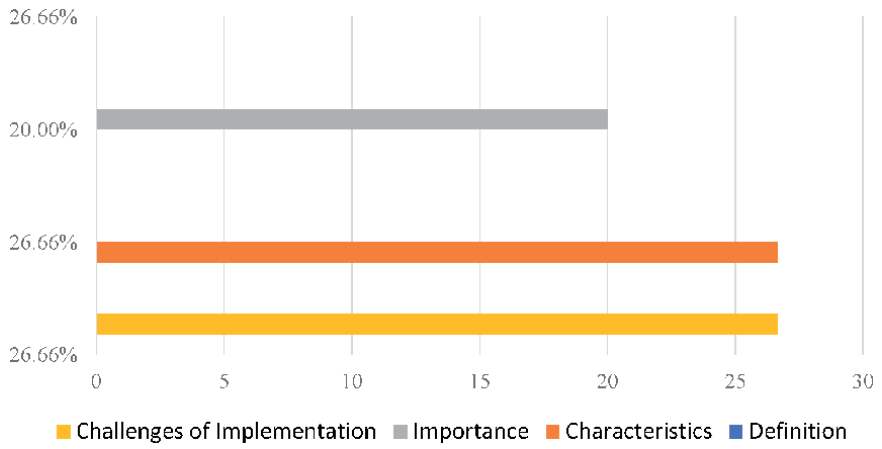

Figure 3.
Bar Chart Indicating Percentages of Synthesized Entrepreneurship Concepts.

also be considered for upcoming studies. Scarcity of secondary data on synthesized studies about the concept of entrepreneurship constrained elaborate discussion thus the authors relied on synthesized data analysis as shown in **Figure 3**.

8. Conclusion

Entrepreneurship and job creation can in fact be used interchangeably because they have similar implication: the creation of wealth. Entrepreneurship is the creation of significant new wealth through the implementation of new concepts. Entrepreneurship is about change, that is why entrepreneurs continuously search for change, respond to it, and exploit it as an opportunity [24]. In the present study, it has been found out that the term entrepreneurship could be regarded as the capacity of an individual to seek out investment opportunities, create or add value to products and services, and bring visions to life under risks conditions. Another finding is that artisans, traditional entrepreneurs, and opportunists were identified as types of entrepreneurs in the study. Furthermore, profiles or characteristics of entrepreneurs such as originality, self-confidence, and risk taking, among others were also discovered. In addition, propelling entrepreneurship education in higher and secondary education will enhance economic sustainability but inadequate professionals to promote the multi-faceted nature the subject became a challenge to sustainability. Based on the results in this study, therefore, it is safe to conclude that entrepreneurship represent a major sphere of economic activities of many countries having the potentials for wealth creation and employment generation despite the existing difficulties [25]. Thus, embedding entrepreneurship education in schools' curricula is recommended by the present study.

Conflict of interest

The authors declare no conflict of interest.

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Chapter 6

Entrepreneurship Education in Vocational Schools in Indonesia

Sunyoto Sunyoto and Andri Setiyawan

Abstract

One of the objectives of vocational school is to develop an entrepreneur. Via vocational high school education, students are provided with entrepreneurship learning so that they are able. Students are often exposed to the business community to find out what the real world of entrepreneurship is like. First, this paper will outline the goals and growth of Indonesia's Vocational High School, respective government policies respectively. Second, the introduction of entrepreneurship education through academic programs, the introduction of apprenticeship programs, and assessment respectively. In Indonesia, through the vocational school curriculum program, entrepreneurship education is included as a compulsory subject and is strengthened by the experience of the industrial world through an internship in the development of an entrepreneur.

Keywords: entrepreneurship education, internship and vocational education

1. Introduction

The Ministry of Education and Culture through the Directorate General of Secondary Education and the Directorate General of Higher Education have implemented entrepreneurship education as a study are to examine of fostering a creative, innovative, competitive spirit as well as entrepreneurial spirit in edges as an elaboration of the development of the Creative Economy (Presidential Decree No. 6 of 2009). In particular, the aim of providing this content, among others, is to provide skills in the form of basic skills related to the freedom of graduates to be able to work independently. It is suggested that students will be able to apply entrepreneurship theory to work experience in this learning process. Besides, the expected education imposes further emphasis on the mastery of certain fields of work which are essentially carried out in academic units. Its essence, entrepreneurship education in its vocational schools has been carried out by "development units" in various fields of study/expertise programs. Even so, the viability of real entrepreneurship research in vocational schools also varies greatly in terms of success. The number of entrepreneurs in a country could be seen as a reflection about whether or not a country is developing, since by getting more entrepreneurs in that country entirely, there would be many independent businesses in the form of large corporate entities and small and medium-sized businesses. This would have an impact on the increase and wide opening of the number of jobs, which in turn raises the level of the country's economy. It has not happened in our beloved country of Indonesia. Indonesia's mental entrepreneurship is still weak. That is demonstrated by a limited number of entrepreneurs with independent companies. There are still a lot of people who are

still uncertain about getting a job every year. Government Regulation No 29 of 1990, Article 3(2), in the context of the vocational schools' goals, must therefore include:

1. Join the job market and be able to cultivate a professional mindset within the framework of company and management skills.

2. Able to include career, be able to compete, and be able to establish within the scope of business and management.

3. Become a middle-level workforce to meet the present and future needs of the corporate sector and industry in terms of market share and management.

4. Be active, resilient, and innovative people.

As a result, vocational school graduates are actively trained to reach the field of employment either by career ladders to become middle-level employees or to become single, self-employed, or entrepreneurial. First, this paper will outline the goals and growth of Indonesia's Vocational High School, relevant government policies. Secondly, the implementation of entrepreneurship education through apprenticeship programs, the implementation of apprenticeship programs, and assessment.

2. Educational standard in Indonesia

The level of education is the stage of education defined based on the level of student progress, the goals to be accomplished and the skills to be developed. Formal education in Indonesia covers primary education, secondary and higher education. Each level has a specific age range and period of education. Indonesia has completed 12 years of compulsory education. Twenty years of compulsory education must, therefore, be the standard of primary education consisting of 6 years of primary school or equivalent and 3 years of junior high school or equivalent. For now, though, the upper secondary school is taken up to 3 years and is generally conducted up to 4 years for higher education (S1) (**Figure 1**).

2.1 Primary education

Primary education is the basic curriculum to be pursued during the first nine years of school and consists of a six-year primary school education system and a three-year junior secondary school educational program. Primary education takes the form of elementary school (SD) and junior high school (SMP). Primary

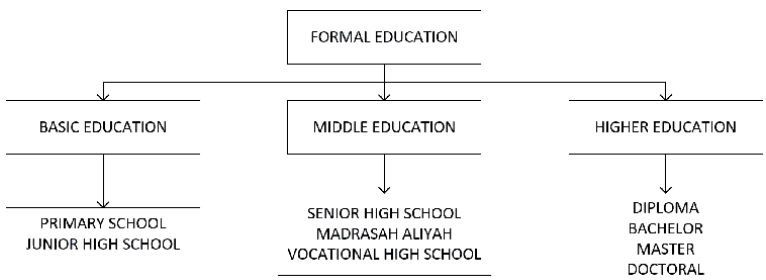

Figure 1.
Formal education level in Indonesia (source: [1]).

education is the beginning of children's education, as it teaches children to read properly, develop their math and reasoning skills. Primary literacy aims to lay the foundations for intelligence, knowledge, maturity, good character, and capacity to live independently and pursue further education. To attempt to achieve primary education goals, a teacher's position to the learning process is required to ensure that students have consistency between cognitive, emotional, and psychomotor skills.

2.2 Secondary education

Secondary education is an extension of primary education. This form of secondary education is a secondary school (SMA), madrasah aliyah (MA), vocational school (SMK), and vocational madrasah aliyah (MAK) or other similar types. The general aim of secondary education is to improve comprehension, knowledge, personality, moral strength, and the ability to live independently and engage in further education. While the general aim of vocational secondary education is to improve intellect, knowledge, personality, moral strength, and ability to live independently and pursue further education in compliance with their vocational training.

2.3 Higher education

Higher education is an extension of secondary school education. Higher education is no longer carried in schools but universities. Including a variety of diplomas, bachelor, master, doctoral and specialized programs organized by universities. Higher education institutions are required to provide education, research, and community services. At this level, students are required to be more active in practicing/directly involved in each learning activity, because the ultimate goal of this level of education is that students are expected to be human beings who are useful to others. Higher education institutions may organize academic, vocational programs.

3. Vocational school in Indonesia

3.1 About entrepreneurship

Entrepreneurship is ultimately a creative and imaginative way of thinking that is used as a framework, tools, and driving force, goals and strategies, and tips to deal with the challenges of life. According to Agus Wibowo's statement, entrepreneurship is the ability to merge existing expertise, innovation, and opportunities. Entrepreneurs are people who know how to take risks, are imaginative, inventive, never give up, and are willing to cope with opportunities properly [2]. Entrepreneurship is a mindset, a spirit, and a capacity to build something new that is very important and useful, both for oneself and for others [2, 3]. Entrepreneurship is a mental attitude and a soul that is often active or productive, motivated, innovative, creative, humble, and seeks to increase income for its company. While entrepreneurs are people who are willing to take advantage of opportunities to grow their businesses, intending to improve their lives.

Entrepreneurship is a creative and imaginative ability that is used as a framework, tips, and tools to find growth opportunities [4]. Creative and creative processes typically begin with the creation of ideas and concepts to create something new and special. Creativity is the ability to develop new ideas and ways of solving problems and finding opportunities (thinking new things). Innovation is the desire to apply ingenuity to solve problems and discover ways (to do new things). Emigawaty added that the cycle of entrepreneurship is beginning with challenges [4]. Ideas,

motivation, and ability to take the initiative, which is nothing but fresh thinking and constructive action, should arise from the challenges.

3.2 The purpose of vocational school

Vocational education is education that incorporates, matches, and teaches people to have working habits to be able to join and expand the world of work (industry) so that they can be used to better their lives. National Education System Law (UUSPN) No. 20 of 2003 Article 15 states that vocational education is secondary education which prepares students, in particular, to work in certain fields [1]. Vocational education is associated with grooming an individual for employment and enhancing the development of a future workforce. This involves different forms of schooling, training, or further development to prepare someone to join or continue working in a legal role. Vocational education is certainly part of the national education program, which intends to train workers who have skills and expertise following the requirements of job requirements and who are able to strengthen their capacity by embracing and adapting to technological developments.

Vocational education is part of the national education program, structured as a continuation of the Junior Secondary School and Madrasah Tsanawiyah:

a. In line with the skills, interests, and abilities to meet the needs/job opportunities that are and will be created in the community.

b. Vocational school graduates are trained, educated, and trained workers.

c. Able to engage in further education and/or respond to technological changes.

d. Impact as a promoter of (small or large) industrial development.

e. Significant decrease in unemployment and crime rates.

f. Economic growth and national income by income tax and value-added.

UUSPN No. 20 of 2003 Article 15 states that vocational education aims, in particular, to prepare students to work in plenty of other fields. This goal can be further transferred as follows by [1] into general objectives and precise objectives:

a. General Aims

As part of the vocational education system, the goals of Vocational Schools are:

1. Preparing students to succeed in a decent life.

2. Improve the students' faith and modesty;

3. Preparing students to become independent and accountable individuals;

4. Prepare students to appreciate and acknowledge the rich cultural heritage of the people of Indonesia, and

5. Prepare students for a healthy lifestyle, environmental insight, knowledge, and art.

b. Specific Aims

Vocational schools are especially purposeful:

1. Prepare students to be able to work independently or to fill established positions in the business community and industry as middle-level employees, in keeping with the fields and knowledge system of their preference;

2. Equip students to be able to choose professions, to be versatile and to remain competitive and to be able to construct professional attitudes in areas of expertise or interest, and

3. Equip students with science and technology to be able to enhance themselves through higher education.

In contrast, according to the Directorate of Secondary and Vocational Education (Dikmenjur) in 2006, the SMK learning system adheres to the concept of full learning (Mastery Learning) in addition to being able to master behaviors, information, and skills to be able to function following their career. As required by competence. In addition to being able to research extensively, it is necessary to develop the overall evaluation principles:

a. Learning by doing (learning by actual activities or activities that provide meaningful learning experiences) is transformed into production-based learning.

b. Objectives of Vocational Education and Entrepreneurship Education Implications Government Regulation No 19 of 2005 on National Education Standards (SNP) Section 25 paragraph 4 implicitly notes that graduates (SMKs) are required to meet graduate-level competency requirements representing the ability of graduates to act, know-how and skills. Therefore, the learning process in educational units is carried out in an active, interactive, creative, challenging, fun, and independent manner according to self-potential, physical development, talents, and interests, as well as students' psychology. Individualized learning (learning with emphasis on the uniqueness of each individual) with a modular program. Empirical statistics show that most vocational school graduates are not yet following customer expectations or requirements of stakeholders.

Graduates tend to be "job hunters" and not many are able to work "independently" to incorporate and improve their skills (survival skills). On the other hand, the work ethic of vocational school graduates is still weak in terms of entrepreneurial thought. In accordance with Law No. 20 of 2003 on the National Education System, secondary education consists of general secondary education and vocational secondary education (Article 18, paragraph 2). Senior High School is a general education unit, while Specialized School is a specialized secondary education unit. The objective of the introduction of high school is to provide academic competence for students to pursue their higher education, while at the same time, vocational schools emphasize more on preparing students to be ready to work under certain fields. The introduction of the SMK also offers incentives for students who have the qualifications and skills to pursue professional, professional, and academic education (dual purpose).

3.3 Evolution of vocational high school

The terms of vocational education and technology are currently being established, there are a stigma and a tendency to define vocational education and technology as an institution that seeks to prepare the workforce in accordance with the interests of students. However, there are quite many limitations related to vocational education and technology in its advancement, namely, among other things, the differing viewpoints of professionals, such as the following.

In the 1920s, Barlow [5] stated that vocational education was a means for someone to prepare and prepare for the services we need. These restrictions are very specific since the word "services" has very different definitions. Struck [5] provides another perspective on vocational education and technology, which leads to the provision of experience to students to be able to carry out work in the field. It seems that this restriction is still very common, as it does not specifically reflect the form and quality of education, both within and outside the classroom.

One form of technical and technological education, namely vocational high school technology. The educational goal is to produce students who comply with the intermediate level work requirements as interpreters or technicians in compliance with other forms of vocational training. Therefore, the management of the learning cycle is more oriented towards the incorporation of vocational skills theory and practice, which refers to the intermediate level of work requirements required by the industrial environment. The presence of an imbalance between what is created by educational institutions and the needs of the labor market is a serious concern of the Directorate for Vocational High School Growth. This seriousness is expressed in the 100-day flagship program of the "Indonesia Bersatu" Cabinet Volume II. Processes, strategies, and action plans should be developed to resolve this mismatch in the 100-day program, in particular the education program.

In order to improve the quality of vocational school graduates, the Ministry of Education and Culture will increase industrial simulations for each vocational school. The purpose of the industrial simulation is to provide vocational students with knowledge of the working culture, the real conditions in the industry, and the mastery of technology. The creation of a cooperation model will also be carried out as a policy action plan. The relationship will be formed between vocational school, vocational higher education, and skills training with the industrial environment, including the creative sector.

This is achieved in order to improve the prospects for intermediation and apprenticeship as well as the suitability of education or training for the world of work [5]. On the other hand, the competitiveness of education can be accomplished through the growth of entrepreneurship, including technology entrepreneurs (IT entrepreneurs) through collaboration between educational institutions and the business world. By the numerous measures outlined above, it is hoped that the connection between education and jobs required by the labor market can be developed and that the unemployment rate will be reduced to the lowest level.

The idea of connection and match has essentially been implemented since the 1994s, when five PSG model schools (Jakarta, Karawang, Semarang, Surabaya, and Medan) were set up, supported by the German Technical Zuzamenarbeit (GTZ). Nevertheless, in its growth, ups and downs are induced, among other things, by the lack of a consistent partnership pattern that can lead to mutually beneficial relationships (mutual benefits). The concept of establishing a mutually beneficial relationship was initially designed to provide tax relief for manufacturing communities that have collaborated intensively with vocational schools and can report on the outcomes. It takes time and a clear political will from the Government in the process of understanding the notion. In addition to applying the principle of

linkage and equivalence (link and match), the structuring of study programs or skill programs (re-engineering) is an evolution of existing fields and skill programs in all vocational schools (public and private) to meet the geographic capacity and the requirements of the job market.

The outcomes of the re-engineering structuring would benefit: (1) vocational school, because the field of expertise program designed is in line with the needs of the future of employment; (2) prospective students and parents, so they can select a field of expertise program that facilitates integration in the future of employment; (3) business and industry, as it makes it easier to find employees who suit them. The structuring of the vocational education framework approach would eventually lead to the introduction of a CBT (Curriculum Based Training) that complies with the concepts of a competency-oriented curriculum that is now being developed into a unit level curriculum (KTSP). Competence-based education and training offer, ultimately, individual learning programs.

The introduction of vocational schools will, therefore, be successful and productive where: (1) provision of appropriate teaching materials/modules in terms of number, form, and quality; (2) provision of sufficient learning time in accordance with each student's learning pace and ability; (3) provision of learning facilities that allow classical learning in schools and industrial practices outside of school.

4. Implementation of entrepreneurship education

4.1 Entrepreneurship as a compulsory subject

There are educational courses in entrepreneurship in technical schools that students will take. Entrepreneurship training courses are conducted in Class X to Class XII. The competencies offered are different for each class. Class X competencies include: (1) recognizing entrepreneurial attitudes and behaviors; (2) adopting attitudes and job habits (always trying to move forward); (3) formulating problem solutions; (4) cultivating entrepreneurial spirit; (5) creating loyalty to oneself and others; (6) taking business risks; (7) making decisions. Whereas in the same semester the competencies given include: (1) displaying an unyielding and resilient attitude; (2) handling conflicts; (3) developing a business vision and task.

For reality, entrepreneurship training courses are structured into adaptive training courses. Adaptive education and subject training is a training and subject training community that acts to educate students as individuals so that they have a broad and strong knowledge base to adopt or adapt to changes in the social climate, the economic environment and to be able to learn based on the advancement of science, technology, and art. Adaptive programs provide training courses that emphasize majorly on offering opportunities for students to learn and master the fundamental concepts and principles of science and technology that can be applied to daily life or underpin work skills. Adaptive approaches ensure that students not only understand and learn "what" and "how" a job is done, but also provide comprehension and mastery of "why" a job needs to be done.

4.2 Introducing the business world through apprenticeship education

Vocational School is one of the national education systems which strives to equip students with skills or expertise through the Dual System Education (PSG) program or whatever is often referred to as an internship. Vocational schools are introducing Technical and Vocational Education Training (TVET) in Indonesia. According to Putu Sudira [6], TVET also brings schools closer to the business environment and

the industrial sector. PSG aims to sync the business community and the field of education. Vocational school in legislation No. 20 of 2003 on the National Education Framework Article 18, paragraphs 2 and 3. Vocational in secondary school is organizes vocational education that gives legitimacy to student preparation to join the workforce and establishes professional attitudes (Article 1 paragraph 2 of the Decree of the Minister of Education and Culture of the Republic of Indonesia No 323/U/1997 on the introduction of the Dual System of Education at vocational school.

Vocational schools seek to develop students' knowledge and skills in such a way that they are ready and willing to work based on their expertise in their respective fields following graduation from secondary education. The competence of vocational school graduates will be expressed in the form of achievement as real or unidentified activities, including (a) both a strong character and a weak character. (b) The development of knowledge mastery, which is characterized by a process of knowledge that is capable of processing information (a process of understanding, know-how, and know-how). (c) Professional development (tool capacity development) characterized by adherence to protocols, punctuality, resistance to fatigue, precision, and thoroughness. (d) The creation of critical thought process skills is characterized by developing new concepts, looking at problems in new ways, and preparing for strategic problem-solving. Based on the outline of the vocational school teaching program (1993: 11A), priority is given to the adoption of the vocational school curriculum: (a) Prepare students to enter the workforce and build professional attitudes. (b) Preparing students to be able to have a career, succeed, and grow to a better standard of living. (c) Preparing a middle-level workforce to meet the present and future needs of the corporate sector and industry. (d) Prepare for graduation so that they are active people who are ready to create, adapt, and be innovative.

4.3 Apprenticeship implementation

The internship is an absolute prerequisite for the introduction of technical education. This is the primary reason for the introduction of internships in most technical education institutions. Training may also provide tangible benefits for vocational education and training programs, such as meeting the criteria of accreditation and attempts to develop the credibility of a school. Recognition of the need to expose students to the world of industry is the biggest motivation for vocational education institutions to coordinate internship programs [7, 8]. In the meantime, for industry, there are many explanations for promoting collaboration through apprenticeship programs, including (a) Public care (b) 2.2. The interpersonal connection between industry and vocational education institutions, for example, business players, is alumni of the school concerned. (c) And get a workforce that suits your needs. According to the rules, the minimum length of the internship is three months, but in certain places, the optimal maturity is six months to one year. In summary, the apprenticeship program will be carried out in the following stages (**Figure 2**).

The prerequisites for the completion of the internship [9] include: (a) the department at school must be in keeping with the area of jobs in industrial apprenticeship location. (b) Schools must ensure that the definition of internships to be introduced complies with Regulation. (c) Schools must set industry standards for the location of apprenticeships. Evaluation practices must be seen as part of the growth of all businesses, schools, and students. In particular, internships are also supposed to be a feedback platform. Therefore, evaluations should be carried out regularly, not only at the end of the industrial working cycle, but even once a

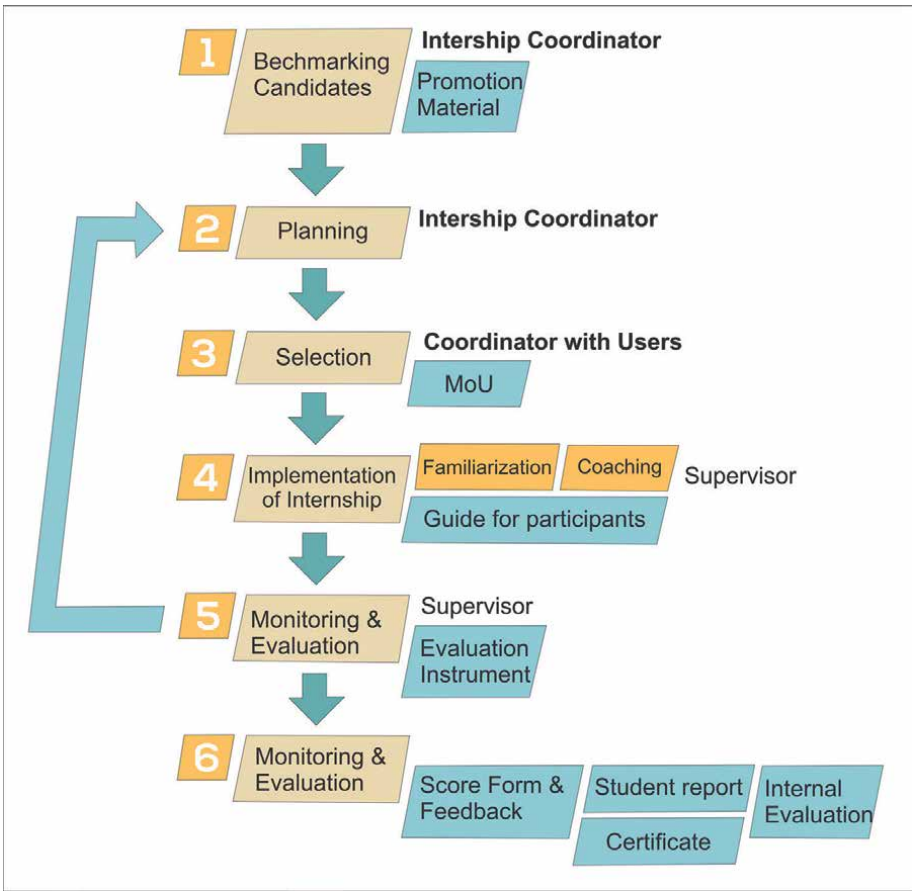

Figure 2.
Internship adoption batch (source: [9]:p. 17).

month, for example. Bon and Eschborn [9] listed a variety of items that were evaluated, including the achievement of the internship participants is consistent with the objectives set for the internship. (a) Creation of technical competence. (b) Creation of non-technical competencies (soft skills and attitudes) focused, in particular, on the goals of competence. (c) Quality according to job requirements and client commitment. (d) Another capacity of the participants. According to Duc in Billet [10], "The contribution of the student is linked to the various ways in which internship guidance can be given or not depending on the context in which they are trained." In our study of vocational education in the Swiss VET dual program, observations find workplaces where spontaneous types of instruction are much more common than others, or where vocational trainers respond easily and enthusiastically to assist requests. Conversely, we often identified firms where contested modes of instruction were the prevailing pattern of interaction and staff fought for knowledge and became a valid teacher. In particular, the requirements given to students can differ from one background to another [11]. This degree of high contextual variability is an essential challenge for practice-based learning models, as it greatly undermines overall performance. The introduction of the PSG is carried out in phases at SMK, to ensure the quality and efficacy of coaching, as well as allow the process of improving the PSG to take place. In other words, the adoption of this initial stage is a trial that is often accompanied by constant evaluation and review, and, in effect, it is expected that the principle and application of the PSG, which is legitimately

solid and in line with the school, will be formulated. The distribution of the adoption of the PSG in schools will be decided by the readiness of the vocational school concerned, in particular, the readiness to develop cooperative ties with industry or companies to become partner institutions.

5. Conclusion

The internship is part of a vocational curriculum that aims to prepare students' skills or abilities in a specific field in order to be able to work. Through the apprenticeship training course, students are prepared to face the true world of life, both through the mindset, the job is done, and the actual working environment. It is expected that the graduates of this apprenticeship program will be better qualified mentally and in their abilities to succeed in the real work environment.

Via internships, students are required (1) to experience the working climate in the world of work directly, (2) to acquire work experience, including expertise, skills, work attitudes and character-based values that emerge from industrial culture, (3) to know the real working environment in the world of work, (4) to know the working processes of the business (products, labor, discipline, values of work), (5) contrasting the knowledge and skills acquired at school with the knowledge and skills acquired during the internship in industry, (6) acquiring the most recent knowledge from the internship, (7) applying the principles of attitudes and character, knowledge and skills acquired at the internship, and (8) getting stronger soft skills in terms of motivation, communication, freedom.

The introduction of the internship has similar features to the apprenticeship program as provided for in Regulation No 36 of 2016 of the Minister of Labor of the Republic of Indonesia on the implementation of the Domestic Apprenticeship, which states that the apprenticeship is stipulated as part of the vocational training system that is carried out in an integrated manner between the training. Directly under the direction and supervision of teachers or staff who are more knowledgeable in the manufacturing process of products and/or services within the business, intending to acquire those skills or expertise.

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Section 3

Digital Learning in Today's World

Chapter 7

The e-Learning in Bosnia and Herzegovina Classrooms

Dzenana Rustempasic

Abstract

Electronic (E)-learning is a type of learning by using electronic technologies to access an educational program outside traditional classrooms increasingly demanded by many education systems. As conventional classrooms continue to be transformed into digital, teachers are expected to adopt multiple learning modes. Digitally enriched content and personalized learning should be the primary way of teaching and collaborative and interactive learning. Contrary to the continuous development of technology and students who regularly encounter computers from an early age, teachers do not have the privilege to introduce technology into the classroom successfully. The paper presents how the lack of funds influences a teacher's readiness to embrace technology into their teaching practice. The paper explores E-learning issues related to virtual environment reality and artificial intelligence that is increasingly entering the classrooms of developed countries and 'what application of artificial intelligence means for the development and broader implementation of E-learning in virtual classrooms in Bosnia and Herzegovina. The primary method of collecting data was through an open question survey distributed to students in different parts of Bosnia and Herzegovina. For research purposes, schools were chosen based on how often their students have access to computers or the Internet. Four schools from urban and four schools from rural areas were chosen, and questionaries' were delivered directly to students by the researcher. The research aims to examine students' views on the benefits online education has in the educational process in Sarajevo and Bosnia and Herzegovina. The survey provides an analysis of the potentials for implementation of the e-learning model in secondary schools in Sarajevo Canton and the rest of the country. The paper presents the advantages and opportunities that contribute to the improvement of e-learning in educational institutions and the benefits for students and other involved parties in the educational process, such as teachers and parents. Students enrolled in this research have a highly positive attitude towards e-learning, which leads to the conclusion that students are willing to learn using I.T. solutions in the classroom.

Keywords: artificial intelligence, digital literacy; e-learning, virtual learning environment, virtual reality

1. Introduction

Today's modern society is characterized by the rapid development of information and communication technology (ICT). One particular field that presents special interest both for society and individuals are education. The advent of

computers and the development of the Internet had a significant role in the development of distance learning.

Distance Learning is a relatively new field, only a hundred years old. Stated that distance learning had followed extraordinary growth worldwide since the early 1980s. Due to the effect of technological advances, its form has changed rapidly from initial correspondence education, in which printed materials were primarily sent to high school students, to a form of learning that can be accessed from anywhere at any time. Distance learning is a field that needs to be continuously revised and renewed mainly because of its related dynamics such as technology [1]. Even though students and professors are located in remote locations, they can regularly communicate with each other. Changes in online education that allowed some of its processes to be carried out in a different place and at different times than the traditional classroom practice began to occur long before the advent of computers. First, as a form of correspondence education, students were provided with an opportunity to be educated without having to attend regular classes.

The first significant steps in programmed teaching were developed by Sidney Pressey in the 1920s and further taken over by Burrhus Skinner in the mid-1950s. Skinner's ideas for improving the teaching and learning process were mainly focused on two facts: first, that students learn at different paces, and second, that, by the dominant theories of learning stimulus–response, feedback must carefully monitor behavior. This, however, is not the case in a school setting, where students are forced to follow the imposed pace of feedback from lecturers and usually receive a delayed response because teachers need at least one day to correct assignments.

Skinner believed that hiring one teacher per student would solve the problem. However, as this was practically impossible to implement in practice, Skinner proposed and worked on introducing learning machines. Each student could work at his own pace and receive direct support after the correctly solved task [2].

In essence, the development of programmed learning aims to computerize teaching, structure information, test student knowledge, and provide instant feedback to students, without human intervention other than in designing hardware and software and selecting and loading content, and evaluating questions. B.F. Skinner began experimenting with teaching machines that used programmed learning in 1954. Skinner's teaching devices were one of the first forms of computer-based learning [3].

Although the idea of e-Learning was still in its infancy in the sixties (this was a decade when PLATO, probably the first experiment in the world of e-learning, was developed and first launched), Marshall McLuhan had a clear vision of the future of education. McLuhan believed that for better education, we need fewer teachers, more technology, and, most importantly, a more positive view of technology. As a historian by education, McLuhan noticed that education had not changed much in many aspects since finding the Gutenberg printing machine at the end of the 15th century. McLuhan considered that we should stop relying primarily on visual delivery methods and create a multi-sensory, interactive learning environment based on students' needs and interests [4].

E-learning primarily transmits education through computer and digital technology, including the Internet, intranet, computer, satellite T.V., CDROM, audio, and video resources. Therefore, e-learning can be broadly defined as the use of Information and Communication Technology or shortened ICTs to enhance and support learning that can range from teachers and learners using email for communication up to online courses [5].

Developing distance learning is entirely conditioned by modern information technologies such as computers, educational software, computer networks, and the

Internet. However, distance learning has limitations on the technical level of ICT application by instructors who offer this education model and specialized equipment for students who want to use it. The success of distance learning is further related to educational institutions' willingness to embrace ICT in the learning process.

The educational system in Bosnia and Herzegovina is relatively rigid, and traditional teaching is still the most common form of instruction. Looking at the elementary and secondary levels of education in Bosnia and Herzegovina, it is evident that the teachers are even resorting to the traditional methods and techniques of teaching. Chalk and talk is the standard way of transferring knowledge. The war has made the teachers' continuous professional development impossible and caused the lack of a qualified teaching workforce [6].

The e-learning model currently presents in Bosnia and Herzegovina is in its infancy stage. Despite the development of technology and e-learning tools, we are witnessing that in Bosnian schools, students still sit in rows of benches and read from textbooks or fill out worksheets. The teacher gives a lecture standing in front of the class in ex-cathedra style, and each student receives information in the same manner as all other students. Their different learning needs and learning styles are neglected and do not bring positive results.

The number of computers in the secondary education system overall covers 8.4% of the student population. However, there is a lack of statistics on the exact number of computers in secondary schools. Overall, the number of computers with an internet connection in the secondary education system covers 6.8% of the student population. In comparison, 42.8% of. I.T. companies in Bosnia and Herzegovina are dissatisfied with the content of the I.T. curricula and learning processes [7].

According to the data, 61.0% of citizens have used a computer, and 31.6% of respondents have never used a computer. The share of computer users by gender is 64,4% of male users and 58,4%of female users.

The survey results on the usage of ICT in households and by individuals in Bosnia and Herzegovina have shown that 69.2% of households have access to the Internet, and 29.6% of households do not have access to the Internet [8].

The survey results on the usage of ICT in households and by individuals in Bosnia and Herzegovina have shown that 69.2% of households have access to the Internet, and 29.6% of households do not have access to the Internet (**Figure 1**).

Availability of computers and internet connection in secondary schools in Bosnia and Herzegovina

Number of students in secondary education	**124 148**
• Technical schools	67 895 (54.7%)
• Vocational schools	22 819 (18.4%)
Number of computers in secondary schools	**14 192**
• For employees in school	3 753
• For students	10 439
Number of computers with internet connection in secondary schools	**11 690**
• For employees in school	3 230
• For students	8 460

Source: Agency for Statistics of Bosnia and Herzegovina, Demography and social statistics, education, 2017/18

Figure 1.
The number of computers in the secondary education system [8].

Older teachers need to learn how to adapt to new technological changes, both inside and outside the classroom. Inside the classroom, teachers need to learn how to integrate technology into everyday teachings, such as using computer programs, iPads, and smartboards. Outside the classroom, many teachers learn how to use the Internet by having to access an electronic diary or exchange emails with parents as a part of their regular teachers' duties. Often teachers receive emails and messages on social networks or Viber groups from their student's parents. As the world adapts to this digital age, teachers must follow this trend.

Research, which measured the application of this model in the educational system, is based on determining existing conditions in educational institutions concerning usage of ICT in today's classrooms as well as potentials for the implementation of the e-learning model. Attitudes of primary stakeholder groups for this venture were examined with the overall goal to form an e-learning model that would have a realistic prospect of success.

2. Theoretical framework

According to Anderson and Dron, historically, distance learning has undergone three pedagogical approaches: Cognitive-Behaviorism, Social-Constructivism, and Connectivism. The authors state that cognitive-behavioral models have defined the first generation of individualized distance education. Besides providing opportunities for many students to receive education at a lower cost than traditional education, distance education ensured full access and freedom for students [9].

Cognitive-behaviorism and theories of social-constructivism argue that learning takes place within a person, and even socially constructivist views hold that learning is a social process that promotes the individuality of the individual in education. The Connectivist approach focuses on the learning process as well as what has been learned.

In the modern age, in which learning tools or the virtual learning environment have gained popularity, the quality of information learned and the importance of turning data into a knowledge process has become more important for distance learning [10].

Cognitivism often takes a computer information processing model. Learning is viewed as a process of inputs, managed in short term memory, and coded for long-term recall. Cindy Buell details this process: "In cognitive theories, knowledge is viewed as symbolic mental constructs in the learner's mind, and the learning process is how these symbolic representations are committed to memory" [11].

Constructivism suggests that learners create knowledge as they attempt to understand their experience while behaviorism and cognitivism view knowledge as external to the learner and the learning process as the act of internalizing knowledge. Constructivism assumes that learners are not empty vessels to be filled with knowledge. Instead, learners are actively attempting to create meaning. Learners often select and pursue their learning. Constructivist principles acknowledge that real-life learning is messy and complicated. Classrooms that emulate the "fuzziness" of this learning will be more effective in preparing learners for lifelong learning [12].

For Siemens, it is the connections and information flows that result in knowledge beyond the individual. Learning becomes the ability to tap into significant flows of information and follow those significant flows. He argues that" 'Connectivism presents a model of learning that acknowledges the tectonic shifts in society where learning is no longer an internal, individualistic activity.

Learning (defined as actionable knowledge) can reside outside of ourselves (within an organization or a database) [13].

Behaviorism is a learning theory that considers learning to be a change in observable behavior that results from experience and lasts over time. Based on B. F. 'Skinner's concept that behavior changes because of contiguity or the pairing of stimuli, insights, goals, ideas, and any other change that exists only in the 'learner's mind are not considered.

It is a psychological theory based on the assumption that the environment determines human behavior through association and reinforcement [14].

Learning theories examine the depth of learning and quality of information absorbed as a result of a learning process are used as a basis for the research. They prove that a student is an active part of the learning process and not just its object. Students in online learning have an opportunity to choose time, place, and content they want to explore, learn, and acquire during the learning process. The conventional classroom is not the only space where learning can or must take place. On the contrary, online classroom gives more variety of learning if only appropriately implemented.

3. Methodology

A study in this research sought to analyze e-learning in B&H classrooms. Research was done by seeking to answer the questions:

1. What are the benefits of e-learning over traditional learning.

2. How different e-learning tools facilitate this approach to learning.

3. Examine students' attitude towards e-learning and their preferences.

4. Demonstrate how providing learning through an online platform encourages..I.T. literacy and provides opportunities for high school students to succeed in a globally competitive world.

The survey analyzes potentials for e-learning model implementation in secondary schools in Bosnia and Herzegovina and other educational institutions opportunities to define and create a national e-learning strategy. The survey focused on collecting information necessary to develop the e-learning model's adoption in secondary schools in Bosnia and Herzegovina. Survey respondents were students aged 16–19, both sexes, 150 in total. The survey was conducted in December 2018 in eight public schools across the country. The study adopted qualitative research, a student satisfaction survey, to explore students' views on the benefits online education has in Sarajevo and Bosnia and Herzegovina's educational process.

Data were collected through a student satisfaction questionnaire that was completed by students during school hours. Finally, after modifications and improvements were made to obtain a more efficient instrument, a pilot instrument was administered to students in two highs schools in Sarajevo to ensure students understand the meaning of statements.

Few modifications were made in Section 3. to enable the final version of the questionnaire was given to the target population via personal contact.

The primary method of collecting data was through an open question survey distributed to students in different parts of Bosnia. For research purposes, schools

were chosen based on how often their students have access to computers or the Internet. Four schools from urban and four schools from rural areas were chosen, and questionaries' were delivered directly to students by the researcher.

The Likert-type questionnaire with five responses was applied: 1-"disagree"; 2 - "disagree"; 3 - "neither agree nor disagree"; 4 - "agree" and 5 -completely agree." Categories were administered to students to respond to interaction (Section 2), prior experience (Section 3), students' competencies (knowledge, skills, and values) related to the virtual learning environment (Section 4), and cost of learning in a virtual learning environment (Section 5) statements or claims following Section 1 on "students' background information.

The first part of the questionnaire covers information about respondents' computer usage habits, such as questions about the frequency of computer use. In contrast, the other two questions relate to knowing the meaning of e-learning and attending e-courses. After modifications and improvements were made to obtain a more efficient instrument, questionnaires were administered to the target population through personal contact. The questionnaires were distributed to 8 schools in 4 towns of Bosnia and Herzegovina.

Respondents were informed of the purpose, and anonymity and confidentiality of responses were ensured. Finally, respondents were given a questionnaire to complete during December 2018. The respondents got familiar with the purpose of the survey and the process of completing the questionnaire.

All respondents voluntarily, independently, and anonymously filled in the questionnaire, and the estimated time to complete the questionnaire was ten minutes. Exploratory factor analysis, a principal component analysis method, was used to determine the survey's validity. Analysis of the data was obtained using the SPSS statistical software. The second section's questions were formulated as Yes/No questions, while statements in Section 1 and Section 3 consisted of Likert-type questions.

Quantitative data collected from the questionnaire were analyzed using SPSS to answer research questions. Data analysis procedures included factor analysis.

Multidimensionality of the instrument was tested, an analysis of the main components was carried out. To check the correlation matrix is suitable for carrying out factor analysis, the Kaiser-Meyer-Olkin test and the Bartlett test were conducted. The Kaiser-Meyer-Olkin test shows the proportion of variance that is common or can be explained by latent factors. When this test's value is more significant than 0.60, it is considered that data is suitable for carrying out factor analysis. In this case, the value is 0.870.

The Bartlett test checks if our matrix is identical to the identity matrix. If our model were identical to the identity matrix, this would mean that the matrix variables were unconnected and would not make sense to carry out a factor analysis.

Table 1 shows the factor structure of the particles, with the values of the characteristic root and the percentage of the explained variance of each component. Given the content of the particles and their projections on the elements, the first element corresponds to the interaction of teachers and students, the other part corresponds to the benefits that students have from the virtual learning environment, and the third corresponds to the economic aspect (costs for individual students and the scope of work).

The test must be significant with at least 95% security for data to be comparable to factorization. In our case, the approximate $\chi 2$ is 442,256 and is significant at 99,9%. The results of these tests on our data indicate that it is justifiable to carry out a factor analysis. Analysis of the main components resulted in a three-factor solution. The characteristic roots of the three components are more significant than one, and together, they explain 55% of the variance.

	Teach stud	Student	Cost	1	2	36	47	58	6	7	8
Teacher student	1	.669**	.119	.063	.064	−.008	−.134	−.018	−.081	−.132	−.050
Student	.669**	1	.016	.124	.145	−.108	−.081	−.067	−.093	−.045	−.010
Cost	.119	.016	1	−.025	.134	−.070	−.023	−.021	.090	.001	−.065
1. How often do you have access to information from the Internet?	.063	.124	−.025	1	.161	.162	.131	.103	.093	.117	.030
2. How often do you post messages on a discussion forum (asynchronous discussion)?	.064	.145	.134	.161	1	.244**	.215*	.300**	.284**	.103	.041
3. How often do you participate in a synchronous discussion (eg using a chat box)?	−.008	−.108	−.070	.162	.244**	1	.118	.267**	.093	.172*	.046
4. How often do you upload content to a website	−.134	−.081	−.023	.131	.215*	.118	1	.277**	.164	.217*	.243**
5. Have you listened to/attended online courses that involve using a discussion forum?	−.018	−.067	−.021	.103	.300**	.267**	.277**	1	.373**	.418**	.198*
6. Have you listened to/attended online courses that involve the use of conversation (synchronou)	−.081	−.093	.090	.093	.284**	.093	.164	.373**	1	.294**	.290**
7. Have you listened to/attended online courses in which materials and content were delivered o	−.132	−.045	.001	.117	103	.172*	.217*	.418**	.294**	1	.233**
8. Have you listened to/attended online courses in which you used a self-assessment program t	−.050	−. 010	.065	.030	.041	.046	.243**	.198*	.290**	.233**	1

*Correlation is significant at the 0.05 level (2-tailed).
**Correlation is significant at the 0.01 level (2-tailed).

Table 1.
Correlations.

Dimensionality was added to the correlation matrix, meaning that underlying components could be identified in the subjects' answers. The particles' logical and content analysis indicates that the first component corresponds to the student-teacher interaction quality. The second component corresponds to the assessment of the user that the virtual environment has for learning and students. In contrast, the third one corresponds to the economic aspect of the virtual learning environment (VLE).

A statistically significant correlation was found between particles related to a previous experience in the virtual learning environment. A statistically significant correlation was found between the first and second group questions on the level 0.05 or $p < 0.05$.

There is a high correlation on the level of significance 0.069, or $p < 0.069$ between the components teacher-student and the benefits of the virtual learning environment at the 0.01 level. It was expected that the correlation is high; that is, the teacher is an essential factor in the teaching process and that it contributes to better interaction in the educational process. It is vital for the individual student that ongoing daily communication with teachers is maintained. The student perceives that the virtual learning environment gives them more opportunities to access a myriad of information, more frequent contact with the instructor or teacher, which allows him to ask questions in constant communication, which is not common practice in the traditional classroom environment.

4. Results and discussion

The claims are divided into three sections.

From **Figure 2**, it can be concluded that only 1.4% of respondents seldom answered the statement, "How often do you have access to information from the Internet," and 3.6% of students answered occasionally. In comparison, 35.5% of students responded that they often have internet access, and as many as 59.4% of students answered that they have internet access daily.

Slightly more than half of the respondents access the Internet daily, which indicates that most students regularly access the Internet searching for information that is not necessarily related to educational content.

Previous Experiences in Computer Use show the percentages of student responses to claims related to students' prior experiences of listening to online subjects (**Figure 3**). The chart shows that as many as 69.9% of students used synchronous conversation, 73% listened to subjects where the content was delivered online.

These data confirm that students show great interest in online learning and online content that helps them acquire knowledge in a more appealing and exciting mode.

In the second group of statements related to previous experiences, respondents stated that they had the opportunity to attend an online course, which refers in part to the online learning week that is carried out in schools in Sarajevo Canton since the 2017/2018 school year. Educational materials and accompanying exams are uploaded on the Google online platform. Students are required to complete tasks and tests and upload them on the subject stream on the Google platform on the due date and time. A relatively low percentage of responses on the use of forums and synchronous discussion indicates that students had no experience in attending online subjects. That would require the use of forums and discussions with teachers and other students to fulfill the online course tasks, such as projects or case studies that are supposed to be completed with fellow students who take the same subject. Section3 examines the attitude of students towards the virtual learning

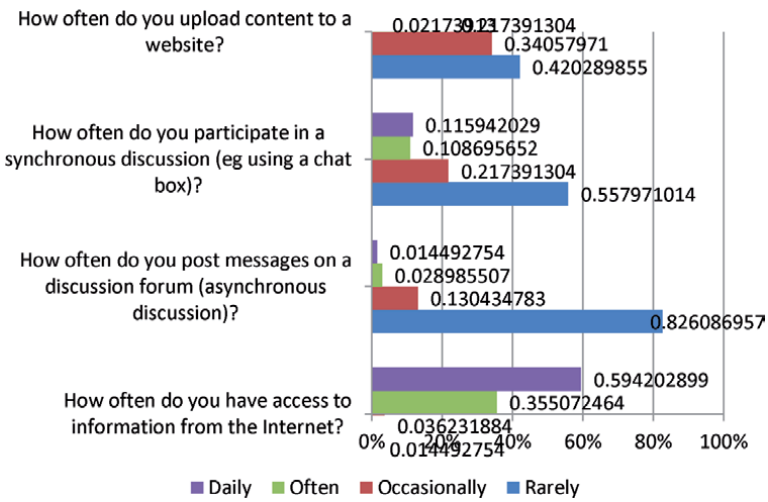

Figure 2.
Experiences in computer use.

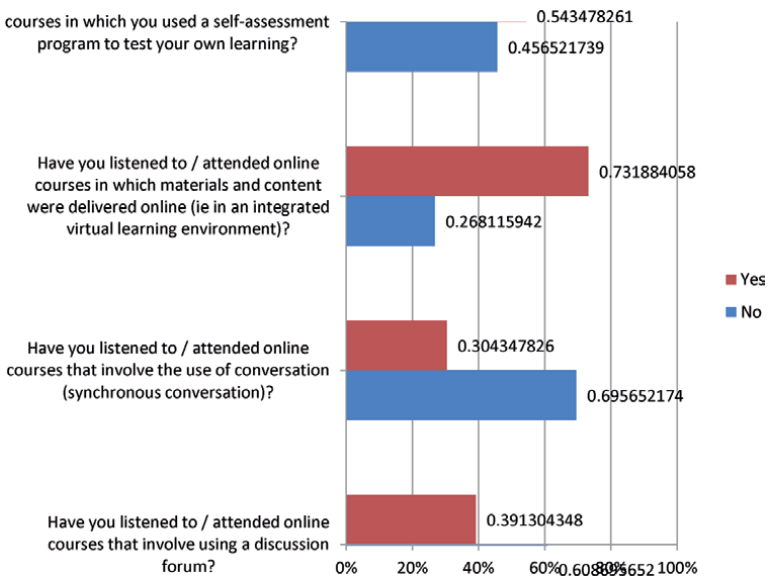

Figure 3.
Previous experiences.

environment and the economic cost of VLE, which, in addition to financial costs, also includes the time and effort invested by students (**Figure 4**).

The results showed that the respondents generally have a positive attitude towards the virtual learning environment.

Students believe VLE helps them achieve a closer relationship with teachers and other fellow students; to be more precise, 70.1% of students agree that VLE enhances students and teachers' relationships. Additionally, 78.1% of respondents believe that VLE allows teachers to provide students with information from multiple sources, which is more than what they receive in a traditional classroom where teachers rely only on preapproved textbooks. They agree that a virtual environment increases constructive interaction between teachers and students, with 70.1% of respondents agree VLE allows students to ask questions to teachers at any time, not just within one school hour.

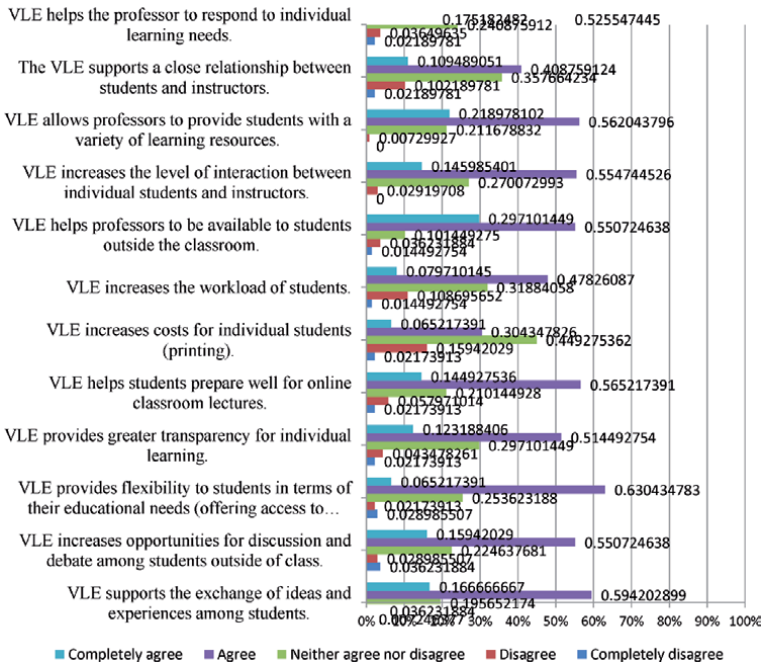

Figure 4.
The attitude of students towards the virtual learning environment and the economic cost of VLE.

Online learning and a virtual environment let students have a flexible attitude towards learning, i.e., to access learning materials when they want and where they want, a statement with which 70% of respondents agreed. However, regarding the cost component, it is evident from students' answers that VLE increases students' workload, a statement approved by 55.8% of respondents.

It implies that students must invest much more time in independent work to successfully meet the requirements of online courses or online subjects as most of the work is done independently, without the teacher's supervision or control, which is inevitable in a traditional classroom.

Since e-learning requires a high level of self-discipline and personal time management, it may not be appropriate for certain students. Students who attend or take online subjects must be highly motivated to take full advantage of the media, as often, the experience of online learning can be impersonal. Those looking for more personal touch and face to face interactions are better in the conventional classroom where they can physically access teachers during the class.

It is more convenient for some educational institutions to pass on the cost of photocopying to students by putting all lecture notes and course brochures online. Such practices often mean that course materials are in an inappropriate format for online learning. Organizations that organize courses or schools that offer online courses need to develop new technical skills as well as course design skills to suit the new medium and make it easier for students to access the necessary materials without incurring high costs.

One of the essential items of online learning that students rated as positive is that e-learning offers discussion opportunities with other students and teachers. They do not usually have such options in a traditional classroom where time for questions is minimal, and the debate that (students find very useful for the learning process) takes place rarely in schools.

School programs do not offer the opportunity for discussion that goes beyond the official curriculum. Teachers are required to follow syllabi from which they

cannot deviate even when it benefited students. That is certainly a limiting factor and does not contribute to students' interaction as positive and desirable in the learning process.

A comparison of results obtained by examining the study of e-learning in Bosnia and Herzegovina with developing countries showed the development of online learning opportunities had been accompanied by changes in legislation related to online learning.

U.S. states and the District of Columbia passed 157 laws related to online learning between 2008 and 2012. Iowa and Wisconsin are among the states that have legislation to expand online learning opportunities and make them available to students.

In 2013, Iowa law initiated a model of an online learning program, called Iowa Learning Online (Iowa 2013Acts, Chapter 121). In 2012, the Wisconsin Virtual School and the Wisconsin eSchool Network signed a Memorandum of Understanding with the Wisconsin Department of Public Administration (2007 Wisconsin Act 222) to meet state legislation requirements that provide schools with equal access to high-quality online education across the state. While this report focuses on two federal states in the Midwestern United States, the results may be beneficial to other states by potentially providing a valuable framework for considering online learning options and types of monitoring and support for the e-learning model [15].

Wisconsin high schools have used online courses to meet the needs of their students for several educational reasons.

Among schools in the state of Wisconsin that reported offering online learning in the 2012/13 school year, the reasons they cited as very important or somewhat necessary for enrolling students in online courses is:

- to allow students to get points from subjects they missed or had a negative grade (89%),
- to provide a subject that is not available (88%),
- to reduce schedule conflicts for students (86%),
- to provide an alternative learning environment (79%),
- to personalize the learning of students who have educational difficulties (76%).

One of the biggest challenges or problems faced by schools in Wisconsin and most commonly encountered in implementing online learning is the school administration's concern about the quality of online courses or online subjects offered [16].

InBosnia&Hercegovina, each level of governance needs to develop its curricula based on the Common Core curricula, which should increase DSC's quality in IVET. The absence of established and reliable monitoring and assessment mechanisms, at both the state and the entity and Brčko District levels, prevents constructive policy development and tracking of the effectiveness of existing DSC programs. This is coupled with a lack of funding. The general infrastructure in schools for advanced DSC education relies mainly on donor investments and is therefore inadequate. There is also a deficit of ICT workers in the labor market [17].

Possibilities offered by e-learning go beyond the traditional curriculum framework and the law-imposed curriculum that does not accompany changes in the environment, and accordingly adjust the curricula, and interests of students that is

applicable in the digital age. Changes and the adoption of new learning models are necessary to provide schools with an education that meets its students' real needs, followed by the rapid development of information technology. I.T. literacy as a prerequisite for integration into the global society and adaptation to the demands of students.

The success of schools will depend on their ability to meet future students' needs with their contemporary curriculum, the teachers' quality, and how the education content is delivered.

Despite the unfortunate economic situation and low standard of population, Bosnia and Herzegovina are showing a significant upward trend in the use of ICT. Additionally, the impact of globalization, the use of social networks, and immediate access to information provide students with opportunities to choose forms of Additionally, the impact of globalization, the use of social networks, and immediate access to information provide students with opportunities to choose forms of education; therefore, a significant number of students want to take classes online. There are great opportunities in the technical, pedagogical, and business segments of e-learning, and its implementation should undoubtedly increase in the coming years. Education; therefore, a significant number of students want to take classes online. There are great opportunities in the technical, pedagogical, and business segments of e-learning, and its implementation should undoubtedly increase in the coming years.

5. Artificial intelligence assistants

Artificial intelligence is another emerging technology that begins to change educational tools and institutions and change how the future might look like education. Artificial intelligence is already being applied in education, primarily in tools that help develop skills and testing systems.

Since educational solutions that involve artificial intelligence continue to emerge, it is believed that it can help fill gaps in learning and teaching and enable schools and teachers to work more than ever before [18].

Although most experts believe that teachers' physical presence is irreplaceable, there will be many significant changes in teachers' work and the best practices in education [19].

Enhancing e-learning with a more comprehensive social experience enables learners to interact with each other as they would in the actual classroom. Students can complete group projects together and hang out outside of the school, enriching their learning experience. Virtual reality already enhances certain aspects of e-learning. Companies, schools, and universities are experimenting with this new technology and are trying to understand how best to integrate virtual reality into curricula. Artificial intelligence is part of our everyday life and becomes more present in world classrooms.

By using tools such as Siri, Amazon, and Alexa, the possibilities of artificial intelligence in education are just beginning to be realized. While artificial intelligence will not wholly replace teachers, it is possible to transform the way teachers teach and learners learn [20].

Artificial intelligence tools enable the creation of global classrooms accessible to everyone, including those who speak or use different languages or who may have visual or hearing impairments. Presentation Translator, for example, is a free plugin for PowerPoint that creates the subtitles for the materials teachers prepare for students in real-time. Additionally, it opens opportunities for students who cannot attend school regularly, among which are students struggling with chronic illness,

students with disabilities, gifted students, or those looking for a topic not being available in a school. Artificial intelligence can help break barriers between learning and traditional classes. It will provide opportunities for children to learn in a way that suits their personal needs and preferences as well as learning styles. For years, teachers are struggling to help students adopt knowledge and learn effectively while dealing with every student's individualized educational needs. It becomes challenging in an overcrowded classroom where everyone is expected to pass the same standardized test, regardless of their abilities.

The use of artificial intelligence has the potential to change the traditional and potentially damaging model of modern teaching that corresponds to a standard that should apply to all, in which all students, regardless of individual differences and preferences, should fit in. Machine learning algorithms have already begun to help teachers fill in knowledge gaps, pointing to subjects with which students have the most difficulty.

A personal tutor is another feature in the educational process that chatbots can do with ease, helping students identifies problematic issues during their studies through interviews. The information thus acquired can then be used to create a personalized curriculum for each student individually. Chatbots would then follow students from the beginning to the end of formal education, record their progress, and provide feedback and suggestions. The individual preference for using artificial intelligence in the classroom is the solicitation in the assessment of tests and other repetitive duties.

The artificial intelligence in the assistant's assistant could teach lessons from the curriculum or provide additional information and metrics for learning the students they need, without disturbing the natural course of time or hindering the rest of the department [21].

With the advance of artificial intelligence, it becomes possible that the machine reads the expression on the face of the student, indicating that the machines are developing to the extent that they will be able to recognize the feelings of the person or the emotional state of the students. Machines will be able to modify the lesson to adapt it to the student's condition. The idea of adapting the curriculum to each student's needs is still not sustainable today but will be in the distant future for machines using artificial intelligence [22].

6. Virtual reality

Virtual reality (abbreviate V.R.) simulates multiple senses, including vision, hearing, and touches, immersing students into the artificial world like no other technology. In this way, virtual reality occupies students in the learning environment. When the. V.R. handset is placed, which leads to a simulated setting that completely distances them from the actual environment. The primary object of virtual reality is a visual simulation. Each handset aims to perfect its approach to creating a 3D environment. EachV.R. handset sets the screen (or two - one for each eye) in front of your eyes, eliminating any interaction with the real world. There are usually two lenses for automatic focusing between the screen and the vision adjusted based on the eye's unique movement and positioning. Visual displays on the screen are displayed using a mobile phone or an HDMI cable connected to the computer [23].

Virtual reality allows learners to learn through practical experience because students are immersed in a world that simulates real life. Learning through experience has been proven to be the most effective way of learning, and research has shown that it increases the quality of learning and retention by 70–90%. Through this type of learning, the information is more meaningful, and those who learn can

connect with it because they use information in their way through their responses and behaviors.

Research has shown that virtual reality can increase engagement and improve retention learned that the fundamental challenges that a traditional school is struggling. Some of the benefits of experiential learning with virtual reality are that repetitive learning can dramatically be improved by visualizing learning materials while providing a safe learning environment. When students make mistakes during travel, the consequences are minimal because they appear in a safe and controlled virtual world. Students learn the theory about a particular topic, which they can then experience in an interactive 3D environment, which gives pupils an unforgettable learning experience [24].

These virtual adventures can be embedded in the human brain's emotional center by misleading the mind to believe that users are really "teleported" out of the classroom into an environment that fully occupies their senses. Research has already shown that we remember only 10% of what we read, 20% of what we hear, and 30% of what we hear and see together. However, virtual reality can deceive the brain's core to feel that a dinosaur or emotional depression is being haunted by life in a refugee camp. The joy of walking on the moon's surface or passing through the deadly trenches of the First World War can trigger an emotional reaction deeper than any film.

According to a scientific study of biometric monitoring of the eye movement and direction of view, electrodermal reaction, and heart rate, 27% of users of virtual reality were more emotionally involved in these contents than those available through a two-dimensional, conventional video [25].

At the beginning of last year, the U.S. teachers met 55 million new students to offer new tools to capture students' attention and inspire their imagination with virtual reality.

Hundreds of new intriguing experiences, many of which are free, can transfer students back through history where they can enjoy critical historical events or travel through our solar system without actually taking a school bus [26].

7. Conclusions

The online program and online classes' organization enables students to access content and fulfill tasks according to their time organization. Knowledge is acquired at place and time that increase the opportunities for personal growth and development. Most students use the Internet every day and communicate with peers on social networks, which undoubtedly contributes to their readiness to accept newI.T. solutions in the learning process. Therefore, the differences in attitudes towards e-learning are also related to the purpose and frequency of using the Internet. Students, when being asked to respond on issues concerning the virtual learning environment and the application of e-learning tools, have confirmed that e-learning offers opportunities to acquire knowledge and skills that are not available in the schools they have attended.

There was a statistically significant correlation between previous experiences that students had in the virtual learning environment, meaning that positive learning experiences and communication in the virtual learning environment influenced students' preferences and their choice of modalities of learning. Students enrolled in this research have a highly positive attitude towards e-learning, which leads to the conclusion that students are willing to learn using I.T. solutions in the classroom.

One of the main disadvantages of using the e-learning model is that it still heavily relies on social support in the sense that e-learning depends on the teacher's ability and readiness to create and prepare course materials and use online educational

tools. Necessary prerequisites for successfully implementing the e-learning model are acquiring appropriate technological infrastructure, sound educational content produced by teachers who possess computer skills, and a culture that fosters learning and knowledge sharing in a virtual environment.

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Chapter 8

Online Career Guidance Systems for PK-12 School Students: Compliments to a Comprehensive School Counseling Program

Julie A. Cerrito and Richard Joseph Behun

Abstract

The American School Counselor Association (ASCA) identifies three main domains that should be included in a developmental and comprehensive school counseling program. These domains include academic development, social/emotional development, and career development. This chapter will provide an overview of the career development needs of PK-12 students. It will also offer several online career guidance system suggestions that school counselors and educators may employ to meet both the needs of school-aged students and the demands of career guidance and planning during the formative years of elementary, middle, and high school. Research has shown that the area of career development is significantly lacking in school systems and less emphasis is placed on this domain in comparison to others. Therefore, online career guidance systems that may be accessed by students independently or with educator collaboration may help to bridge this gap.

Keywords: school counseling, career readiness, comprehensive school counseling program, online career guidance, career development

1. Introduction

With its profession founded in the need for vocational guidance in the early 1900s, professional school counseling has substantially evolved during the last century. Historically, there has been a considerable amount of role confusion regarding the responsibilities placed on the professional school counselor (PSC) [1]. This lack of clarity and uniformity of the role of the PSC has prompted the need to further define it "to help the profession become as integral, understood, and valued as other disciplines in a school building" [2]. The American School Counselor Association (ASCA) states that by implementing a comprehensive school counseling program, PSCs can improve student success for all students [3]. Furthermore, ASCA emphasizes that school counselors maximize student success as vital members of the education team [3]. The overall objective of school counseling "is to help students overcome barriers to learning and to prepare for successful careers after graduation"[2].

Over the past few decades, the profession of school counseling has answered the call to implement a more holistic and comprehensive approach to describe and

delineate the roles and responsibilities of the PSC. The concept of a comprehensive school counseling program is not a new one, having first been introduced by Norm Gysbers in the late 1960s. This holistic approach has allowed for PSCs to implement a more equitable and inclusive comprehensive school counseling program for all students by infusing the three domains of academic achievement, career readiness, and social/emotional development by placing an equal emphasis on each of the three domains. PSCs also understand that each domain compliments one another. For example, PSCs guiding students toward college, career, or other post-secondary pathway must do so in collaboration with maximizing every student's ability to learn while also helping them to manage their emotions [2].

Over the last few decades, the domains of academic achievement, career readiness, and social/emotional learning have been expanded upon by the ASCA National Model which provides PSCs with a formal structure for implementing comprehensive school counseling programs [2]. For example, the career readiness domain includes competencies used to guide school counseling programs so that students understand the connection between school and work and can plan and transition effectively to a future postsecondary education or work setting [2]. The ASCA National Model provides a framework for PSCs to be more intentional in the establishment of school counseling programs that are "comprehensive in scope, results-oriented in design, and developmental in nature"[2]. This comprehensive approach to school counseling allows for PSCs to deliver services that promote a culture of equity from which all students can benefit.

Given that comprehensive school counseling programs are designed to benefit all students, PSCs are tasked with a plethora of responsibilities including administrative demands outside of the three ASCA domains [4]. It is common for PSCs to be assigned large caseloads of students that can impact the overall effectiveness of their school counseling program. Although ASCA recommends an appropriate student to school counselor ratio of 250:1, there are few schools in the United States that adhere to that ideal ratio and, in some cases, that ratio is nearly quadrupled [5]. Thus, given the large caseloads and myriad of responsibilities assigned to PSCs, it is of no surprise that dedicating sufficient time to career development has been found to be lacking [5].

Research has shown that career development processes are necessary and critical components of a school counseling program during the PK-12 years [6, 7]. Through the leadership of the PSC, the concept of career development should begin as early as the preschool years [8, 9] and must continue as students make the journey through high school. As part of a comprehensive school counseling program, PSCs who implement career readiness are giving students the knowledge, skills, and self-awareness needed to manage their own education and career decision-making for a lifetime [10]. Students who do not receive any type of career intervention during the elementary years will likely miss the opportunity to build career development skills that will later impact their vocational lives [11]. Career guidance may potentially have the most significant impact on middle school students as there is still time for them plan and shift directions before exiting high school [1]. Recognizably, high school students are at the crossroads for critical college and career decision making that will greatly influence their future selves [7].

Due to an increasingly globalized economy that views a college education as a gateway to a secure economic future, college and career readiness initiatives have become an important policy goal within education [10]. Notably, perhaps the most significant policy goal was introduced by former U.S. president Barack Obama when he emphasized the importance for students to continue their education past high school in his Delivery Address to Joint Session of Congress [12]. As part of that vision, the National Reach Higher Initiative was introduced, [13] which

provided support to school counselors in their work preparing high school students to successfully transition to college, a career, or other post-secondary pathway [1]. Never forgetting their roots founded in vocational guidance, PSCs have reinvented a career counseling focus sustainable for the 21st century as they aim to "create a culture of college and career readiness for all students"[2].

2. Career development in the digital age

In the digital age, technology plays a prominent role in the lives of students who are engaging in more virtual learning than at any other time before. At this point in history, all current students were born as digital natives [14] into a world of ubiquitous technology consisting of computers and the Internet and have never known a world without it. Students in schools today are often referred to as the Google generation or the digital generation. These are terms that underscore the use of technology as a way of life [15]. Social networking sites serve as logical tools for career counseling centers to connect with students and increase student responsivity [16]. Responsivity is an important consideration as we consider computer assisted career planning as 21st century students often expect fast response times and instant results in their quest for knowledge regarding nearly any question they seek an answer.

Computer assisted career planning systems have existed since the late 1960s. These systems have assisted individuals in career development and decision making. Computer assisted career planning systems offer effective tools for career guidance [17]. Students who create career goals using these systems are more likely to remain in high school and proceed to some form of postsecondary education. It has been shown that gains from using these systems can be enhanced by spending more time interacting with the systems themselves [17] and through supportive individuals, such as counselors, that can augment learning [11, 17].

Computer assisted career group guidance is effective at increasing career decision making and self-efficacy for students [18]. Students assigned to an online career intervention group show greater career adaptability and life satisfaction than those in a traditional type of career intervention [19]. Furthermore, using career websites to store various resources, including assessments, allows for communication and collaboration among individuals including teachers, parents, counselors, administrators, and students [20]. Online career guidance systems are often viewed as tools for the delivery of assessment, information, and career planning support [17] and prove to be invaluable tools to assist students in career exploration and development.

3. Online career guidance systems: an overview

Considering the comfort level of students to engage in virtual learning, the use of technology in the classroom and counseling has quickly become an expectation and is commonly used as a supplement to traditional instructional and counseling methods. Due to the demands placed on school counselors' time, the school counselor to student ratio concerns, and educational initiatives for college and career readiness for all students, career interventions in schools are critical components to students' postsecondary success.

Students can use online career guidance systems either independently or collaboratively with educator involvement, and these systems can be time and resource efficient. Online career guidance systems provide convenience and economy to

students making career decisions and those individuals, such as school counselors, who are assisting them in the process [21]. Interestingly, technology-based career development programs appear to be used more frequently than many other types of counseling tools [4]. In addition, many of these career counseling tools serve as sources of accountability measures for educational mandates.

For the purpose of this chapter, we will examine three online career guidance systems frequently used in the United States. These systems include the Kuder Career Planning System (KCPS) [22], Naviance College and Career Readiness Program (NCCRP) by Hobsons [23], and Xello [24]. These three systems share commonalities and differences. Notably, they were created to assist school-aged students and adults in their career development journeys. They can be considered solutions for connecting career theory to practice in comprehensive school counseling programs across elementary, middle, and high school settings.

3.1 Kuder career planning system

The first career guidance system we will present is the KCPS. This system can be accessed by students via desktop, laptop, or tablet in both English and Spanish language versions. The KCPS has three distinct programs, or subsystems, highlighting the developmental career progression from preschool to postsecondary school. These include Kuder Galaxy (KG) [25], Kuder Navigator (KN) [26], and Kuder Journey (KJ) [27]. Each will be explored separately so that educators can form a basic understanding for how these systems may compliment, or add value to, career exploration and planning that occurs within educational settings. It is important to recognize that the three subsystems of the KCPS work in tandem to form a complete career guidance planning system across the PK-12 years and across the lifespan.

3.1.1 Kuder galaxy

KG is a career awareness program dedicated to elementary school students (prekindergarten through Grade 5). The content of the system is aligned to ASCA. KG was designed by career development and elementary experts to help young learners begin their career exploration process as early as preschool [25].

Each grade level of the KG includes learning objectives to guide educators and students. Students learn about the world of work through various games, videos, and activities utilizing an outer space concept. The use of space creatures in this system promotes equity by avoiding gender roles, race, and prestige stereotypes. Using the Holland Theory of Vocational Choice as the undergirding for the system, students visit six different planets at each grade level that correspond with the six Holland work environments and include realistic (doers), investigative (thinkers), artistic (creators), social (helpers), enterprising (persuaders), and conventional (organizers). Students are introduced to a different lead commander at each grade level who serves as a guide. KG is presented as play to a child but includes important information regarding the world of work and the careers that people pursue. Children deepen their learning regarding familiar occupations within their communities while also gaining exposure to new occupations, as the system includes awareness of 120 different careers. There is an age appropriate career readiness theme and question for each grade level so that learning is scaffolded across the elementary years. All learning activities relate to each grade level theme. The theme for prekindergarten defines what work is; kindergarten focuses on what people do at work; Grade 1 includes reasons why people work; Grade 2 showcases the tools and skills people use at work; Grade 3 identifies where people work; Grade 4 provides information regarding the training and education needed to prepare people for

work; and Grade 5 helps students learn more about occupations of interest to them. Individual I statements are included in the system and are customizable by school districts. Students can begin to build their career portfolios early in life by understanding their capabilities and making connections to a future career. Children have the opportunity to earn badges as they navigate the grade level activities to encourage completion and success and promote positive reinforcement. Additionally, the system includes dashboards for teachers and administrators to track progress, ensure completion, and present data for showing evidence of meeting career and education standards. A parent dashboard is also included so parents can create space for conversations with their children regarding the school to career connection. Additional information regarding the KG system can be accessed here: https://www.kuder.com/solutions/kuder-career-planning-system/galaxy/.

3.1.2 Kuder navigator

KN is another developmental career program within the KCPS suite of products. This system is geared toward middle and high school students and their future career planning needs as they approach the critical transition from high school to work, college, or other postsecondary endeavor. In the KN, students gain access to a variety of career assessments that can be completed in approximately 20 minutes. They can also find out about their interests, skills, and values as they create education plans for their future. The portfolio that was started in KG is continued and expanded upon in KN [26].

There are several comprehensive career planning tools included in KN such as information regarding financial aid, scholarships, academic course planning, graduation planning, and college application tracking. There are also additional services that can be added to KN such as a college access package, pathways link, and administrative database management system. In the college access package, students gain additional services including college entrance test preparation and practice materials, a college match calculator to show how student academic achievement corresponds with personal goals and finances, a tracking system for scholarships and applications, and management features for important documents such as transcripts and letters of recommendation. With the pathways link, students can complete a career interest assessment and learn how their interests match with course offerings in their school or career and technical education program. In the administrative database management system, educators can review student information, generate reports, and provide accountability. Within the KN, students can tailor their e-profile to their unique plans and save their information in a portfolio that they will have access to for life. Parental involvement is also encouraged through a parent account that is complimentary with KN. Additional information regarding the KN system can be accessed here: https://www.kuder.com/blog/news/kuder-navigator-pathways-link-aligns-students-interests-to-programs-of-study/.

3.1.3 Kuder journey

KJ is the final subsystem of the KCPS dedicated to postsecondary students and adults. In this chapter, we are focused specifically on the career development needs of PK-12 students in schools, however, we would like to emphasize that the KJ system recognizes career development as lifelong and that career planning needs do not stop as students exit high school. KJ provides information that is relevant to individuals who are in various stages of their careers such as those who are new to the workforce, those who are changing jobs, and those who are recently retired, as just a few examples. Practical career advice such as building a resume, interview

tips, and job search strategies can benefit individuals at all career junctures. Additional information regarding the KJ system can be accessed here https://www.kuder.com/solutions/kuder-career-planning-system/journey/ [27].

3.2 Naviance college and career readiness program

NCCRP is a comprehensive career guidance platform for Grades 6-12 dedicated to help students develop skills for "college, career, and life readiness after high school". This program does not have an elementary version but rather focuses on the middle and high school years of development. It is estimated that 40% of high school students use NCCRP within the United States. Educators can use the platform to discuss students' interests, strengths, and needs and assist students in strengthening competencies. Additionally, NCCRP allows for collaboration among educational professionals, such as school administrators, school counselors, and family members. All of these individuals are vital contributors to the career success of students. Specifically, school counselors can "save time by streamlining course planning, college search, and college applications to focus on building the skills and knowledge for students to be successful". Due to the many demands placed on school counselors' time, finding innovative ways to help students flourish in their future is fundamental [23].

NCCRP emphasizes six competencies that are deemed essential for student postsecondary success. These include social emotional learning, interpersonal skills, academic skills, career knowledge, college knowledge, and transition skills. Each of these competencies will be defined for clarity. Social emotional learning "helps students understand their strengths, manage emotions, build relationships, plan ahead, and make informed decisions." Interpersonal skills "gives students insights into their personality types and group interactions so they can strengthen interpersonal skills". Academic skills "helps students understand their learning styles, strengthen study and test taking skills, and create an academic plan to meet their goals". Career knowledge "helps students match potential career paths to their strengths and interests, learn about career requirements and wages, and prepare a resume". College knowledge "helps students to make data-informed college decisions and complete the steps necessary to apply to and enroll in college." Transition skills "help students build skills that smooth transitions from elementary to middle and high school, then to college and independent life". Additional information regarding the Naviance platform can be accessed here https://www.naviance.com/ [23].

3.3 Xello

Xello is another college and career planning software program designed to prepare K-12 students for success through building "self-knowledge, personalized plans, and life skills". Two separate programs exist; one for elementary school and another for middle and high school. These programs are developmentally appropriate for the ages and stages of school-aged students in promoting future career success. Students can access the program via a desktop, tablet, or mobile device and are available in both Spanish and English language versions [24].

The elementary school program aims to spark children's curiosity regarding their future through age appropriate career awareness and skills development. Xello for elementary school "encourages self-discovery, creates career awareness, and builds future readiness skills". Xello indicates that students are more self-assured and excited about their future as a result of participating in the age appropriate skills and lessons. The program also includes built in activities for students aligning

with educational standards such as the ASCA mindsets and behaviors for student success. Additional information regarding Xello for elementary school can be accessed here https://xello.world/en/elementary/ [24].

Xello boasts a seamless transition in programming from elementary school to middle and high school as it aims to assist students from all backgrounds to become future ready. Specific focus in meeting educational requirements for college and career readiness is emphasized. Xello for middle and high school offers tracking for progress and completion, which is essential given the accountability standards inherent in educational programs of the 21st century. Additionally, assessments are offered as part of this program and include career, personality, and learning style inventories. Similar to other career guidance programs discussed in this chapter, Xello for middle and high school includes personalized student portfolios that can be updated as students grow, learn, and develop through the years. Support for tracking college applications and sending transcripts and letters of recommendation are useful features for college bound students. Additionally, test preparation for college entrance exams are provided along with college acceptance criteria. As students navigate their impending postsecondary transitions, dates and deadlines increase in importance. Xello for middle and high schools offers summary data of important upcoming deadlines for students to see at a glance and a course planner for identifying courses that fit with a student's career goals. The interactive planning tools also help students create personalized career plans that are as unique as they are. Additional information regarding Xello for middle and high school can be accessed here https://xello.world/en/middle-and-high-school/ [24].

4. Research supporting online career guidance systems

The three programs described in this chapter highlight the need for progressive web-based career interventions that can help to enhance the career development initiatives that PSCs offer to school-aged students. However, it is vital to assess research to determine the efficacy of online career guidance programs implemented in PK-12 school settings. It is important to note that there are very few published research studies examining the specific online career guidance systems discussed within this chapter. Although these systems are widely used in school settings across the United States, few studies have examined their utility, impact, or outcomes. In our literature search, we found two relevant studies regarding the NCCRP, one study regarding the KCPS, and no studies regarding Xello. We will review those existing studies as they are relevant to school-aged students.

There were two research studies that studied the use of the NCCRP. The reasons why school counselors chose (or did not choose) to utilize NCCRP was examined [28]. Four constructs were measured and included: perceived ease of use, perceived usefulness, attitudes, and actual behaviors. This study considered if PSCs acceptance and use of NCCRP improved counseling practices, job productivity, and efficiency. Results indicated that the majority of middle and high school counselors agreed that NCCRP was easy to use and was useful in increasing job-related effectiveness and productivity. The study also noted that, overall, counselors had a favorable attitude toward using the system which was shown through their high usage rates. Notably, this study emphasized the value of using a system, such as the NCCRP, to help introduce and prepare high school students for college. Another study examined using the NCCRP as a supplement to college counseling in increasing college access [29]. The purpose of this study was to determine if using the system would influence college application rates. Results indicated that those

students who used NCCRP more frequently had higher college application rates. The average number of times that students accessed NCCRP within a given year was a strong predictor of college application rate.

KCPS also had a relevant research study that examined the use of the KGP with fourth and fifth grade elementary school students as a career guidance intervention [11]. In this experimental study, students were randomly assigned to a series of four web-based career guidance lessons or four traditional (human facilitated) career guidance lessons and were administered pretest and posttest assessments. Four subscales of the assessment (information, curiosity/exploration, interests, and locus of control) were examined as those were the scales that most closely related to the content of the lessons. Overall, findings indicated that both the web-based and traditional guidance groups did not differ much in their average scores regardless of the career guidance intervention received, however students in the traditional career guidance intervention group had slightly higher scores posttest than those in the web based career guidance intervention group. The authors of this study assert that web-based career guidance systems should be supplementary, or adjunctive, in nature and should not replace the important role of the PSC's human connection in providing career guidance and counseling.

5. Conclusions

There has been a significant shift in how PSCs deliver career services to their students, with online career guidance programs growing in popularity as they are regarded as both time and resource efficient. Career development must begin for students as they make the journey from pre-school through high school and beyond. Even though the profession of school counseling has evolved from vocational guidance, career development often receives the least amount of attention by PSCs [5]. Thereby, career development interventions have received little attention from counselors who predominantly define their roles to focus on academic achievement or social emotional development [30].

Online career guidance systems that work in tandem with PSCs can bridge the theory to practice gap and enhance, or compliment, a comprehensive school counseling program. There is value in using technology to support counselor growth and student outcomes in education [28]. PSCs should understand the capabilities, benefits, and shortcomings of using online career guidance systems with their clients [31].

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Chapter 9

Learning Is Visual: Why Teachers Need to Know about Vision

Gunvor Birkeland Wilhelmsen and Marion Felder

Abstract

This chapter adopts an integrative literature review to describe and analyze theories and empirical research on visual development, impairment, screening, and intervention. The purpose is to inform teachers on how to influence students' education and social growth through understanding vision. Vision is especially essential for reading, accessing classroom materials, and learning. Yet, in many countries, vision problems in children are not assessed and thus not treated. The negative consequences for individuals and society are often significant. Though there is an abundance of eye health specialists in developed countries, not all visual problems that influence learning and reading are screened or treated effectively. This is worse in developing countries where eye health infrastructure often is lacking. Even screening and treatment given through the eye healthcare system is not always sustainable, since regular follow-up is lacking. The literature review shows that vision is a developing sense important for learning and that teachers can screen children's vision and support visual development. It can be concluded that every child in the twenty-first century school should have teachers with knowledge in vision. An example of a higher education initiative is presented to illustrate possible further education for teachers in the area of vision.

Keywords: visual development, stimulation, learning through vision, vision screening, teacher education

1. Introduction

The world is changing rapidly, and the necessity for good functional vision is greater than ever. Education is essential for the individuals' overall life quality and for personal, social, and occupational development. Societies depend on it for economic growth and democracy. Recent research revealed how important good vision is in all learning- and for all academic-related tasks. In classrooms around the world, visual inputs are involved up to 70% of the time [1], so even tiny disturbances can result in a lack of important information.

Unfortunately, not much has changed since Rogers, in 1924, claimed that the importance of vision in reading and writing is often overlooked [2, 3]. Even today few teachers have any special knowledge about the visual functions and vision disturbances [4] or how they affect learning, the development of motor skills and cognitive capacities. Reading is a particularly significant vision task depending on good visual acuity (VA) for detecting all the tiny details in a text. In addition,

it relies upon an intact functional visual attention span in the visual field (VF) for getting an overview of the next letters, the words to come, the end of line, and from where to continue reading the next text line. Vision is not a passive sensory system that is only receiving inputs; it is also an active and complex motor system that is continuously moving. The eyes must coordinate to fixate on the same spot, move around to different areas for searching, while the lenses adjust to the ever-changing locations. The goal is to give the brain clear inputs, no matter the distance. During reading, the gaze must jump precisely and should be coordinated from one fixation point to the next and adjust to the light level of the actual surrounding. This complexity indicates why vision must be considered in teaching [5–7]. There is no doubt that literacy is the foundation of almost all education and probably the most important skill to have in the twenty-first century, and this skill starts as a visual process. Thus, when children have problems with their vision, they may not be able to succeed in school [8].

Visual impairment is classified extensively by the International Classification of Diseases, ICD-11 [9]. Although the criteria are health classifications, many countries use them very strictly as eligibility criteria for educational services by the teacher for the visually impaired or blind. In most cases, only a significantly reduced VA and/or a VF loss after correction of refractive error will lead to services [10]. What is often not understood is that vision plays such an enormous role in learning, that even milder problems, which are frequent among children and youth must be considered in school. These problems will be the focus of this chapter. Several vision disturbances, not just decreased VA and VF, have a negative influence on the academic work, sports and leisure activities, and general learning. Such "milder" visual problems are often not addressed even in countries with a highly developed eye health-care system, although many children exhibit them [11]. If these problems are not identified, the children are left without treatment and sometimes even the wrong explanations are given for their learning problems. This may result in frustration, low school results, and a reduced self-esteem. Thus, regular vision screenings may be necessary in finding out whether children have the visual capacity to learn. Screenings are done by eye health professionals, but school-based vision screenings by trained teachers have shown to be effective [12–14].

In this chapter, we will describe and analyze the relationship between vision and learning, the implication of visual problems on reading, and how teachers can screen their students' vision more comprehensively and make interventions as necessary. It begins with (1) an introduction and the description of the methodology we adopted. This is followed up with (2) our inquiry about the relationship between vision and learning, (3) the impact of visual disturbances on reading, and (4) screening and intervention of visual functions through teachers. The chapter concludes with the description of a Continuing Professional Development (CPD) course based on the theoretical framework and results of this literature review.

2. The integrative literature review methodology

The theoretical framework of the literature review is based on teachers' understanding, identification, and intervention of children's vision and vision screening. Literature sources from various disciplines such as neuroophthalmology, ophthalmology, optometry, education, visual impairment, vision sciences, and vision rehabilitation were used. A thorough integrative literature review approach [15] was conducted to explore the relationship between vision and learning, the impact of

impaired visual functions on learning, and the reasoning for visual screening and interventions conducted by teachers. In general, a literature review is well suited to review the theories and evidence that exist in a very specific area, such as the role of vision in learning. In addition, a literature review is helpful to provide an overview of the topic. This also seems important since there appears to be a knowledge gap about the relevance of intact visual functions in learning. A literature basis can also be a foundation for the development of a model for new theories and practices. It will be investigated in this chapter whether a new model of teachers' screening and intervention can be derived from the literature review. However, in order to be more specific, it was necessary to narrow down the very broad method of a "literature review." An integrative literature is described as.

> *Most integrative literature reviews are intended to address mature topics or new, emerging topics. In the case of mature topics, the purpose of using an integrative review method is to overview the knowledge base, to critically review and potentially re-conceptualize, and to expand on the theoretical foundation of the specific topic as it develops ([15], p. 336).*

The new emerging topic that we would like to address is the greater emphasis that schools and teachers may possibly have in the area of prevention, screening, and intervention of vision problems. We altogether viewed 65 sources, from the years 1901–2020 using various databases and search engines, using keywords such as vision, visual development, visual stimulation, vision screening, and vision screening in schools. The sources were analyzed by the themes established in the introduction, namely, the relationship between vision and learning, the impact of vision problems on learning, and screening and intervention.

3. Inquiry into the relationship between vision and learning

Teachers and other caretakers of children may largely impact on the development and remediation of visual capacity. An analysis of the process of visual functioning, description on the relationship between visual development, and stimulation and how structured teaching improves some visual problems are of importance for conducting visual screening and for the possibilities of teachers to intervene when children do exhibit visual problems.

3.1 Complexity of visual functioning

Increased knowledge in neurology, anatomy, and psychology has provided new insight into the complexity of the visual sense (e.g., [16–21]). It is evident that visual functions such as a clear VA at near and far for seeing details and object together with the ability of noticing people, objects, and movements in the VF are essential for being able to function in our surroundings. A single image on different distances is reached with a functional vergence-convergence where the eyes stay parallel when looking at a point far away and turns more and more inward, converge, when fixating an object that comes closer. At the same time, the eye lenses must change their form, accommodate, for bending the light waves to fall on the central part of the retina. Only then the image is seen clearly respective to the distance. This accommodation function can be compared with a lens in a camera which also has to change its form due to the distance for the focused object. Convergence and accommodation are closely connected and must function coordinated and easily when the eyes are tracking and scanning on different items and objects of interest at far or near. These

functions are developing throughout childhood in response to stimulation and activation. This development is going on until children are in their teens [22].

Researchers have shown how cognition can influence vision by selectively directing the gaze to special elements of interest [23], but first of all, vision provides us with information about the world around us. Intact visual inputs are, among other things, a prerequisite for motor activities, higher level visual abilities, and the cognitive development. Clear visual inputs are necessary for fundamental visual perceptual skills, that is, identification of objects and people and for concepts of same—different, comparing, sorting, matching, catching, reading, and writing.

3.2 Visual development and stimulation

In order to support the development of vision, children need an environment and activities which stimulate their senses, including their visual sense, from an early age on. Visual capacity is often taken for granted, although as we pointed out, it develops through childhood and also during the years in primary school. Children should be engaged in visual activities together with their caretakers and teachers from a very early age on. Words should accompany objects and pictures. When pointing to pictures shifting from close or far, the child is training accommodation and convergence, steady fixation, and saccades (the gaze jump from one position to the next) together with eye-hand coordination. This can be strengthened by entering a dialog of sounds and words, pointing to interesting features of pictures, comparing and naming objects of different sizes and perspectives, and imitating sounds of animals or cars. Making reading with children as part of a routine is a reciprocal and bonding experience between children and their caretakers [24]. Such activities can be the inspiration for children to draw or do other eye-hand activities.

Children should be encouraged to "look" at elements in their environment and become aware of their surroundings, of the natural and man-made environments, of differences between things they encounter such as flowers, plants, animals, colors, objects, shapes, etc. Teachers should have conversations with children about what they see and stimulate their visual perception, visual discrimination, and visual memory in different ways through games and structured exercises with a variety of age-appropriate materials. Especially, preschool teachers can include a number of activities that are stimulating and supportive of the visual system based on the abilities of the child. Puzzles, memory games, and building with blocks with and without models can give a good foundation for visual development. Children should do activities that stimulate their near and distance vision: They should be involved in coloring with crayons at near but should also play ball with friends from a distance. During the past years, more emphasis worldwide has been put on "digital learning" and the use of computers and tablets in preschools and schools. Although digital media can be used successfully in many different areas of life, there are reasons for caution of their increased use, particularly in preschools. Interestingly, many executives of technology development in Silicon Valley, one of the main centers of global digital development in the United States, seem to want to educate their children in a "device-free" school program, such as the Waldorf Schools [25]. As experts in technology development, they also seem to know the limits and even dangers of their products on child development. In addition, more and more children and students turn myopic because of all the near work done on screens [26].

Children need direct interaction with the material world to develop concepts. They need to touch, see, smell, grasp, and reach for real objects and have real experiences in the world surrounding them. Only then can they develop crucial vision, visual attention, and visual motor skills. If they have a firm grasp on

those more concrete experiences, they can move on to more abstract visual concepts such as letters and numbers.

3.3 Vision problems and teaching

Research that was originally conducted with visually impaired students and with people who suffered vision loss after brain injuries show that "vision" is a learned process thus can be improved through structured teaching. Such knowledge is valuable for all educators and should have consequences for our education systems.

Natalie Barraga [27] was the first vision teacher who carried out research in relation to structured visual education in order to teach children with a visual impairment to use their remaining vision better. She developed exercises focusing on visual discrimination and recognition using objects with different sensory qualities: size, figure, contrast, and color. In her lessons, she taught children to discriminate and reflect on forms and objects and connect the forms to their surrounding objects. Her findings revealed that structured vision education increased the childrens' functional vision and resulted in more visual effectiveness.

Later research confirmed that visual qualities like VA, the attention in VF, and different ocular motor functions including accommodation and convergence can develop through structured learning [28]. Gislén et al. [29] were impressed of the VA capacity that the pearl divers showed under water, but afterward they trained some Swedish children who rather quickly reached the same underwater VA level. Behavioral optometrists have focused on children with eye motor disorders and have shown how better eye movements trough structured procedures also improve the VA at near and distance [6, 30–33].

Walter Poppelreuter [34], a psychologist and medical doctor, developed vision rehabilitation strategies for soldiers suffering from vision problems after gunshot wounds to their heads during World War I. Soldiers with reduced VF, the area of vision outside the fixation, learned eye movement techniques as compensation strategies [10]. These experiences laid the foundation for rehabilitation of vision problems following neurological disorders like stroke or traumatic brain injuries [7, 35, 36]. Cyvin and Wilhelmsen [37] demonstrated how a girl with brain damage got better balance and motor functions parallel to improved binocular vision.

All visual sensory and ocular motor functions are connected in a visual circle where the eye motor capacities influence sensory and perceptual functions and vice versa [38]. Tiny eye motor disturbances may affect concentration, attention, endurance, social communication, reading and writing, and motoric activities and have a negative influence on the ability to manage assigned tasks [33, 39]. Even communication with others is to a large degree visually mediated. Not only is the written communication visual, but we also use nonverbal communication when facial expressions and body language interpret the message we want to send. Therefore, increased vision will even positively influence social behavior and motor activities which rely on visual inputs [10, 37].

The conclusion that many visual functions such as VA, VF, accommodation, convergence, and ocular motor control are important for receiving clear visual inputs in learning and communication can be drawn from the discussion above. Thus, this importance for learning needs visual screenings to be comprehensive and inclusive of all visual functions involved in learning. In addition, vision is a developing sense; for it to thrive, it needs a stimulating environment provided by teachers and other caretakers. However, evidence from the literature show that visual function problems can be improved through intervention. Yet, most school vision programs however do not screen for all those visual functions mentioned, although their impact on academics, particularly reading, is significant [40].

4. Impact of visual problems on the reading process

When learning to read, the first important activity is to learn the sounds connected to the visual forms of each letter and how to combine sounds and form them into words. Visually, there is a need of being able to see the difference between a **t** and a **f** or depart an **o** from an **e**. This requires good VA for distance, so they can see the blackboard clearly and a good accommodation capacity and convergence for clear near inputs. For being able to read the letters in the correct order, the eyes need to focus together on the same spot. If not, it is difficult to decide if the word is **follow** or **flow**, **spot** or **ptos**. Letters will be turned around, or if the fixation is unsteady, they will even be seen jumping around. For children with ocular motor disturbances, the same word may appear differently during each time it is seen.

This phase is followed by a period where reading develops and turns into an automatic process where the child can read for learning [41] and understand the meaning of the texts. The child must develop a strategy where perceiving the text turns automatic, without great effort [42]. This level may be difficult to reach if vision is a challenge. Some can manage for a short time, but then the vision system is worn out and the text turns blurry or double.

Seeing the text clearly is of fundamental importance and requires a good VA. VA tests are presenting letters, numbers, or symbols with smaller and smaller sizes on each line down the chart. The most common tests are normally the distance VA tests carried out on 6 m or 20 ft, although some used for children are standardized for 3 m. If the line marked 6/6, 3/3 or 20/20 is seen from the actual test distance, the VA is normal. Full VA means that the symbols expected to be seen at 6 m, 3 m, or 20 ft are seen on this distance and noted as 6/6, 3/3 or 20/20 or as decimal number 1.0. If the 6/12 line is the last line seen, the vision is in decimals 0.5, which is the border line for the category of visual impairment in ICD-11 [9]. Then symbols that were expected and seen at 12 m (40 ft) are seen at 6 m (20 ft). For reading from the blackboard or seeing objects clearly from a longer distance, it is important to have good distance VA. Students with problems seeing objects far away are often nearsighted, having myopia [42].

It is important to remember that a normal distance VA is no guarantee for a clear VA at a reading distance. Therefore, it is also necessary to screen the near VA separately with a VA chart developed for 40 cm or 3 ft. It is a harder ocular motor activity to see clearly at near because the lenses need to adjust, or accommodate, and more and more the closer they must focus. Children with accommodation problems will perceive the text as foggy or blurry at near. Because the regulation of the lens is muscle work through the ciliary muscle in the eye, some children may lose the power to keep the accommodation over time. After some minutes, it will be demanding and tiring to continue reading [42]. A near VA test can show if the child has accommodation problems, a hypermetropia. The new ICD-11 [9] also categorizes a near VA as a visual impairment, if it is less than 0.5. This criterion is new compared to previous classifications. Together with testing the accommodation ability, the near VA test is an important predictor of visual discomfort for reading and other near activities [43].

The VA tests are done monocularly, with each eye alone, and binocularly, with both eyes together, to see if each eye has a good VA and if they function well together. When looking at something in the distance, the eyes normally stay in a parallel position and the eye lens has a relaxed shape. When looking at something closer, both eyes must not only accommodate, but also converge inward to fixate on the same spot. If the eyes are not fixated on the exact same spot during reading, double images will occur. Disturbed convergence is a binocular problem [6]. Students who struggle with double vision, will sometimes unconsciously supress the visual inputs from one

eye and only depend on the information from the better eye. The supressed eye will turn into a so-called "lazy eye," with reduced VA [42].

The classic treatment of an amblyopic eye is to patch the good eye for hours each day, so the weak eye is used and stimulated [44]. The result may be two eyes with a good VA, but they will not always function well together—an ability that is essential for reading. Students may manage near-work in school if the letters are large and the reading time is limited. But they can have problems with reading, when the letters are smaller, the text gets longer, the line space is reduced, and the period of reading increases. The text may turn unclear and double and the eyes may even hurt. Some are then even rubbing their eyes or turning very sleepy.

The measured VA gives only information about the very central area of the vision where the gaze is fixated. The VF around the fixation point informs about the surroundings and what is happening there. This visual information tells the brain where to look next, what to be aware of through colors, forms, and movements. These signals are catching our interest and attention, and we move the gaze to new places for seeing the details clearly. Even in reading, VF is important. It contributes to the reading speed and reading flow. Only the awareness of the entire picture of the text can give information about what is coming and where the gaze must continue. With this information, the brain prepares where to place the next fixation. The gaze jump, or saccade, normally places the next fixation in the first part of the next word. Reading consists of continuous new saccades and fixations, and during this eye motor activity, the eyes must work well together to prevent double images [6, 42]. This shows how essential well-functioning binocular activities are for effective saccades and fixations during reading [45].

There are more accommodation challenges among school children than previously known [33]. In a group of nearly 400 schoolchildren, between 8 and 15 years, only 54% were found to have normal accommodation and convergence [46]. These are serious findings due to the connection between ocular motor disturbances and reading difficulties [41, 47]. Often, children with such problems receive refraction with plus lenses to relax the lens and to make text appear larger. However, this treatment may help children to overcome their accommodation problem but not necessarily their binocular disturbances [42]. So, prescribing glasses is not always enough or the best help for their visual reading challenges [48]. To train and strengthen the accommodation capacity on the other side has shown a good and long-lasting effect on reading [6, 10, 49]. Strengthening the ocular motor control and capacity will give better visual sensor qualities, especially the VA increases through better accommodation and steady fixation [10, 33].

The evidence theme that is emerging from this paragraph is that reading is a highly complex visual activity which relies upon intact visual functions. Some visual functions can be improved with eyeglasses, but not all. In terms of learning, it appears that many different visual functions have to be checked and also that there has to be some awareness of teachers that these functions are important. Otherwise, they may miss important signs of their students to indicate a visual problem. In addition, there is also the question what other types of intervention are identified by the literature if glasses are not the sole solution for visual problems that children may exhibit during learning [3, 22].

5. Screening and intervention of vision problems in school

The functional consequences of a vision problem are often misunderstood and may be interpreted as signs of dyslexia or attentional disturbances [6, 22, 50]. Because vision inputs are so fundamental for the learning and reading process,

vision should be checked regularly. There is even an increase in vision disturbances through the years in school [51]. Children themselves are seldom aware of their vision problems, so several states in the United States have rules for checking childrens' vision during the years in school [52].

Teachers can learn to screen VA for near and far [4, 14] and other visual functions in their classrooms and identify visible eye health problems, for example, changes of the eye appearance, eye movement problems such as eyes moving in different directions and squinting. However, often the vision screening is incomplete, not addressing those latter problems [40]. Metsing et al. [13] also point out that in vision screening programs around the world, there often is a priority to identify problems related to distance vision to detect amblyopia and related problems, such as strabismus, in preschool children. Accommodation and convergence are often not screened for even though those functions are very important for reading and writing in older children. An issue, however, is also about training of the screeners. Screeners need to be educated well to be able to screen properly for many visual functions and avoid high false-positive or high false-negative identification [13].

Early on, Rogers [3] was convinced that teachers would identify many pupils with vision problems if they were better observers. Signs like making mistakes with letters and figures, holding the text abnormally close or leaning forward when reading something far away, and complaining about headache or blurry vision are still signs that a teacher has to take seriously. They can observe and notice light sensitivities in their students and become alarmed if a student is copying from their neighbors instead directly from the blackboard. When students are easily bored of doing near work or read slowly, teachers could become aware that the student may have vision disturbances. Equipped with knowledge and skills, teachers can communicate their findings to parents and the eye health system and ensure that there is follow-through with recommendations.

Students with accommodation and convergence problems may need structured vision training of the eyes in order to improve their reading skills. Even though there is still controversy about the main cause of reading problems, whether they are phonetic or visual in nature, there is evidence that visual training does improve reading outcomes, especially in poor readers and even children with dyslexia [53–55]. This training is usually done by experts in the field of behavioral optometry. However, there may also be a lack of optometrists, ophthalmologists, and eye health-care workers in many countries, particularly in developing countries [56, 57], so children may not have access to such training. There is also evidence that teachers can be educated to systematically stimulate childrens' visual capacities in a structured way [42].

From the literature, it appears that particularly eye movement disorders, accommodation, and convergence problems are often not screened for in vision screening programs. This is true for many countries around the world. These problems also cannot be changed through glasses alone but may need more structured vision training to improve.

6. Results and discussion of the literature review

In the next paragraphs, results and discussion of the results are presented. Each major result of the literature review is discussed separately.

> *Vision is a learnt and developing sense and can be stimulated by teachers and caregivers to improve best developmental outcome.*

Possibly all teachers should have knowledge about the role of vision in learning as part of their education. Such information can be delivered through teacher training and continuing education programs for teachers. Just even greater awareness of the importance of vision may be important to provide better learning environments. Teachers sometimes can prevent visual problems if they offer a visually stimulating environment and pedagogy particularly in preschools. They can educate students, parents, and caretakers about the importance of eye health and intact visual functions. Especially in developing countries, parents may not know about the signs and symptoms of visual problems or eye diseases, such as conjunctivitis [58]. Teachers can also provide an environment that is conducive to learning, with good lighting conditions, for example, and materials that have universally good visual features in form and contrast, such as clearly legible materials. Improved teacher training in the area of vision may be an important prerequisite to higher academic achievement in children. This however requires governments to invest in Continuing Professional Development (CPD) courses and in teacher training at the preservice level in the area of vision.

> *Academic learning such as reading can be negatively impacted by visual problems. Intact visual functions such as visual acuity, visual field, ocular motor control, accommodation, and convergence are necessary for learning.*

Even though there is debate about the role of vision in areas such as reading difficulties and dyslexia, evidence was provided in how impaired visual functions can have an impact on reading. Reading difficulties cannot be attributed solely on visual problems, however, when children do exhibit reading problems, a thorough screening and assessment should take place [59]. This requires teachers being aware of the effect of visual problems on learning. It also needs a functioning networking system where teachers can refer children to for screening and intervention.

> *Teachers can learn to screen for visual functions. School screenings need to encompass all visual functions involved in learning, not just visual acuity testing for distance vision.*

In different parts of the world, teachers have been trained in VA screenings [4, 14], but screening for many different visual functions, evaluating the results, making decisions for further steps, and ensuring follow-through does not fully occur [40]. However, for teachers to be able to do this and become successful screeners, it seems obvious that they have to be trained well [60]. There are several questions that must be answered regarding the training and who should be trained. In many countries, teachers of the visually impaired/blind (TVI) teach children with visual impairments, that means children who have a VA loss or a VF loss after correction of refractive error. These teachers have a foundation of knowledge in vision. They, however, would have to undergo a role change in that they would not only be responsible for children with significant visual impairment due to VA and VF loss, but they would also have to get involved with children that may have problems in learning due to eye movement problems, accommodation, or convergence problems. It would need to be researched further whether ordinary classroom teachers or specialist teachers, such as teachers of the visually impaired, should be educated further to conduct a comprehensive vision screening for all children. The exact manner through which school-based screenings are organized is also dependent on the specific context and country. Historically vision screening was primarily done by eye health professionals, which is the medical sector. The medical and

educational system in a specific country would have to begin to work together in a more coordinated way, also to ensure valid screening results and follow up in children. The issue of false-positive or false-negative identification of children through screening by teachers when compared with screening results conducted by ophthalmologists is a concern. However, it appears that with training this can improve, and the benefits outweigh the risks [61].

> *Teachers can learn to intervene when visual problems occur. They can network and collaborate with eye health-care providers. A child may need more structured vision training/intervention to improve vision for learning.*

The issue of intervention can be even more challenging. Children with significant visual impairment or blindness classified by ICD-11 (after correction for refractive error) usually receive services by a TVI and often are taught compensatory skills and receive alternative materials to print reading. Children who need correction for refractive error only receive eyeglasses.

As we pointed out before, some problems that affect reading can be ameliorated with spectacles, but not all. Eyeglasses which are important in treating refractive errors such as myopia and hyperopia are necessary in many cases. The World Health Organization estimates that globally over 1 billion people have visual impairment due to uncorrected refractive error [62]. However, eyeglasses do not solve all visual problems that impact learning, such as accommodation and convergence problems. Teachers need to come to realize that even though a child is wearing eyeglasses and has seen an eye doctor, they may still struggle visually and need a different plan of intervention. Even children who have had their eyes checked but did not receive glasses may still have vision challenges. Eyeglasses may also not be sustainable for many children, particularly those from families that lack the financial resources to see an ophthalmologist or optician on a regular basis. For example, in some African countries peer pressure, costs, and availability of optical services were identified as the main barriers to spectacle wear in children [63].

There is also controversy with regard to vision training or "vision therapy" as it is also often called. Usually, this training is conducted not by medical eye doctors or teachers but by optometrists. There is a continuous debate about the benefits of vision training besides the controversy about who should actually do it [64]. There is however a consensus that vision therapy does work for visual disorders such as convergence insufficiencies. This leads to reading problems and reading aversions [65]. Much of this chapter is focused on precisely those types of problems, namely, of both eyes working together, which can have adverse effects on learning.

Eye health professionals may not always realize the impact of vision problems relevant to learning. For teachers to begin to address childrens' vision problems in the school setting, this also would require a whole system wide approach and again collaboration between the medical and educational sectors.

Methodologically, this study was an integrated literature review. This also poses some limitations of the study, mainly the question whether all relevant information and studies on the topics were included. Further studies using different methodologies should continue to explore the relationship between vision and learning and particularly the relationship between the medical and educational systems when it comes to the area of vision screening and intervention. This study aimed at opening the discussion about a possible model of training teachers in the area of vision. Further studies and research must occur to identify benefits and problems/barriers of teachers conducting vision screenings and interventions in schools. However, the results of this review could help to inform the design of such a model of teachers' training, while taking also into account the country and regional specifications.

7. Conclusion

> *Experiment and test out new ideas. The basic mode of classroom pedagogy today in most schools has not changed much for decades. It may be worthwhile to consciously create a culture and room for 'disruptive' ideas and technologies and test whether innovations and different approaches work better than the status quo ([66], p. 63).*

Teachers may need to take on a more active role in the prevention, assessment, and intervention in visual problems in children due to the role of vision in all academic activities.

Just like Sumra et al. [66], quoted above, this may be a somewhat disruptive "idea" since the educational and eye health systems must converge to address the visual problems that occur in learning. The eye health sector and the education system have to become partners in working together continuously for the benefit of children with visual problems. Future studies need to explore the exact mechanisms of such collaboration and respective roles further. In any case, more thorough training and education in the area of vision, vision screening, and intervention is a prerequisite for teachers so that they become competent in those areas.

Professional development courses may be a good vehicle to increase knowledge in the area of vision and learning in addition to advanced degrees and more research into this area of education. Collaboration between the education and the eye health-care system is fundamental for education in the twenty-first century, with educators taking the lead for vision-related problems affecting learning in school.

Before concluding this chapter, an example of a Continuous Professional Development (CPD) course in the area of vision is presented. This CPD program was originally developed at the Western Norway University of Applied Sciences in Bergen for teachers in Norway. This program then was taught to the primary school teachers and faculty staff from Patandi Teachers College in Arusha, Tanzania. In the last paragraph, the elements of the course are highlighted.

7.1 The CPD course, *Vision for reading and learning*

The CPD course, *Vision for reading and learning*, has been taught at the Western Norway University of Applied Sciences, HVL, to teachers in Norway since 2010. In 2016, HVL, was awarded project funds for the project, *Securing education for children in Tanzania* (2017–2021), from the Research Council of Norway, NRF, in cooperation with Innovation Norway and NORAD, the Norwegian Agency for Development Cooperation. Project partners were Patandi Teachers College for Special Needs Education, Tanzania, and University of Applied Sciences in Koblenz, Germany. The project team included teachers of the visually impaired, vision specialists, social scientists, and engineers. The project aimed to contribute to poverty reduction in Tanzania through improved teacher training in the area of vision through the CPD course. Thirty teachers were educated in the 30-credit post-BA blended learning course *Vision for reading and learning* took place over a period of 2 years (15 students completed the course each year). Instructors from Patandi Teachers College together with the teachers and headmasters from primary schools participated in the course. They all held at least a BA degree or a MA degree from an accredited institution in Tanzania. Most of the students had a teaching endorsement in a special education category, such as visual, intellectual, or hearing impairment. The theoretical foundations of the CPD course consist of elements that were described in this chapter: sensory, attentional, and motoric aspects of vision [38]; principles from rehabilitation programs for vision problems following brain injuries [36]; vision teacher methodology [7, 27, 37]; and behavioral

optometry [6, 33]. In addition, age-appropriate pedagogical principles [67] were considered since students completed their practical training with children in selected primary schools. The goal was that the participants of the course were able to assess a variety of visual functions and plan and administer visual stimulation and education programs and/or refer children to health care, eye clinics, or optometrists for further assessment or refraction when necessary.

The course lectures and classes took place at the college, combined with periods of self-study, and were taught by professors from HVL, Norway, and Koblenz University of Applied Sciences, Germany. Four colleagues from Patandi College, who had successfully completed the first year with *Vision for reading and learning*, assisted in the second round of the course with lectures and hands-on supervision in the following year. In addition, a close 1: 1 supervision was provided by professors and other professionals who had completed the course in Norway previously. The course content consisted of a challenging theoretical basis but also practical component. Students had to learn hands-on how to do assessments and tests and critically evaluate the outcomes and design intervention programs. Examinations were rigorous and aligned with the expectations of HVL. All participants passed the course and used their new knowledge and skills in various positions throughout the school system of Tanzania. All participants grew professionally from the course as it gave them new perspectives on childrens' learning and the important role vision has for education. The new knowledge also influenced the curriculum at Patandi Teachers College of Special Needs for all disciplines including preservice teachers. Currently, a vision assessment center is being developed at Patandi Teachers College to assess children in collaboration with eye health-care providers. In addition, Patandi Teachers College is now planning to conduct CPD courses about vision for in-service teachers throughout Tanzania.

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Section 4

Envisioning the Impact of Globalization

Chapter 10

Is University Education Limited by Globalization and Technology in Developing Countries? An Observation Done during Pandemic

Mary Marcel and Beatha Mkojera

Abstract

On March 2020, WHO declared Covid-19 a pandemic disease. This forced many university students to return and stay home. In developing countries; most home means remote areas where technological interventions have their limitations. To continue with studies, some universities arranged for online classes. This became feasible only to those with access to internet. Other universities had to cancel classes due to uncertainty that online classes will be accessible to every student. Teaching arrangement s for higher academic institutions in Africa was mostly affected by COVID-19 as compared to America, Asia and Europe; whereby 43% of classes were suspended and 24% canceled. The unevenness of the term globalization and irregularity of technology seem to affect the continuation of university education to each and every student during the pandemic time. The question becomes: are developing countries globalized enough to confidently declare the effectively use of technology in their educational systems? This chapter aims to provide an observation of the Impacts and limitations of globalization and technology to the university education in developing countries.

Keywords: higher-education, developing-countries, globalization, technology, pandemic

1. Introduction

Globalization interconnects the world, making it a small village through time and space where technology is the main and important facilitator of this interconnectivity [1]. This process is marked by speedy, free movement of people, services, capital, goods, ideas and knowledge across borders [2]. A question becomes, how practical is the term globalization in describing educational systems of developing countries? Through technology, globalization facilitates access and sharing of most recent knowledge across the globe. Online classes, scholarly references, and academic communications in higher education and universities provide proof that education is pinned down by both globalization and technology.

During times of minimum physical contacts, like what happened recently due to COVID-19 pandemic; one might expect the benefits of globalization and technology to outshine. In educational systems, this would mean continuation of studies and communication among those involved. Unfortunately, in some developing counties benefits of globalization and technology to university educations had their limitations during the times of pandemic. Some universities had to seize classes completely simply because technology was limited in its application.

Authors of this chapter argue that: the terms globalization and technology are used disproportionately and unfairly when it comes to university education within developing counties. The two terms tend to mask the reality of the limitations they cause. Maybe, if developing countries had accepted that they are not globalized enough as assumed and masked by the term 'globalization'; and that the available technologies are not advanced enough, they would find ways to continue educating during the times of pandemic. Instead, for developing countries to rely on globalized technology has proven limited during this challenging time.

2. University education in a globalized world

Globalization or global links are mentioned to have started to form since the early 19th century where rapid interconnectedness across the globe was witnessed [1]. Since the 90's the term globalization emphasizes on interconnection among nations across the continents, and described as: not limiting investments, production and innovations within one nation's borders [3]. Authors of this chapter think that a nation must reach a certain level of development technologically before entering the state of being globalized. Such development at national level should not be judged as a complete hindrance in globalization of both education and career rather indicates the need to amend the national approaches to address the population demand of the developing countries preferably in the indigenous manner [4]. Authors of this chapter observed that developing counties are said to be 'globalized' and 'technologically connected with other nations' but found to be technologically limited within a country. A good example is the observation done at the university educational system during the pandemic. Authors of this chapter observed that university education is limited by the unevenness of the term globalization intersected by the irregularity of technology. The use of the terms when elaborating university education creates assumptions that there is an equal distribution of their benefits.

The term globalization makes authors of this chapter think of importance of nationalization and rationalization [4]. In order to deliver higher education successfully, maybe a country should be termed as 'nationalized' first before being globalized. This way we can use the term globalization in the assurance that connection is successful within a nation before spreading global. As a university lecturer, this will mean that I should be able to communicate with my students within my country same way I can use technology to connect with other academicians in foreign countries. To our opinion, when the system of education is said to be modernized and globalized, then its availability and accessibility should not be in a limited context both nationally and globally.

Globalization can strengthen or weaken educational systems in a particular nation: a good example of educational policies. In coping with globalization, developing counties must develop their educational policies not only to serve national needs, but also to be integrated to accommodate the global context with positive impacts. Al'Abri who assessed influence of globalization on educational policy at Oman, argues that; educational policies within developing countries in the context of globalization are strongly influenced by the role of international

organizations when compared similar influence to developed ones. Accordingly, education policy is no longer determined by actors within the nation state alone, but through various complex processes occurring globally [2]. International organizations such as the UN, the World Bank, and Organization for Economic Co-operation and Development (OECD) are claimed to have more powerful impact on education policy of low income and developing countries through their practices, programs and policies such as the UN's Millennium Development Goals, Education for All, and others [5]. Accordingly, education policy in developing countries is globalized.

Educational policy terrain is confirmed to be reformed and redesigned by globalization [2, 6]. Authors at [2, 6] argue that the process of globalization has deeply shifted and changed the ways in which education policies are developed, implemented and evaluated.

3. University education and technology

Technology can be defined as the use of scientific knowledge for practical purposes or any other life applications, whether in industries or in our everyday lives [7]. Subsequently, we are using technology whenever we use our scientific knowledge to achieve some specific purposes. Generally, Technology can be anything from the discovery of simple things up to complicate ones [8]. Since technology can be so simple or so complex, different colleges/universities have been operating using different technologies in different aspects.

Colleges and universities have generally been quick to adopt new technologies, regularly even before their educational value has been confirmed. Throughout history, higher education institutions have investigated with technological advances as diverse as the blackboard and the personal computer [9]. The use of computers, internet and telecommunications are the major technologies reforming higher education. The use of electronic mail, fax machines, the World Wide Web, CDROMs, and commercially developed meeting software apps are altering the daily operations and expanding the duties of colleges and universities. Some technologies such as the use of slides, projectors, and other audio -visual skills have now become permanent parts of higher learning institutions. These technologies are being used in different matters like teaching and communication [10]. This has been of great importance in different college/universities where the traditional teaching and learning process has been revolutionized.

Technology has been able to eliminate the barriers to education imposed by space and time and dramatically expand access to lifelong learning. Students no longer have to meet in the same place at the same time to learn together from instructors, instead, they can use technology to access different sessions, materials and academic meetings/appointments. We can now say that modern technology has transformed the concept of higher learning institutions that is no longer necessary for a college/university to have a physical place/building with classrooms or lecturing theaters but it can use technology to reach students [11]. Through sophisticated communication technologies; higher learning institutions are no longer restricted to have face to face communications between staff and students. They can now communicate via technologies from different geographical locations if and only when all required resources are in place. Technology can also make education a much more interactive and collaborative process to both students and stuff. The use of electrical mails, course-based websites, and computer-based chat rooms are some of the technology-enabled resources that facilitate communication and teamwork among students and their instructors.

Despite of all technology's promise, its incorporation in some of higher learning institutions in developing countries has not been easy and successfully due to some difficulties including infrastructural settings [12]. Many barriers to technology-based innovations and investment costs have been limiting the total exposure of technological advances for stuff and students [9, 13]. In East-African settings with an example in Tanzania, most of academic institutions are so confined to classroom - centered lecture that make many instructors reluctant to adopt alternative instructional strategies using the computer or telecommunication devices [14].

Technology has also been found of disadvantages in university education settings where it has also brought a number of cold aspects. Among the disadvantages of technology are; many instructional positions have been obsolete, professors and instructors' control of the curriculum has been lost, cheating on academic matters has been so easier to students, the importance of attending lectures has been ignored, the role of some instructors/mentors has been replaced by technologies and also technology has facilitated laziness for university students [15]. Together with this, the cost of many technological applications also prohibits their easy adoption at many resource-limited institutions.

4. Education in the middle of globalization and technology

4.1 Education in the middle of technology and globalization within Africa

In response to the coronavirus outbreak, many African governments took the decision to close all schools and higher learning institutions to contain the disease. Consequently, all higher learning institutions had to rethink the approach to become more digitally led and shifted to online platforms [16, 17]. The manifestation of coronavirus pandemic exposed the unpreparedness of many higher learning institutions in Africa to shift to online. The pandemic incidence caused many African governments to temporarily close all educational institutions and other places that gather people in order to contain the spread of COVID-19 in their respective countries. The closures of schools and universities is said to have impacted over 70% of the world's population. The management of higher learning institutions in Africa have now understood the importance of encouraging students to embrace change in learning and teaching as well as to prepare themselves for any forthcoming events and other troubles that might become part of their lives [16].

The situation of higher education in the COVID-19 era has been an excellent lesson for higher education institutions in Africa to rethink what to consider in planning for future curriculum including steps to be taken towards adopting a blended learning approach in education to improve access and equity. During COVID-19 pandemic, several universities across Africa, such as Egypt, Ghana, South Africa, and Rwanda shifted some of their programmes to online platforms and partnered with Telco's to zero-rate these platforms [13, 16]. These few universities in some instances made data packages and laptops available to some of their students' access which was difficult to other African universities due to some geographical and technical challenges.

Nevertheless, even with all the efforts of some universities in Africa to ensure smooth teaching and learning via online platforms, limitation of globalization and technology still affect African university that hinder students from accessing their studies in case of any emergency like pandemic issues. According to UNESCO, 89% of students in sub-Saharan Africa do not have access to household computers and

82% lack internet access and thus even though there will be online classes still they cannot cater for all students in Africa [17].

During this pandemic, many strategies made by universities to make studies continue were observed. Some researchers like Kari Mugo, Naliaka Odera and Maina Wachira did a survey to know the impact of COVID-19 on Africa's higher education and research sectors. On their survey, they found out that While 83% of respondents reported experiencing disturbance on their ongoing learning, only 39% said they were enrolled in institutions offering e-learning options. Only 17% of West African respondents reported being at institutions with e-learning options, compared to 43% of East African and 41% of respondents in Southern Africa. The survey added that even the research activities were affected whereby, 73% reported a suspension of their lab or field research activities as a result of the COVID-19 crisis. These results of the survey alert us to a broken system that has been worsened by a global pandemic. The researchers pointed out that, even if there were institutions offering e-learning, the trend across the continent was not homogeneous. They also found differences in accessing to e-learning based on a respondent's gender, age and exposure to technological issues [18].

The impact of COVID-19 pandemic was not similar worldwide; different continents were affected differently. African regions were mostly affected by suspending teaching sessions and some teaching were mostly canceled in Africa compared to other continents surveyed. Results are summarized in **Table 1**.

4.2 Education in the middle of technology and globalization within developing countries

It is through education that nations are termed as developed. An educated nation, using technology and interconnected with other nations is termed as developed. Education does not only speed up development processes, but also make development more linked to people's needs. Development goals in most developing countries have been changed, related to and influenced considerably by globalization processes. Various authors conclude that education is a necessary component of development in responding to globalization and in achieving economic growth and social development. Education equips people with the new knowledge and skills needed for the acceptance and adoption of globalization [5, 19].

Technological innovations, creativity and output are all contained within an education system. In developing countries, both education and technology correlated together are looking for to provide solutions to both economic and social challenges [20, 21]. Therefore, education becomes crucial to developing countries as a means of creating channeled-opportunities for these countries

Continents	Not affected	Classroom teaching replaced by distance teaching and learning	Teaching suspended but the institutions developed solutions	Teaching canceled
Africa	3%	29%	43%	24%
Americas	3%	72%	22%	3%
Asia & Pacific	1%	60%	36%	3%
Europe	Almost zero	85%	12%	3%

Source: https://www.iau-aiu.net/IMG/pdf/iau_covid19.

Table 1.
Impact of COVID-19 on teaching and learning by region.

to engage and integrate with the global economy and development. Education and technological level enable assessment of developing counties in the level of globalization. Clearly one country is termed as globalized based on the quality of education and technology available in that country. Therefore education becomes the core center that holds technology and globalization all together.

5. Observation during pandemic – university education limited by both globalization and technology

The observation was done mainly to university education in East Africa during the time of pandemic. Existence of pandemic forced both students and academicians to stay at home; technology was expected to facilitate the continuation of university education. After all it is a university education we are talking about where terms technology and globalization are highly applicable. Technology in university is used in all aspects of teaching (ICT, internet, modern lab equipment). Globalization is applicable under a notion that in order for a university to be permitted to offer higher education, there must be linkages, flow and continuous exchange of current knowledge and expertise between the universities across countries and sometimes continents. But should not these two terms globalization and technology enable university education to continue during the emergency time of pandemic? One might expect that to be the case. But in most developing countries their limitations were caused by inapplicability.

In Tanzanian universities for example; classes had to be frozen completely during the peak of pandemic. Students went home with minimum educational communication with their academic supervisors. Shouldn't globalization (connection of the world) and technology (especially ICT) be helpful during this time? Had the globalized technology not being limited by evenness in accessibility, university studies during the pandemic would continue. We cannot deny or dare to overlook the importance and advantages of globalization and technology in the university education. We appreciate the two when we are able to access online classes with visual contact communications from other developed countries. However, to proudly apply the intersection of the two terms, continuity must be maintained during the emergency times of minimum contact.

6. Conclusion

It is through globalization that education has become a matter of international relation and concern. Technology has been able to facilitate this. But should the terms globalization and technology been used evenly to both developing and developed countries? The authors of this chapter argue that they should not. The evidence behind their arguments is because of what was witnessed on university education in developing countries during the time of pandemic. Even though we appreciate the benefits of the terms as applied to part of educational systems within developing counties, the unevenness usage of the terms create the assumptions that mask the reality of their limitations to university education.

Therefore the lesson learnt during pandemic serves as a call for all higher education institutions in developing countries to rethink and modify their curricular so as to suit a blended learning approach. To ensure equal access of globalized techniques and technologies in higher education institutions, authors recommend investment to improve resources and infrastructures within developing countries.

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Conflict of interest

"The authors declare no conflict of interest."

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Chapter 11

Beyond Teaching: School Climate and Communication in the Educational Context

Eleni Mousena and Nikolaos Raptis

Abstract

Positive school climate promotes teachers' professionalism and students' social development and academic achievement. However, positive school climate cannot be taken for granted within a context of rapid change and increased complexity. Educators are often faced with critical situations, which result in many of them questioning their own abilities. The problem set forth in this study is based upon the changes in educational context as caused by current social, financial, and technological factors and their impact on school climate. This paper explores the variables of school climate and communication in order to find the extent to which their relationship can work in favor of an open, safe, and creative educational organization where teachers and students will wish to belong. It also examines the communication skills of school principals. The conceptual framework of the study is based on research related to organizational culture and educational communication. The study is a critical meta-analysis of literature on the statement problem. The results show that school climate is fundamental to achieving school goals. Communication among all participants is a key factor in creating a positive school climate, and the communication skills of the school principal are largely crucial.

Keywords: school climate, communication, listening culture, leadership

1. Introduction

In the last decades, the scientific interest in the quality of education and its outcomes has focused on the importance of school climate, indicating that a positive school climate can promote the academic and social development of children and the professional performance of educators [1, 2]. As well as this, school climate is one of the main aspects of the teaching and learning process. The deliberate cultivation of a culture of learning and participation in an organization requires the systematic collection, processing, and distribution of knowledge aimed at the organization's optimal performance [3].

However, school climate is not always positive or creative, and teachers and students alike may not feel good at school, while school objectives may not be achieved. It is a fact that conditions in education are becoming increasingly difficult, as a result of the broader, rapidly changing, and increasingly complex environment. Teachers are often faced with violent, even criminal, acts, which may cause them to consider changing careers or have low self-confidence regarding their chosen profession [4]. Critical situations can disrupt school climate [5–7]. Ways of dealing

with such problematic situations can be sought by competent bodies, but they can also come from within the school, from educators themselves, probably with more successful and long-lasting outcomes. This is because when the school community itself is involved in resolving a problem, there is increased likelihood of the solutions being viable. In contrast, when the solution is imposed by external agencies, it is often rejected by the school. The school setting is a microcosm of society. Here, participants are not production units of an industrial or business organization, but partakers in the learning process which is, first and foremost, an act of communication [8, 9].

At this point, the questions arise: How can a school become a space where teachers and students wish to belong to? What factors can foster a positive feeling and creativity? How can effective communication within the school unit act as a catalyst for enhancing school climate?

The problem set forth in this study is based upon the changes in educational context as caused by current social, financial, and technological factors, and their impact on school climate. The importance of this study lies in its effort to seek effective interventions in school that can create appropriate conditions for the development of teachers' and students' creativity. We argue that both effective interpersonal communication among all members of the school community and the principal's communication skills are crucial.

The aim of the present analysis is to examine the variables of school climate and communication in order to find the extent to which their relationship can work in favor of an open, safe, and creative educational organization where a positive school climate exists and to which teachers and students will wish to belong. In particular, the following questions will be considered:

- What does the concept of school climate entail and what is its importance?
- How can school communication contribute to its improvement?
- What is the role of school principals in this process?

Gorton and Alston note that through communication, the organization's culture is shaped, while the workforce is encouraged to develop, obtain, and process information, to take decisions and to plan ([10], pp. 96–97). The principal's role as pedagomanager acts as a catalyst both in the formation of cooperative relationships and in the performance of the educational work of the school unit. The principal is the central regulator of school climate. The term *pedagomanager* is used to denote the principal's dual role, performing both administrative and pedagogical tasks ([11], p. 52). This is a feature that distinguishes educational organizations from other organizations in the market. These two types of tasks differ significantly, and the person entrusted with them must be 'transformed' into an optimal pedagogue or a perfect manager, respectively. According to Deal and Petersen [12], when it comes to shaping school climate, school leaders are models, potters, poets, and healers.

2. Literature review

2.1 School climate

2.1.1 Concept and importance

Over the last two decades, there has been a growing appreciation that school climate, the quality and character of school life, fosters teachers' professional effectiveness, dedication to the profession, and continuing professional development.

Research confirms what teachers and parents have claimed for decades: a safe and supportive school environment, in which teachers and students have positive social relationships and are respected, engaged in their work, and feel competent, matters.

But what is meant by *school climate*? The definitions that have been offered vary but they do share a common characteristic: school climate is related to the quality and features of school life, in the way that participants experience them. The term denotes the way in which interactions among participants in pedagogical events and phenomena are experienced. It focuses on emotions and describes teachers' interpersonal relationships. School climate refers to the quality and character of school life as it relates to norms and values, interpersonal relations and social interactions, and organizational processes and structures. School climate sets the tone for all the teaching and learning done in the school environment and, as research proves, it is predictive of students' ability to learn and develop in healthy ways. Further, research has shown that positive school climate directly impacts important indicators of success such as increased teacher retention, lower dropout rates, decreased incidences of violence, and higher student achievement [7, 13, 14].

The school experience is recorded as a process whereby participants interact based on the operation of principles, rules and values pertaining to teaching, learning, administration, and the school's relationship with the family and the broader environment. Relevant and alternative terms applied to the concept of school climate are "psychological climate," "pedagogical climate," and "pedagogical atmosphere". At the same time, Peterson & Deal write of school culture: "culture is the underground stream of norms, values, beliefs, traditions, and rituals that has built up over time as people work together, solve problems, and confront challenges" ([15], p. 28). Culture influences everything that goes on in schools: staff collaboration, abilities, and their willingness to change, the practice of instruction, and the relations among parents.

In this paper, we have adopted the term "school climate", which we define as the way in which the interactions of participants in pedagogical events and phenomena are experienced. The vast majority of researchers and scientists indicate that school climate, in essence, reflects the individual experience at school. School climate is described as pleasant, unpleasant, positive, negative, boring, fertile, shifting, open, closed, constructive, interesting, engaged, cold, etc. As an umbrella term, "positive" is more frequently encountered in the relevant literature to cover those terms that denote the above desirable qualities. Positive school climate exists when participants feel safe and at ease in a setting where interaction is favored through the care and support provided by principals and colleagues. A positive school climate is characterized by:

- A sense of warmth, an active interest in students, and adult participation;
- Setting limits to unacceptable behavior;
- Absence of corporal punishment when rules are violated or otherwise undesirable behavior exhibited;
- Adults acting as positive role models [16].

Such an environment has an impact on all those related to the school: educators, students, parents, and the broader community. Positive school climate favors the teachers' professionalization and students' development and progress at a sociopolitical, emotional, moral, and academic level. It constitutes a constructive experiential process preparing students for adult life within a democratic society. To create a positive school climate, the educator supports students, expresses high expectations, opts for student-centered approaches, provides immediate feedback, creates a

family-like atmosphere, encourages interpersonal communication, evaluates success positively, formulates clear rules, gives work and academic orientation, and expresses his/her confidence in students ([17, 18], p. 125).

It has been acknowledged that there are various elements that shape school climate although there is no universal agreement on its key features. What is certain is that "strong positive cultures are places with a shared sense of what is important, a shared ethos of caring and concern, and a shared commitment to helping students learn" ([15] p. 29). Researchers have divided climate into variables, subsystems, or dimensions in order to define the components of organizational climate. Owens and Valesky [19] explain that organizational climate is the product of four variables or subsystems: ecology, milieu, organization, and culture. A review of relevant research shows that there are 10 fundamental dimensions that shape individual experience in school, which are grouped in four categories:

- Safety (physical, social, and emotional);
- Teaching and learning (quality of teaching, social, emotional, and ethical skills for learning, professional development of educators, and leadership);
- Interpersonal relationships (respect for diversity, a sense of community, cooperation, and cohesion);
- The environment (space, materials, and time) [20, 21].

As far as the teaching and learning process is concerned, positive school climate activates motivation and the willingness to learn. Learning is not possible outside a suitable school climate, both in terms of the learning outcomes and in terms of the process. It is worth noting that the school climate that the child experiences at the start of his/her learning route is the foundation upon which he/she builds learning ability and experience.

2.1.2 The rivals of school climate

School climate can be disrupted by a range of external factors, such as certain natural phenomena (e.g. severe weather conditions) or social events (conflict, transition, loss, etc.) or by internal factors, such as the educators' and the staff's behavior, the number of students, the composition of groups, third parties entering the classroom, an accident in the classroom, and so on. In cases when the disruption is threatening to participants, we speak of a state of crisis. According to Freiberg, "a healthy school climate contributes to effective teaching and learning. These instruments for assessing climate can help schools make informed and meaningful changes for the better" ([21], p. 22). To manage states of crisis in schools, it is necessary to take measures, including school readiness, the cognitive and emotional competence of educators in matters of mental health, information on the students' family background and health, good cooperation with educational institutions, parents, school administrators and educators, and clearly defined and predetermined rules of action. Hoy et al. note that "A healthy school climate is imbued with positive student, teacher, and administrator interrelationships. Teachers like their colleagues, their school, their job, and their students are driven by a quest for academic excellence" (2002:39) [22]. According to Marshall [23], school climate is influenced by the following factors:

- The number and quality of interactions between adults and students;

- The school environment, including buildings, classrooms, available materials, but also the educators' and students' perception of this environment;
- Students' academic performance;
- A sense of security at the school for all members of the school community;
- A feeling of trust and respect for students and educators.

School atmosphere can have an impact on many areas of the school experience. Positive school climate has been associated with fewer emotional and behavioral problems [24]. Commitment to compliance with school operational rules and positive feedback by educators are two aspects of the pedagogical climate that affect the school experience and students' self-esteem [25]. In addition, a special research project into school climate in high-risk urban settings has shown that a positive and supportive school climate can affect students' academic performance to a great extent [26]. According to another research project, positive interpersonal relationships and an increase in learning opportunities for students in all demographic settings can increase levels of achievement and decrease dangerous behavior [27].

Regarding the roles of the teaching and administrative staff, Taylor and Tashakkori [28] found that the existence of a positive climate in school is connected to an increased sense of job satisfaction for school staff. Finally, the transition from one educational level to the next is also influenced by school climate. Entering a new school can cause stress in teachers and students, and this can have a negative impact on the teaching and learning process. Research has found that a positive and supportive school climate is important for a smooth transition to a new school [21]. Establishing a positive climate in a school unit is a collective, coordinated, and, to a certain degree, disciplined endeavor by the whole staff. When teachers and students feel that they are in an environment that is truly and actually interested in them, they view their everyday teaching and learning experience as a positive process ([29], p. xi). These are schools where staff exhibit a passionate professionalism and enjoy extensible opportunities for collegial dialog, problem solving, and community building and where the culture encourages student involvement in community service and teacher commitment to continual instructional development ([15], p. 29).

2.1.3 Evaluation of school climate

Evaluating school climate is one of the best ways to ensure its positive characteristics. An environment of cooperation and learning is founded on the social and emotional environment of the school, which is reflected in school climate [9, 30]. The evaluation process is aimed at assessing the level of school climate and designing its further improvement so that schools with a positive school culture can be created. Although traditionally the assessment of student performance has used reading, mathematics, and scientific knowledge as its criteria, an increasing number of education agencies are realizing that these indicators cannot convey educational outcomes in their totality. Data from the assessment of school climate are now used as a complementary form of evaluation. Important information is derived from the reviews of students in their final year. As Freiberg stresses, "the feedback process allows students to be citizens rather than tourists in their school, as they realize that they have an opportunity to participate in shaping the education process" ([21], p. 26).

The school community determines policies that promote the holistic development of all participants in the school community—the social, emotional, moral, political, and intellectual. Also, it promotes an integrated system for overcoming

hindrances during teaching and learning. We could say that the school community creates an environment in which all members feel safe and creative. School climate and relationships within the school are one of the main areas of evaluation in the assessment programs for schools. Specifically, during the evaluation process, attention is paid to the following criteria of quality:

Relationships among educators: Quality of communication, creative collaboration and collective action, regular meetings, and cooperation with emphasis placed on pedagogical and teaching issues.

Relationships between educators and students and among students themselves: The pedagogical teacher-student relationship, development of initiatives for creative teacher-student cooperation, student conduct that complies with school rules, and student participation in the formulation of regulatory practices pertaining to school life.

Relationships between school and parents: Effective mechanisms for regular and two-way communication between the school and parents, quality of the information exchanged with parents, development of initiatives for creative cooperation with the Parents' Association.

Relationships between the school and agencies: Constructive communication and collaboration with education authorities and agencies, the local community and the broader society, frequency, content, and quality of communication [31].

The process of evaluating and improving school climate is a demanding one. It is understood as a circular process consisting of five stages, including preparation and planning, assessment-evaluation of strengths, weaknesses, and needs, understanding evaluation outcomes, designing and application of the action plan, and reassessing what has been achieved and developing the next stage for improving school climate. The evaluation of indicators is based on data collected through the use of qualitative and quantitative methods and observation and recording tools [32]. The quality of education is, to a great extent, a function of school climate quality, which can be improved substantially, especially when it is understood and evaluated internally by the individuals actually involved in the education process. Internal evaluation requires additional competences on the educator's part, but experience has shown that educators avoid recording data of their pedagogical action. The collection of data with the use of various methods identifies the educator as an education researcher, a quality inherent in pedagogical action. A combination of methods and techniques for observation and recording is the most effective way to cross-check and interpret data, and to define goals for each of the stages of evaluation [33].

School climate is expressed by tangible means, it is greatly influenced by leadership, and it responds to change rapidly. It becomes evident through collectivity, communication, decision-making, trust, expectations, recognition, support, and experimentation. School climate should reflect directly the school's mission statement through its focus and actions. External factors, such as increased funding and provision of resources and staff can play a key role in shaping positive school climate. We are aware, however, that when planning and interventions are carried out by those involved in the internal environment of the school, they tend to be more viable. Could internal school communication be efficient in this respect? This question is analyzed in the following section.

2.2 Communication in educational context

2.2.1 Concept and definition

Communication is the main parameter in the creation and development of civilization. For ancient Greeks and Romans, it was an area of great importance.

The Athenian society called for greater competence in oral speech. When in court, citizens could not hire advocates but, rather, they had to defend themselves publicly. Those who stood for public office had to learn how to voice their ideas clearly and convincingly. In an attempt to understand the variables affecting persuasion, modern scholars have tried to transfer the classical persuasion practice into modern reality.

A multitude of definitions can be found in the literature with regard to communication. It has been defined as the delivery, reception, processing, and interpretation of information. This information can be transmitted orally, in writing, and in an active, passive, formal, informal, conscious, or unconscious manner ([34], p. 290). Robbins, Coulter and DeCenzo note that communication is the transfer of understanding and meaning ([35], p. 446). According to Schermerhorn [36], communication is an interpersonal process of sending and receiving symbols with attached messages. Communication is an interpersonal, that is, a social process, which can only be considered complete when some kind of understanding has been reached. It never is a simple case of a stimulus and a response in the way that these terms are used in psychology. Communication is the mechanism by means of which human relationships exist and develop. Irrespective of its conceptual definition, it must involve not only the transfer of meaning but also an understanding of it. Only when the sender's message is fully understood by its recipient(s) can communication be considered effective ([34], p. 294; [36], p. 491).

Communication is a social activity, a social phenomenon that is present both at the interpersonal level and at the organization level. Communication is about transmitting and receiving information and messages between individuals and between groups through a system of symbols. Educators, just like doctors, social workers, psychologists, vocational guidance and business counselors, etc., are what is called "interpersonal professionals", meaning that a great part of their work is dedicated to face-to-face interactions with other people. Such professionals must possess certain skills:

- Cognitive skills: the fundamental knowledge pertaining to their profession that characterizes it and distinguishes it from other professions;

- Technical skills: skills involving the use of tools and instruments relevant to the profession;

- Social and communication skills: an individual's ability to interact effectively with others at a professional level [37].

It is a fact that the ways used to communicate today have increased significantly compared to the past [38, 39]. Although educators have several new possibilities and media at their disposal that enable them to send their message to multiple audiences, they still seem to be lacking in key communication skills. It is also true that educators are not concerned about the way and the outcomes of their communication with students on the micro-scale of the classroom. However, experience has shown that this is not the case when they need to collaborate and communicate with other groups, such as staff associations, parents' associations, and education agencies. On such occasions, the necessary communication skills are situated on the macro-level of the social and political sphere, where argumentation and persuasion require more complex knowledge and skills [40].

Conversation analysis in the school context aims to highlight the kinds of conversation that are most effective in students' understanding of the material taught. Most research focuses on teacher-student dialogs [41–43], while studies into student-to-student talk within the education process are rather limited in number. The orality movement has helped to emphasize the significance of oral discourse

in the school context. Regarding the systematic research of talk, two models of communication have been proposed. The *Transmission Model of Communication* views oral discourse as a medium for the transmission of information between a sender and a recipient. Although this model is held in high regard in educational practice, it fails to penetrate the complexity of oral discourse ([44], p. 132). The second model, the *Dialogic Model* [45] draws on Piaget and Vygotsky and their constructive process of discourse. According to the *Dialogic Model*, understanding between interlocutors is constructed through dialog and is shaped by the social and cultural context. Hence, talk is a complete system of cooperative understanding. The dialogic model is also connected to Volosinov and Bakhtin, according to whom utterances and responses constitute a chain of interlinked verbal events [44].

2.2.2 Listening culture

Listening is a complex parameter of communication rather than a simple and natural hearing process. According to the Speech Communication Association, listening is the process of receiving and assimilating ideas and information from spoken messages. Effective listening involves both the literal and the critical understanding of ideas and information transmitted through oral speech ([46], p. 282). Listening is an active process that the individual chooses to occur. Of the events that take place in his environment, the individual selects the ones to which he will direct his attention, which he processes and uses, and which he may even retain and combine with other bits of information that he has previously chosen to save in his memory. The skills of active listening can be cultivated through practice and knowledge acquisition [47]. However, communication can encounter difficulties deriving from a failure to listen. Such hindrances include listeners who do not actually listen but pretend to do so, *selective listeners*, who employ a kind of partial listening whereby they deliberately direct their attention to certain parts of the speaker's talk, and, finally, *egocentric listeners*, who regard themselves as the center of each and every transaction or activity [46]. For a listening culture to be developed, emotional intelligence and empathy on the part of those involved are essential. Listening culture is a determining factor in promoting collaboration among educators and in shaping positive school climate.

According to contemporary educational research, communication is one of the main factors in the development of a sustainable system for improving school climate ([29, 48], p. xv). Within a school unit the whole of the educational workforce communicates with one another, with colleagues from other school units, with the community of parents, but also with various agencies from outside the school [49]. The communication process occurs on a daily basis with all educators within school orgnanizations. For cooperational relationships to be developed in the school, effective communication among members of the school community is considered essential ([35], pp. 428–36). Sergiovanni notes that "School climate and relationships are obviously affected by the organization and communication in the school; school climate lies at the center" ([50], pp. 100–101).

2.2.3 Communication and leadership

School principals' communication skills can determine, to a large extent, school efficacy and the achievement of goals. Research has shown that school principals devote a great amount of time to communicating with students, other educators, parents, education authorities, and with other individuals relevant to the school environment ([51], p. 53). According to certain findings, their communication is not rigidly planned, but, rather, spontaneous and relaxed, while they do not seem to make a systematic effort to receive or provide feedback or evaluate the

effectiveness of communication. In addition, the communication roles assumed by school principals have increased, mainly because of the possibilities provided by new technologies. Gordon and Alston [10], 97–99) talk about four communication roles of principals: a) communication agent, b) message recipient, c) supervisor, and d) communication seeker.

In a critical analysis of these roles, we could suggest that the roles of the agent and recipient are somewhat inherent in the principal's responsibilities, while the roles of supervisor and seeker require the development of communication skills and practices by the principals themselves. The role of a communication agent requires, first and foremost, that the principal understands the main objective of the message they wish to transfer [52]. When they understand the purpose of the message, they will be able to determine precisely both its content (message encoding) and the appropriate means of transmission (communication channel) ([36], pp. 491–493). At the same time, they must be aware of potential obstacles that may arise in the process of decoding by the person or persons that the message addresses (recipients). Such obstacles can be lack of interest on the recipients' part, their poor cognitive background, prejudice, a problematic situation, etc. An important factor in this process is the existence or nonexistence of mutual trust between the agent and the recipient. Trust, i.e., confidence in the integrity, personality, and competences of a manager, constitutes a key parameter of communicative efficacy, as it is through this trust that the principal can convince recipients of the legitimacy of the objectives involved in the message ([35], p. 413). The role of recipient requires that principals be active listeners who try to decodify the sender's messages without making judgments or resorting to spontaneous interpretations. Instead, they should engage in close observation of nonverbal clues, avoiding distractions and, above all, strengthening empathy for the sender. But how capable are school principals of understanding the emotions of others, including educators? With a certain degree of emotional intelligence, school principals can "read" other people's feelings by focusing communication on actual behaviors, such as verbal, nonverbal, and paralinguistic clues. Communication is of great importance when it comes to understanding and interpreting the feelings of others, that is, their emotional intelligence. Donaldson [53] researched his own high school principalship by surveying staff members regarding communication. He analyzed both direct and indirect forms of communication finding a discrepancy between how he saw himself and how his staff members saw him.

Teachers are in a state of ongoing interaction and communication. The quality of this interaction is mainly dependent on the form of communication they use. An authoritarian attitude and administration turn workers into passive and submissive individuals and can ruin any possibility for meaningful communication and interaction. By contrast, a democratic attitude can contribute to the creation of a better emotional climate of cooperation, optimism, sincerity and responsibility and provides better possibilities for working efficiently and developing the personalities of those involved. A democratic principal can help create a positive school climate and, by doing so, a climate that is also productive. A principal who is demanding, pressing, and authoritarian cannot foster the improvement of interpersonal relationships. By contrast, a friendly, democratic principal can contribute substantially to the development of good relationships among the staff, which is a necessary condition for the progress of the whole organization. "School leaders—principals, teachers, and parents—are the key to eliminating toxic culture and building positive culture" ([15], p. 28).

To conclude, it can be argued that school principals should not restrict their communication roles to sending and receiving messages. Supervising and seeking communication within, from and to the school unit are quality features for establishing an appropriate process of communication than can make a difference in

the lives of all stakeholders—educators, students, and parents. These roles call for a principal who is constantly active and has a profound insight, a principal whose vision will be the enhancement of communication at all levels so that a climate of trust can be created and communication can be promoted.

2.3 Meta-analysis approach of the literature

The problem set forth in this study is based upon the changes in educational context as caused by current social, financial, and technological factors, and their impact on school climate. This analysis explores the variables of school climate and communication in order to find the extent to which their relationship can work in favor of an open, safe, and creative educational organization where a positive school climate exists, and to which teachers and students will wish to belong.

2.3.1 Literature identification

The conceptual framework of this study is based on research related to organizational culture and educational communication. The material analyzed consists of contemporary articles and books, which highlight the importance of positive school climate in achieving school objectives, and interpersonal communication as a determining factor in terms of the research questions posed.

2.3.2 Articles selection

The examination of literature developed on a general-to-specific basis. By constructing the specific research question, we narrowed the focus of the research. We decided on the specific preliminary research question and identified key concepts and preliminary search terms. We selected appropriate databases in library catalogs and on the World Wide Web open access journals.

2.3.3 Method of literature analysis

This study is a critical meta-analysis of literature on the research hypothesis, that communication is a key factor in promoting positive school climate. Meta-analysis is a recent trend in research. It refers to analyzing published studies to examine trends in the literature or in the results of research studies, such as the impact of a certain independent variable on another [54, 55]. By combining results found in scholarly journals and chapters, researchers can tell how much of an effect a particular variable has had over time.

The availability of electronic databases containing the results of published studies was a substantial benefit for the researcher conducting this meta-analysis. Databases such as https://eric.ed.gov/, www.ascd.org, https://www.hepg.org/, http://education.gsu.edu/, and databases of libraries were used. Sixty articles and books on the subject were selected that cover the key aspects of the topic and the new directions. A thorough study and analysis of their content was performed.

3. Results and discussion

These results are presented and discussed under subthemes, which addressed the questions posed for this study. Thus, the subthemes: "The concept and the importance of school climate", "The Rivals of school climate", and "Evaluation of school climate" emerged for, for the theme "School Climate" and "*Concept and*

Definition", "Listening Culture", and "Communication and Leadership were formed for the theme "Communication in Educational Context". A specific aspect of the problem is clarified in discussing each section of the literature review results.

3.1 The concept and the importance of school climate

We have discussed the concept and the importance of school climate for ensuring the effectiveness of educators' work and achieving school objectives. The conditions of school life are increasingly harsh, with incidents of violence and aggressiveness becoming part of the daily life in schools [6]. As a microcosm of society, school is influenced by the broader environment, in which rapid change, uncertainty, violence, and insecurity prevail. Furthermore, verbal and physical abuse often occurs in settings of grinding poverty. There are two sides to school climate: for those directly involved it can be understood as a subjective experience, while for outsiders it can be seen as a set of objective characteristics. Such characteristics include violent and aggressive acts, negative behavior, higher dropout rates, and educators abandoning the field of education.

We have analyzed the parameters that can contribute to the improvement of school climate as lived experience. In the workplace, educators observe and record aspects of the broader society. Their profession becomes harder not so much because of the demands concerning teaching and the promotion of knowledge as the social and psychological problems they are required to address. They have to work in an environment of increasing cultural and technological complexity, at a time when availability of resources is being restricted. Studies on educators' work-related stress indicate that their profession is becoming increasingly demanding and their role is being redefined. In the context of this redefinition, many are those who take a decision to leave their jobs [4]. We have seen how school climate as lived experience can be a crucial factor affecting educators' performance and a sense that they are effective and competent. When there is tension, violence, and uncertainty in school, it is not only the performance of educators that is reduced but also, as a consequence, that of students as well. By contrast, in a school climate which is positive, job satisfaction increases, while work-related stress tends to decrease. This finding has provided an answer to the first research question.

3.2 Communication as a key factor for positive school climate

They are several ways to create a positive and creative climate in schools in order to enable educators and students to express themselves, create and experience the joy of achievement. It is true that external agencies and competent bodies cannot sense school experience. To them, school reality is an abstraction, an object to be observed, a set of quantitative data to be statistically analyzed. It is hard for outsiders to perceive the lived school reality and thus to fully understand the meaning of school conditions. Given this fact, factors that can contribute to forming positive school climate which come from within the school community were identified in the literature. We have found that interpersonal communication in school is an invaluable tool that can be used to this end. Communication is a social activity *per se*, forming relationships and promoting solutions. Furthermore, the collective work which is organized on the basis of effective communication, emotional intelligence, and empathy can indeed contribute to solving problems and creating positive school climate. The profession of educators is a social profession, not only in terms of what is provided to society as a whole through educating students but also because of its inherent nature. The teacher is not a lonely worker; such an idea is useless and limited in its perspective. Instead, he/she is understood as an

interpersonal professional [46], one who shares his/her ideas and thoughts, and acts collectively. A teacher with social and communication skills can deliver both within the school community and in the broader society. Communication and teamwork, then, are key factors in promoting positive school climate, in forming a school in which all teachers and students will wish to live, work, and exist. This finding has provided an answer to the second research question.

3.3 School principal communication skills and school climate

In our study, we found that school principals have a very important role to play regarding school climate. School principals should possess considerable communication skills, be democratic, and promote cooperation. Understanding the attitude and behavior of educators is one of the desiderata of school leadership. But for this to happen, principals should be emotionally intelligent; in other words, they should be capable of "reading" the emotions of those they work with. Individuals with high emotional intelligence are capable of the following:

Characteristics of Principals personality	**Principals' emotional intelligence actions**
Self-awareness	Understand the way in which they experience their own emotions
Empathy	Be sensitive to and understand other people's feelings
Socially responsible	Offer assistance voluntarily and willingly
Reality-oriented	See things as they are
Sociable	Develop interpersonal relationships, approach others, and care about other people's interests
Impulse control	Manage situations that may cause them to be upset or angry

4. Conclusion

Positive school climate is an essential attribute of a school in which each individual experiences positive emotions, a school that everyone involved wants to belong to. This study has attempted an examination of the importance of school climate for achieving school objectives and identifying the factors that can ensure its improvement. School climate is defined as the way in which interactions between those participating in the school community are experienced. In short, it is an experience during which emotions are formed and participants' motivation enhanced, thus promoting educational work and meeting expectations.

Creating a pleasant school climate, however, is not an easy task. External factors, such as the broader social environment, provision of funding and resources, and collaboration with educational and social institutions, can be crucial in shaping positive school climate. On the other hand, internal factors have proved to be more effective. It is mainly educators', principals' and students' action and behavior that create a school's atmosphere. This is because these are the ones who experience school reality and the effects of its quality. They are directly involved in the school's problems and achievements. For this reason, they are more aware than external actors that a positive and efficient school environment can facilitate the fulfillment of goals and expectations.

Educational work, being a social process, requires effective communication and cooperation. A listening culture, empathy and a collective spirit are

conducive to resolving problems and conflicts. Central to the management of school climate is the role of school principals. A principal who employs a democratic system of administration and has high communication skills can be vital to the creation of positive school climate. The communication skills of teachers and school administration can be a stepping stone or an obstacle to the formation of a pleasant, desirable, and productive school. Every teacher should be aware of their students' needs and potential. With increased emotional intelligence, a teacher can know how to make the best of these needs and potential for their students' benefit. Similarly, the school principal should be aware of the teachers' needs and potential and support them so that the best possible result can be achieved from their work.

Positive school climate is based on respect for singularity and freedom of expression, and on cooperative understanding. It requires work carried out through democratic processes for all participants in the school community. Positive school climate cannot be created in a definitive manner. Instead, it is an ongoing process of observation, planning and evaluation. Each and every member of the school community has an influence on and is responsible for its creation. In conclusion, positive school climate should satisfy the following requirements:

- Covering the biological, emotional, and exploratory needs of participants;
- A surrounding space which is pleasant and provides stimuli for action;
- The ability of neutralizing negative factors;
- Possibilities for verbal, nonverbal and symbolic communication;
- Teacher-centered leadership;
- Educators' ability to communicate and self-regulate emotions;
- Collaboration between school workforce and external agents;

Effective communication and positive school climate in the school context can be viewed as a challenge and an achievement, but also as the core and source of students' and teachers' well-being and development. After all, what both students and teachers later remember from the school experience is how they felt and whether there were conditions encouraging personal expression and creativity, rather than what they were taught or taught to others. For seeing school climate as a fertile soil where knowledge can be cultivated and diffuse, communication is an essential requirement.

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Section 5

Envisioning the Future

Chapter 12

Addressing Sustainability Planning in Higher Education Research

Hope Pius Nudzor

Abstract

In recent times, the term "sustainability" has come to gain significant popularity in policy-oriented research and has become part of our everyday lexis in higher education research. Yet, in an attempt to deal with the issue of sustainability planning in research project proposals, the term has been conceptualized to refer solely to financial sustainability as if to say other types of sustainability either do not exist or do not matter. This chapter addresses this issue of sustainability planning in higher education research. In the process, financial sustainability is elucidated, and through that two other categories/types of sustainability are identified and discussed crisply for rumination. Following up on this, steps to sustainability planning are outlined to set in context the contention of the chapter that sustainability planning in research project management requires long term planning to facilitate diverse donor engagements and for improving institutional capacity of target populations. Thereafter, and using an example of a research proposal which responds to Open Call for project proposals for funding from a renowned multilateral funding agency, the chapter exemplifies how sustainability planning in research project proposals can be addressed to help strengthen the proposals to attract research funding from potential donors.

Keywords: sustainability planning, project management, financial sustainability, institutional sustainability, programmatic sustainability, higher education

1. Introduction

In recent times, the term "sustainability," a word frequently used across several disciplines, has gained significant popularity in policy-oriented research and other social sectors of development, and consequently has become part of our everyday lexis in higher education research. Looking from the lenses of donors and NGO's, it is the most sorted feature nowadays to ensure success to a project venture. Historically, the origin of the word "sustain" dates back several centuries, from two Latin words *sus* which means "up" and *tenere* meaning "to hold." So literally the word "sustain" means "to hold up," although in its current use implies something that continues for a long time. In its current usage, and in research project management sense, sustainability simply is the ability of an organization or research project team to continue its mission or programme of activities far into the future. Looking at sustainability from an organizational point of view, it means continuing to

perform and deliver project benefits to the primary target group after the funding from a donor(s) terminate [1–3]. In other words, sustainability is to maintain and continue your efforts as an organization and/or project management/implementation team after the funding for such activities is over.

Underscoring sustainability planning in research project management[1] principally is the view that all projects have to come to an end eventually at some point, but project impact should continue to be delivered for a considerable length of time [2, 4, 5]. Essentially, project donors want to see how project impacts will outlive their (i.e. donors') direct involvement and inputs. This thus makes sustainability planning a key feature of project management practice. In this sense, typically, research project sustainability simply implies the continuation of the research project activities and sustenance of research project outcomes after the initial/primary grant expires. For this reason therefore, most donors are concerned about sustainability aspect of research projects and often fund projects which have a well-defined and/or comprehensive sustainability plans in place [4, 6, 7]. Besides, it is often a challenge for most organizations to ensure a steady flow of funds for executing their projects and programmes. Integrating sustainability principles in their ongoing projects can therefore be an effective way to ensure long term impact.

From a theoretical standpoint, this idea of project impact sustenance holds relevant for all organizations and institutions of higher learning to prevent them from having "donor-driven visions" [2]. However, in practice, the preponderance of available research evidence, particularly from Development and Project Management literature, identifies lack of sustainability planning as one major challenge that has plagued (and continues to plague) research project implementation and management efforts of countries, particularly those in sub-Saharan Africa. In many of these countries, new policy initiatives are not adopted nationwide and sustained after donor-funded projects end. In Ghana as a case in point, new initiatives recede after funding stops, particularly as most funding for projects come from donors [8, 9]. Consequently, the term "sustainability," at least in research project management sense, has come, all of a sudden, to gain enormous popularity and significance in policy-oriented research, and has become part of our everyday lexis in higher education research. Yet, in attempting to address the issue, sustainability planning, particularly in research project proposals, has been approached and conceptualized by many to refer solely to financial sustainability, as if to say other categories and/or types of sustainability either do not exist or do not matter.

This chapter addresses this issue of sustainability planning in higher education research. In the process, financial sustainability is elucidated, and through that two other categories/types of sustainability are identified and discussed crisply for rumination. Following up on this, steps to sustainability planning are outlined to set in context the contention of the chapter that sustainability planning in research project management in higher education requires long term planning to facilitate diverse donor engagements and for improving institutional capacity of target populations. Thereafter, and using an example of a research proposal which responds to Open Call for project proposals for funding from a renowned

[1] Sustainability planning and project management, as used in this article, have different meanings. Project management is used in this article to denote he step-by step process for planning, organizing and managing projects. It involves the practice of initiating, planning, organizing, executing, controlling, and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. Sustainability planning, on the other hand, is used to depict that aspect of project management that ensures that project activities are planned and executed in such ways that make it possible for project impacts to continue to be delivered and sustained even after the project cycle elapses.

multilateral funding agency, the chapter exemplifies how sustainability planning in research project proposals can be addressed to help strengthen the proposals to attract research funding from potential donors. Essentially, the chapter argues that sustainability planning in higher education research is important in as it prepares higher education institutions to deliver positive outcomes in the absence of primary funding.

2. Addressing financial sustainability in research project management

Integrating sustainability principles in research project proposals is an effective way to convince donors about the long term impacts of one's project activities. However, as was stated earlier, attempts by many prospective research funds applicants to demonstrate to funders or donor agencies how their proposals would continue after project funding ends appear to focus solely on the issues of finances. Admittedly, financial sustainability is of paramount importance as far as project management and sustenance are concerned. It is the pivot around which sustainability as a concept oscillates. However, as would be elucidated in this article, donor agencies look at other equally important aspects of sustainability to assure and/or satisfy themselves that such research projects will continue to deliver long term impacts in terms of benefits to the target community even after the grants expire.

So what is financial sustainability, and how can it be assured and sustained by a research project proposal in the long term? Financial sustainability simply refers how the financial support required for the project activities of an organization or research project team will continue after funding, mostly in the form of grants, have ended. It refers to ensuring a steady flow of funds and generating revenue for maintaining and continuing project activities with the view to providing project impacts to stakeholders or target groups, at least for a considerable length of time [2, 3, 10]. The financial sustainability process itself involves essentially developing a financial plan outlining the various options available for expanding the resource stream of the organization or research project. This may require undertaking research to understand the "terrain" and the various options that can be used to maintain a steady flow of funds. Efforts at this stage also help in knowing potential donors and understanding their priority areas of funding.

Plans to sustain research project activities financially in higher education institutions take many and varied forms [2, 3]. Broadly speaking, financial sustainability activities are planned in such ways that the research projects themselves generate financial gains or profits and continue to function on earned income even after the funding timeframe elapses. Some of the common "business" sustainability measures and/or options that are used, particularly in the case of research project proposals to donors, according to Leon [2] include:

- **Sale of product**: This entails outlining clearly plans to sell products that the organization or research project team will produce in the open market. Although viable, this may not generate huge returns. Nonetheless, this can help the project team continue its efforts to deliver project impact for a while.

- **Diversifying donors**: This involves looking not and identifying a single funding source, but spreading ones tentacles to include funding agencies in related fields, including from corporate organizations, local institutions, individuals etc. Several studies (e.g. [11, 12], etc.) show that sustainability increases when projects have multiple sources of funding.

- **Charging service Fees**: This entails making plans to commence charging nominal fees from the target beneficiaries for the maintenance and functioning of the project once funding of project activities comes to an end.

- **Charging membership fees**: This is about plans to charge annual fees from all beneficiary groups of the project's impact in order to get project plans and activities to continue. This may be a small amount but can help continue some of the project activities as the project team explores other options.

- **Undertaking online Fundraising**: Online fundraising is one sure way of reaching out to a wide audience and individuals who have interest in the project to support project activities. It involves soliciting for funds basically online to support the continuation of project activities.

- **In Kind donations**: This involves soliciting for support, other than financial resources from agencies and individuals to sustain some of the project activities. This is especially the case where the agencies or individuals do not have the "financial muscle" to support the project activities but can render their services, platforms or physical recourses for use by the project team.

- **Undertaking annual/periodic appeal for funds**: This mainly take the form of annual or periodic appeals rendered to agencies and individuals to make financial donations towards sustaining project activities.

- **Adopting environmental sustainability approaches**: These approaches involve the use of project resources in such a way that the needed resources never disappear. It is instructive to note, however, that environmental sustainability approaches, most often, are project themes or cross-cutting themes within larger projects.

So while financial sustainability options take varied forms as illustrated, it is not to be taken or assumed in the least that they operate mutually exclusively. Most often, multiple financial sustainability options with practical and viable potencies are the ones that serve to convince donors that an organization can really deliver positive outcomes in the absence of primary funding. A good financial sustainability strategy to exemplify this point is a situation in which a research project team is able to, for example, demonstrate in their research project proposal, plans to ensure that paid up members of an organization receive a set of services (which include a regular newsletter, information on best practices, policy and regulatory advocacy and participation in annual conference), while at the same time making plans in the proposal to raise funds as well as provide specialized, accredited courses, information searches, published sectoral information and professional advisory services for fees which will be paid for by members and external agents.

3. Other categories/types of sustainability in research project management

The other categories or types of sustainability exemplified in the research project management and development literature vary significantly, but share some similar underlying characteristics with one another. For this reason, and in order not to sound repetitive, I focus on two other types of sustainability (i.e. aside financial sustainability) namely: institutional or organizational sustainability and

programmatic sustainability [6, 10, 13, 14] to drive home the argument of the chapter that there are different aspects of sustainability that are to be considered while writing the sustainability plan, particularly for research project proposals seeking to elicit funding from donors for project activities.[2]

Succinctly defined, institutional or organizational sustainability refers to ways of ensuring proper working of the organization and its institutions that were developed as part of the project even after the period of funding elapses, [6, 13, 15, 16], whereas programmatic sustainability means to continue the organization or project's programme of deliverables in the absence of donor support [10, 14, 17].

So clearly, both of these definitions show that aside finances, project proposals (especially those seeking for funding from donors) ought to demonstrate how project teams and the organizations and/or institutions they represent as well as project activities and programmes would continue to exist and deliver required impacts even after primary funding from donors recede or dry out completely. The argument this chapter presents essentially is that the combination of these three categories/types of sustainability (i.e. financial, organizational or institutional and programmatic sustainability) builds a comprehensive suite of support services and materials for research project teams that wish to undertake sustainability to effect lasting project impacts and benefits on their beneficiary constituencies.

Although from a glance organizational/institutional and programmatic categories of sustainability may appear quite similar in terms of the focus on ensuring the continued existence of the project team (and the organizations and/or institutions from which the team is formed) as well as their programmes and activities, their approaches to planning sustainability differ markedly. In the case of institutional and/or organizational sustainability, the following are examples of the methods that can or are most often employed to demonstrate its sustainability in research project proposals:

- **Exploring new opportunities:** This involves demonstrating within the proposal a flexible approach to undertaking project activities while looking for new opportunities to exploit in order to ensure continued existence of the project. This also entails the readiness expressed in the proposal to modify priorities to fall in line with unforeseen changes that may occur in the course of implementing project activities. A number of studies (e.g. [7, 18, 19] etc.) show that the ability of a project to change in accord with changing circumstances can significantly affect its chances of survival positively.

- **Developing new partnerships:** Developing a sustainable organization demands developing new partnerships. These partnerships, when indicated clearly in the project proposal, are helpful as they show the foresight of the project team regarding how stable the project will be and how they intend to take their mission ahead into the future ([18, 20] etc.).

- **Boosting existing relations**: Along with investing time and energy on developing new partnerships it is equally important to indicate clearly in the proposal how or ways by which existing relations with donors, stakeholders and beneficiaries will be managed in a proper way. This is essential as it is these relationships that are going to take activities of the project into the future and sustain them [11, 12, 21].

[2] So clearly, the focus of this chapter is on sustainability planning for research project proposals development in higher education research to convince donors to fund project activities, and not necessarily on sustainability planning for project management per se.

- **Undertaking communications and outreach activities:** A good project proposal with the potential to attract funding from donors is one that has a well-crafted organizational/institutional sustainability plan with a strong communication strategy. This makes it clear how the project team intends to showcase project results to a large audience [4, 20, 22]. A good practice is to have a monthly communication plan within the proposal that can be used for updating your webpage, social media profile, sending donor mails etc.

- **Engaging volunteers:** One of the strategies that many project teams use to indicate in their proposals their plans to sustain their projects in the long term is through engaging volunteers for performing specific activities. As volunteers do not draw salaries directly from organizations, they are a good source of resource to be used to continue the mission of project activities without spending much money [7].

Programmatic sustainability, on the other hand, is ensured through a different set of activities including, but not limited to:

- **Community involvement:** Involving communities in some aspects of project activities is key to having long term impacts from projects. One way, therefore, by which project teams ensure that they address programmatic sustainability is by ensuring that their proposals involve communities at various stages of projects [4, 7, 13, 18–21, 23]. This indicates to donors the communities' ownership of the project even after the project duration. Also, the entire process of participation is participatory, and also has the added advantage of indicating how the skills and knowledge to be gained by the present group of people within the communities will be transferable and also replicable to or with "others" within the community of beneficiaries.

- **Institutionalize local groups:** Local groups play a very important role in maintaining programme objectives. For this reason, one way of ensuring programmatic sustainability in project proposals is by indicating plans to strengthen local institutions and involve them in the planning and implementation phases of projects [4, 20].

- **Community advocacy:** Indicating plans to sensitize communities about benefits of a particular project and initiating a policy advocacy plans within project proposals is also an effective way to ensure programmatic sustainability in the long run. The assumption here is that once the communities have been sensitized and incentivized enough to have buy in, they embrace and follow through with project activities even after the project duration [4, 11, 12, 17, 21].

- **Involving local government and departments:** Making clear plans in project proposals to involve of local agencies and government also ensures improved access to the government initiatives in this direction. The point is that as these local government agencies and departments are permanent, they help in sustaining project activities beyond the project duration [7, 13, 19, 22, 24, 25].

So clearly, although organizations (including research project teams) need financial muscle to move their activities and programmes ahead, as is being echoed here by the chapter, none of the three categories of sustainability (i.e. financial, organizational or institutional and programmatic sustainability) exemplified takes or should take pre-eminence over the other as far as project proposals seeking funds

from donors are concerned. Rather, it is the combination of all three that builds a comprehensive suite of support services and materials for project teams that wish to undertake sustainability to effect lasting project impacts and benefits on their beneficiary constituencies.

4. Steps in sustainability planning

In practice, sustainability planning outlives research project proposal development and submission processes as it requires long term planning to facilitate diverse donor engagement and for improving institutional capacity of target populations. As such, it is always advised that great pains should be taken to discuss among members of the organization (including research project team members) the various processes and mechanisms to utilize even at the proposal development stage of project activities. Admittedly, and as a result of the strenuous processes, involved, views regarding steps to sustainability planning in the project management and development literature necessarily do not converge [3]. This notwithstanding, the following four suggested practical steps are most useful in guiding the discussion, planning and implementation processes of sustainability planning, particularly in higher education research.

4.1 Step one: understanding your organization

The key to sustainability planning in project management is understanding one's own organization and having long term vision for it. As Director/MD/CEO, management, board or staff, of an organization, everyone, as the first step towards sustainability, should be familiar with the organization and have a clear picture of where they expect to see their organization after a period of 5 or 10 years. This ability to understand and envision the future of one's organization in the long term serves to get the entire organization to think thoroughly about "what" to do and "how" to do the "what" to get the organization to become sustainable in terms of its programme of activities, impacts and resources [5, 15]. Once the long term vision is known to members, the various things required to achieve sustainability could then be easily drafted. Having attained this, and with the use of data and facts, members of the organization are then enabled to explain to the donor(s) about the long term goal(s) of their organization and the processes, resources required to ensure it becomes sustainable in the long term.

4.2 Step two: getting the organization ready for sustainability

Once members of the organization have understanding and could envision the future of their organization, the next task towards sustainability is getting ready for sustainability. The assumption essentially here is that in order for organizations to start the transition towards sustainability, they need to be strong enough to manage change [4, 5]. As such, activities at this stage involve gauging the readiness of the organization for sustainability using sustainability assessment tools. These tools take the organization through a detailed examination of its current efficiency and performance across all its activities and management processes. Of paramount importance at this stage is to ensure that the assessment is conducted as an organization wide process, with everyone (e.g. staff, management and board) fully involved, rather than a Director/MD/CEO conducting the assessment in isolation ([4, 5, 18] etc.). In this way, the whole team builds consensus on strengths and areas for learning and strengthening. Also, it is helpful at this stage to focus on helping

the organization to recognize the difference between practices that "maintain" and those which "sustain" an organization. Often, good practices may already be in place. However, with a completely different understanding of sustainability owing to activities at this stage, the organizations can readily enhance its practices and performance [4, 18]. The sustainability assessment may, for example, reveal that the organization is ready to implement a sustainability strategy or there may be areas where strengthening or additional capacity may be required, and this gives the entire organization an opportunity to come together and jointly agree on the optimal ways to move forward. Again, it is vital that leadership and staff work together to build these organizational foundations and prepare as a team for the new journey.

4.3 Step three: planning for sustainability

The next exciting stage after the necessary preparatory activities is to start planning for sustainability. The activities at this stage include providing staff and stakeholders training to support strategic planning skills, knowledge of needs assessment and logic model construction, leadership skills and fundraising expertise [7, 15, 18, 22]. Owing to the activity-oriented nature of operations at this stage, peer relationships and support networks are encouraged, which the organization can continue and retain for shared learning in the long term. These help to create the opportunity for members of the organization to plan their sustainability strategies, generate a supportive atmosphere where participants can share, learn and plan jointly, and build supportive relationships that allow the organization to compare learning and winning strategies as they work alongside each other. The activities here also help to introduce members to new skill sets and ways of thinking and realizing sustainability.

Six key activities are undertaken as part of the planning process [3]. These include: integrating sustainability aspects into project activities [13, 19]; developing communication and outreach strategy; involving key stakeholders in programmes development [4, 20, 22]; diversifying funding sources [11, 12]; creating inventory of resources [5, 15]; and using donor databases [11, 12, 15]. Concerning integration of sustainability aspects into programme of activities, it is always advisable to integrate sustainability aspects in projects right from the beginning as this helps to develop partnerships and relations with relevant stakeholders at an early stage of project development. This also ensures that once the primary funding for project activities terminates the organization has a strong support to continue its activities into the future. In a similar vein, developing a strong communication strategy is essential at this stage to achieve three key purposes. First, to ensure that project results can be shared with a large audience. Second, to ensure that the organization puts in place a well-documented project results that helps in getting support from a range of stakeholders and donors. Third, this serves to avoid last minute rush of donor search.

Another major step towards sustainability planning at this stage, and as intimated earlier, is stakeholder involvement in programme development. This can be done in several ways, but as part of the project planning activities, a multi-stakeholder dialog workshop can be initiated to seek the involvement and participation of relevant people and agencies in the programme of activities of the organization. Stakeholder involvement and participation is key in maintaining, sustaining and institutionalizing the organization's missions, programme objectives and operations. The most important aspect of planning for sustainability at this stage is to diversify the organization's funding sources or donor-base, and to develop long term partnerships with donors to support the organization's activities. As the success of the organization at securing financial sustainability, for example, depends on partnerships developed with corporate organizations, local institutions

and individuals, the advice always is not to focus on traditional donor agencies but explore new opportunities as well. Another useful way to plan for sustainability, particularly at this stage is to create and keep an inventory of all physical, material and human resources that the organization can make use of after its activities or project ends. This helps the organization to know in advance the resources it would need moving into the future. In this way, the organization gets to use some devices and equipment (such as training modules, camera, recorder, furniture for a school etc.) purchased during specific programme of activities even after the grant for such activities expire. Lastly, and on the part of using donor databases as an activity in sustainability planning, the advice always has been to enlist a few donors from the organization's donor database who are likely to fund its project or programme of activities and to keep in touch with such agencies so that they are aware about the organization's existence and its activities.

4.4 Step four: implementing the sustainability plan

Once the organization is able to develop, finalize and assess its sustainability plans, the next step is for it to commence implementation of its sustainability plan. The essence of finalizing and assessing the plans before commencing implementation is to allow for decisions and/or arrangements for technical support for implementation that probably may be needed. But essentially, the activities at this stage in the sustainability planning process involves putting into use or implementing the plans developed to ensure that an organization's mission, programmes of activities and resources continue to exist after its funding regimes elapse. In practice, it is a generally acceptable practice for an organization's sustainability plan to outlive or transcend project proposal development and submission processes. This is particularly the case since the organization may well commence implementation of its sustainability plans even before a proposal is developed to source funding from donor agencies to get or keep its operations sustainable.

In sum, it needs to be foregrounded that while the illustration in this article treats sustainability planning in the form of steps, it is not to be considered that the approach is compartmentalized into discrete components or stages. The processes and steps involved in sustainability planning are fluid and therefore in practice flow easily into each other.

5. Addressing sustainability planning in research project proposals: an exemplar

In this section, sustainability planning in research project proposal development in higher education research is exemplified. This is done to drive home forcefully the thesis of the chapter that ensuring project sustainability requires more than addressing financial sustainability alone, and that donors look at critically, scrutinize and fund proposals on the basis of how they address financial sustainability vis-à-vis other different but equally important aspects of sustainability to ensure that these projects continue to exist to deliver required impacts even after primary funding from donors recede or dry out completely. To be able to do this, excerpts from a research project proposal submitted recently in responds to an Open Call for project proposals for funding from a renowned multilateral funding agency is drawn upon for purposes of exemplification. For purposes of succinctness of presentation, the issues to be presented are dealt with under three sub-headings, namely: information about the Open Call for proposals; addressing the development challenge and impact of the proposed African Centre of Excellence for

Educational Leadership and Teacher Training (ACE-ELTT); and outlining the sustainability plan for the proposed ACE-ELTT project.[3]

5.1 Information about the open call for proposals

The Africa Centres of Excellence for Development Impact (ACE Impact) project is an initiative of the World Bank which is being implemented through/by the Association of African Universities (AAU) to, among other things, improve the quality, quantity and development impact of postgraduate education (defined to include Master's and PhD degrees, and short term professional level courses and training) in selected universities in Africa through regional specialization and collaboration [26]. Each ACE Impact Centre proposed for funding is expected to identify an aspect of a developmental challenge (i.e. relative its host institution and country) that can be addressed with an integrated programme of work that is achievable over the period of four and half years project duration.

The ACE Impact project consists of three components, namely: establishing new and scaling-up well-performing existing ACEs for development impact; fostering regional partnerships for emerging centres and regional scholarships; and enhancing regional project facilitation, and monitoring and evaluation. This Call for Proposals, to which our research project team responded with a project proposal, is focused on the first of three components (i.e. establishing new and scaling-up well-performing existing ACEs for development impact).

As indicated in the Guidance Notes for the Open Call for proposals [26], Component 1 aims to build and strengthen the capacity of competitively selected ACE centres based in higher education institutions across West and Central Africa. To this end, each ACE centre is expected to address a regional development challenge through: higher quality postgraduate education addressing the skills gap and tackling priority applied research questions; leading regional education networks; and delivering short-term courses. In consultation with stakeholders, the centre are to update and/or launch new postgraduate degree programmes that are accredited to meet international high-quality standards. The centres are also expected to offer curricula that ensure that their students have the demanded competences upon graduating from their degree programmes, including analytical, digital, and entrepreneurial competencies.

According to the Guidance Notes for writing up proposals attached to the Open Call [26], partnerships with national, regional and global sectoral stakeholders (i.e. private enterprise, including but not limited to, multinational, regional, national or local enterprises; Ministries and other public authorities; chambers of commerce,; trade groups and professional associations; hospitals; policymakers; and other appropriate stakeholders) and academic institutions will ensure that the ACEs focus their activities on the education and research needs to solve specific problems associated with the targeted development challenge. Centres are expected to disseminate their research findings to policymakers and companies, as well as through international peer reviewed journals. Further, each Centre, according to the guidance notes, will be required to have policies backed by specific interventions in place to: (a) increase the number of females within their student body, faculty and academic leadership; and (b) ensure the overall well-being of their student population. Under this project, the Guidance Note adds, greater emphasis will be placed

[3] The research proposal described in this chapter passed all the assessment evaluations for funding, and was particularly hailed by assessors for its sustainability strategies outlined. That notwithstanding, it is instructive to concede that the project was not funded eventually owing to infrastructural lapses on the part of UCC to house the ACE-ELTT to support project activities.

on ensuring ACE host institutions are incentivized to undertake several activities, including those which promote good governance; data collection and management; and regionalization of their institutions, that is, taking steps to make their institutions regionally (and ultimately globally) competitive [26].

Overall, the expected results of the proposed project include:

- increase in number of students, in particularly regional and female, enrolled and graduating from Master's and PhD programmes;
- improvement in the quality of programmes including an increase in the number of programmes (and ACE host institutions) that obtain international accreditation;
- development impact attributable to the project, including improvement in the relevance of the education/training programmes and of the applied research evident through:
- increase in the number, and strength, of sectoral partnerships that lead to production and hiring of high-performing graduates, internships for students, application and commercialization of research results, advisory board participation, etc.
- increase in the amount of externally generated revenue, including from companies and other sectoral partners [26].

Thus briefly, it is against this background that the research proposal being described in the context of this chapter was developed and submitted in response to the Open Call for funding to establish ACE to address a pertinent developmental challenge facing Ghana, and by extension, West Africa and sub-Saharan Africa region as a whole.

5.2 Identifying and addressing the development challenge and impact of proposed ACE-ELTT

Literacy, Science, Technology and Mathematics Education and Leadership constitute a key to the socio-economic development of every nation. Knowledge in these five subject areas is critical for industrialization of Ghana and other sub-Saharan African countries that share similar characteristics as Ghana. It is for this reason that past and present governments of Ghana, for example, have identified and channeled (and still continue to channel) a lot of resources into Literacy, Science, Technology and Mathematics Education. These areas put together have been considered as one of the pillars for the development of the nation. However, learning outcomes in these critical areas remain critically low, resulting in high population of people who are semi-illiterate and have very little knowledge in basic science and mathematics. This situation contributes to low industrial productivity, poor sanitation, high levels of crime and eventually poverty within the Ghanaian society.

This developmental challenge could be attributed to a number of significant gaps in the Ghanaian education system. Some of the gaps include poor orientation and exposure of pre-service teachers to pedagogical approaches that draw on students' socio-cultural background to enable them understand school concepts. They also bring about institutional weaknesses in training effective and reflective teachers. These disparities equally affect leadership for learning and the training of well qualified teacher educators, especially in the areas of literacy, science,

mathematics, and technology. Other gaps include the low level integration of new technologies and approaches into teaching and learning in training institutions; the disconnect between learning outcomes and gender balance among students as well as staff in teacher education and leadership institutions; and the limited opportunities for professional development for educators (tutors and lecturers) in teacher training institutions to develop their pedagogical and professional and leadership skills.

Currently, there is no specialist training programme in pedagogy for tutors/lecturers who handle Literacy, Science, Technology and Mathematics at the Colleges of Education and Universities running Teacher Education programmes in Ghana. Many of the educators who teach courses in pedagogy are those who took a few courses in pedagogy as part of their graduate programmes and therefore do not have in-depth knowledge in the area. Consequently, many of the teacher educators have limited ability to connect their leadership skills to the actual learning of students in within the classroom setting. Presently, a number of educational institutions have been established in Ghana and are mandated to undertake capacity building functions. However, efforts to assist teacher educators to connect their leadership skills and dispositions to actual learning of students in classrooms appear to be fragmented, incoherent and dysfunctional.

To address the above challenges, we propose the establishment of the, ACE-ELTT, and seek to mount academic programmes and engage in vigorous enrolment drive in postgraduate studies in educational leadership and teacher training to improve teaching and learning in Ghana and Africa. This, we believe, will go a long way to enhance global recognition and visibility of ACE-ELTT as a Centre of excellence for educational leadership and pedagogy training for teachers in literacy, science, mathematics and technology. The education, teaching and learning activities at the Centre will include teaching with modules and internship. The teaching with modules will involve classroom work, laboratory work and practicum. For the internship, the Centre will set up an Outreach Unit to be coordinated by a senior and experienced academic who has the passion for professional development to superintend over the unit. The Outreach Unit will support students and candidates on placement decisions and place them as interns at pre-agreed institutions that have a working relationship with the Centre. The ACE-ELTT Centre's priority domains of Educational Programme are pedagogical and leadership skills development with the goal of addressing literacy, science, mathematics and ICT education that Ghana and the Sub-Saharan African region needs for economic and social advancement.

In terms of academic programmes, ACE-ELTT will be running M.Ed./M.Phil. as well as Ph.D./Ed.D in Pedagogy in Mathematics, Science, Technology, Literacy (in English, French, and other Regional Languages such as Kiswahili), Leadership and Management in Education, Educational Policy and Management, and Educational Planning. The ACE-ELTT project team further contend that the nature, content and approach of our newly designed programmes and courses for M.Ed, M.Phil, and Ph.D. will help improve the content and delivery of the existing programmes provided to our regular students in the mainstream. The Centre will run additional short courses on innovative approaches to teaching Science, Technology and Mathematics, as well as professional development courses in Action Research. Other short courses that will be run include: Literacy Programme Development, Approaches to teaching reading, National languages, Utilization of ICT for improved teaching and learning, Constructing Curriculum, utilizing teaching and learning materials, Developing Instructional Leaders (including developing school leaders as instructional coaches), Teacher management and deployment, Assessment and evaluation of learning, School based decision making, and Inclusive education, disability education, Assessment of cost effectiveness

of education programmes/education budgeting, Strategic Planning and Organizational Change, Access planning, school mapping, utilizing GIS, Education Management Information Systems (EMIS)/data analysis and interpretation/designing surveys, and Human resources management. These short courses will be run for mid-career professionals in education and students in Ghana and the sub-Saharan African region. The target group will include Lecturers, Tutors in teacher training institutions, school leaders, Circuit Supervisors (School Inspectors), Teachers and other professionals of education at the National and decentralized education units. The short courses will be developed in a consultative setting where the voice of the theory and science meets practice from industry and service providers.

In the area of research, institutional and individual research will form an integral part of the ACE-ELTT in addressing the development challenge confronting education leadership and teacher training in the West and Central Africa Sub-regions. The Centre will undertake research into innovative approaches to teaching, focusing its attention on issues such as instructional leadership, curriculum, teaching strategies and learning environment that draw on the social and cultural background of learners. Additionally, there are many cross-cutting issues pointed out in the main proposal that are relevant in Ghana and the Sub-region of Africa which we intend to take care of. These cross-cutting and interdisciplinary issues include technology integration in education, quality of education, and gender and equity. A typical research agenda that informs policy and practice concerning the cross-cutting themes is identified with the following research project areas: (a) promoting transformational instructional leadership for improved learning outcomes; (b) improving learning outcomes through innovative teaching approaches, using ICT; (c) improving the learning environment and outcomes for learners; and (d) challenges faced by tutors in the implementation of the teacher training curriculum.

To achieve the project objectives and outcomes of ACE-ELTT, we will forge partnership with individuals and institutions at the national, regional and international levels in areas of mutual interest. Based on our established approach, we intend to work with four groups of sectoral partners. The four groups are: national, regional and international agencies of education; national, regional and international development partners working in education in Ghana and/or within the Sub-Saharan Africa; Teachers and educational workers union/associations; national, regional and international research bodies. These groups were carefully considered since they are better placed as relevant and notable fellows in making efficient partners in developing the desired relationships in the education sector as well as carrying the banner of the ACE-ELTT project. In this regard, we have made preliminary enquiries and had spoken to 45 potential partners who have experience in either the Ghanaian or the sub-Saharan African education contexts regarding what they consider to be African educational development challenge. In the final anaylsis, the apparent determinant to making improved education and education services delivery that was found related to two variables, which are pedagogy and leadership. The goal is to address the developmental challenge identified by means of filling in the skills gap and thereby contributing towards poverty reduction and the creation of safe, strong and resilient communities in Ghana and the entire sub-region.

In the final analysis, the proposed ACE-ELTT expects to achieve both short and long-term outcomes upon the establishment and implementation of its programmes of activities. In the short term, it is expected that there will be: increased enrolment (with an estimated target of 21 doctoral and 280 masters students in postgraduate programmes in educational leadership and pedagogy in the area of literacy, science, mathematics and technology); trained, skillful and effective teacher educators in pedagogy and leadership; improved capacity of educators in research; improved methods of teaching in literacy, mathematics, science and technology; improved interest

of teachers in students' learning progress; improved students' interest, attitudes and learning outcomes in literacy and STM in particular; improved capacity of national and regional partners in performing their professional duties and/or roles. The long-term outcomes in ACE-ELTT's activities will include increased number of literate Ghanaian and African populace who have adequate mastery of literacy, basic mathematical, scientific knowledge and leadership skills. This will contribute to the supply of quality labor force to industry thereby resulting in high industrial output, improved GDP, reduction in poverty, reduction in crime, safe secured environment and development of strong, vibrant and resilient communities in Ghana and Africa as a whole.

5.3 Outlining the sustainability plan for the proposed ACE-ELTT project

As indicated in the Guidance Notes for the Open Capp for proposals for this project, funding for the project activities of the proposed ACE-ELTT is to be provided over the multi-year funding window by the World Bank under the AAU's Africa Centre of Excellence Programme. Beyond the period of ACE financial support, and in order to ensure that ACE-ELTT continues to play its role as Centre of Excellence for Education (that is, Educational Leadership and Teacher Training) and Research in the West African sub-region and beyond, a number of sustainability measures will be put in place and pursued vigorously. Given the national and regional and international character of the ACE-ELTT, the main focus of our sustainability strategy is on four key themes, namely financial sustainability; ongoing partnerships with sectoral stakeholders, continual improvement of the student educational opportunities and ongoing applied research that addresses improvement in students' learning outcomes, especially in the areas of Literacy, Science, Technology/ICT and Mathematics.

Obviously, financial sustainability is key to the survival of ACE-ELTT beyond the period of ACE financial support. To ensure financial sustainability, fees will be charged on academic and professional development programmes, even before ACE financial support ceases. The Centre will also commercialize its research activities to bring in some additional funds. The Centre will undertake funded research projects for institutions that engage it services as well as for its national regional and global partners. Findings from research activities will be published as books, which will be sold to bring in some extra income to support its programme of activities. The Centre's main/key staff will be drawn from the University. Hence, the Centre will not be responsible for payment of salaries and related benefits of its key staff. To ensure prudent financial management, the Centre will provide part-time teaching/research assistantship employment opportunities to graduate students who have the requisite qualification, knowledge and skills to support the Centre's activities. Again, the Centre will strive to diversify it sources of funding to also include exploration of the possibility of attracting extra funding from other local and international sectoral and institutional partners such as National Council for Tertiary Education, NGOs, individual philanthropies and multinational development agencies. Also, some of its partner institutions with staff with relevant qualifications and experiences will be recruited to support the activities of the Centre through teaching, research and delivery of short professional development courses. Lastly but not the least, volunteers from the academic institutions of higher learning from within Ghana, the sub-Saharan region and globally will also be sought and engaged in all its activities to help save cost.

In order to ensure continuous and sustained partnerships with relevant sectoral stakeholders, such as Ministry of Education, Ministry of Science, Technology and Innovation, West African Examinations Council, Teachers and Educational Workers Union (TEWU), UNESCO and JICA, beyond the period of ACE financial support, the Centre will ensure that these sectorial partners are consulted and involved in major decisions. Representatives from these sectoral partners will be involved in

identification of areas of interest in applied research and skills needs as well as development and innovations in the current and new programmes and short courses in order to sustain their interest in the activities of the Centre and make the programmes relevant to them. To ensure that the results from the Centre reach wider audience, the Centre will use communications such as social media profile, frequent emails to donor agencies about our activities and frequent update of the Centre's webpage. Again, in the area of sustaining on-going partnership with the relevant sectoral stakeholders, our partnership activities will be organized in ways that will provide a "win-win" situation for the Centre and its sectoral partners. For example, relevant sectoral actors will be incentivized to drive the research agenda of the Centre through commissioning applied research based on their organizational development needs while they (i.e. sectoral stakeholders) support the research costs. Similarly, staff of sectoral stakeholders with requisite academic/research skills and competencies will be drawn in to teach academic and short professional development courses of the Centre while the Centre in return will provide professional development training workshops and programmes for them based on their specific needs and demands.

For the continual improvement of students' educational opportunities to be sustained, ACE-ELTT will make concerted efforts to ensure that qualified and competent staff with the right attitudes and dispositions are attracted, recruited and retained both from Ghana and the sub-region to lead in teaching and research. This will ensure that the Centre activities are addressing the Development Challenges identified and thereby meeting the needs and aspirations of its clientele. As the Centre engages sectoral partners such as the Ministry of Education in its activities, these sectoral partners will be encouraged to provide employment opportunities for the graduates from the Centre. They will also be encouraged to provide for our students scholarships, internship grants and support for research activities. As an equal opportunity service provider, UCC and by extension ACE-ELTT will prioritize within its programmes and activities of delivery issues pertaining to social justice (and its related principles of equity, inclusion, fairness, disability, equality of opportunities and outcome, gender balance etc.) especially in dealing with students, collaborators and partner institutions. In order to stay competitive and make impactful presence in the sub-Saharan African region to improve the educational opportunities of our students, ACE-ELTT activities will be geared towards meeting high standards that are recognized internationally. Furthermore, the certification and accreditation of International Association of Universities (IAU) and Association of African Universities (AAU) will be pursued and obtained to ensure that our students are properly trained to become truly competitive at the global stage.

For on-going applied research that addresses ACE-ELTT's Development Challenge to be sustained in the long term, the Centre will strive to ensure that it is abreast with current local, regional and international discourses relating to developmental challenges facing Ghana and the entire sub-Saharan Africa. In so doing, the Centre will involve its partners in the identification of areas of interest in applied research to make its research agenda timeless and relevant. Also, while making concerted efforts to boost its existing relationships with research partners to keep its research agenda on-track, attempts will be made to develop new partnerships with institutions, stakeholders and individuals to explore "new" trends, opportunities and possibilities arising from existing and/or new development agendas.

6. Concluding thoughts

In this chapter, the issue of sustainability planning in research project proposal development has been addressed. In the process the various categories/types of

sustainability vis-à-vis the steps to sustainability planning in research project management have been identified and explored, although crisply. Through this, the question of how organizations, and for that matter research project teams, seeking funding from donors can ensure that their project proposals address sustainability issues in ways that satisfy financing criteria of the donors, while at the same time producing convincing evidence of how their project activities and programmes would have lasting impacts on communities of beneficiaries, has been exemplified. Typically, the effort and its corresponding evidence in this chapter lends support largely to Leon's [2] contention that on the threshold of the twenty-first century, faced with an increasingly competitive market, a globalized economy, and a context in which change is a constant rather than a variable, organizations and project teams seeking project funding must "think outside the box." They must, according to Leon, demonstrate the most advanced methods of income-generation they will use to achieve sustainability in all its facets and thereby ensure that their programme of activities fulfill their missions and have lasting impacts on target groups even after funding regimes for such activities elapse.

In this context, and in my candid view, therefore, the need to achieve sustainability planning in project proposals is both tangible and crucial as it enables organizations and project teams to make tremendous strides in increasing income generation internally and thereby see decline in donor dependence. While this may be the most obvious benefits of planning sustainability, organizations, higher education institutions and research project teams tend to benefit from sustainability planning additionally in the following four ways. First, having sustainability plans in place means that organizations, higher education institutions and project teams are enabled to make autonomous decisions that truly reflect local, rather than international priorities. That is, they do not dance necessarily to the whims and caprices of donors mainly because they have greater freedom and independence in deciding on their strategies and activities when they generate their own resources. Second, and following up on the first point, in the process of building sustainability strategies, higher education institutions most often routinely examine their operations and procedures which leads to internal strengthening, enhanced management and team building. Third, when a higher education institution or research project team has a clear sustainability strategy and a record of how they intend to generate internal income within its project proposal, this improves the institutional image of the organization or project team in the eyes of potential and existing donors and can enable them attract more external funding for undertaking project activities. Fourth, as higher education institutions and/or project teams demonstrate their sustainability plans and strategies in their project proposals, their relationships with partners in development programmes improve and they become recognized and incentivized to negotiate on the basis of exchange rather than as benefactor and recipient.

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Chapter 13

Community Learning Centres as Podia for Technology Enhanced Ubiquitous Learning: A Botswana Case

Rebecca Nthogo Lekoko

Abstract

This chapter explores ways in which technology can complement quality foundational education in Botswana. Quality here implies acquiring good foundation for future learning and appropriate lifeskills. Indicators of good foundation are monitored performance as pr the national policy including learners' positive attitude towards learning. Learning is systematically organized with clear requirements for progression from foundational to upper levels of education. Botswana's foundational education is the first 10 years of schooling. Currently, poor performance at the national Primary School Leaving Examination (PSLE) examination persists, amplifying unsatisfactory performance in foundation education. In the current inclusive practices, parents as co-players can be actively involved to strengthen and complement foundational years of education. Community Learning Centres (CLCs) can be used to facilitate involvement of community members like parents. CLCs are present in almost each village and readily available as platforms for community participation hence their potential to be podia for ubiquitous learning platforms. Ubiquitous means provision of continuous learning in and outside the school environment. For CLCs to truly function as podia for ubiquitous learning, they should be equipped to provide digital learning (must have computers, necessary software and reliable internet connection); they must be accessed for free and using flexible times; they must give credit to community members as custodians of cultural learning needed to promote the principle of 'balance', that is, accommodate principles of formal and one's cultural learning. Existing centres such as Kitsong Centres, Lifelong Learning Centres, Community Libraries and Community Halls can provide a diversified system of Community Learning Centres (CLCs) to serve as podia for ubiquitous learning. With direct investment and recognition, CLCs can complement or strengthen foundational years and indeed serve as centres for ubiquitous and lifelong learning.

Keywords: community learning centre, ubiquitous learning, foundational education

1. Introduction

Technology can be used to facilitate or complement quality foundational education. In Botswana, the goal of "providing an excellent start in education so that they (learners) have better foundation for future learning" has been dolefully attempted

especially in the period 2015-2020 [1]. Many children have moved from one level to another with low pass marks and some having failed.

Performance in Botswana's first ten (10) years of foundational education continues to decline indication the need for improvement. Education at this level can be improved or complemented with the provision of other forms of learning. For Botswana, structures and spaces located in the communities such as Kitsong Centres, Lifelong Learning Centres and Community Libraries can serve as learning centres that can complement formal foundational years of schooling. These centres are present in almost each village and readily available as podia for ubiquitous learning platforms. Ubiquitous means that learning ever-present in our contexts and continuous learning means learning in and outside the school environment. Community Learning Centres (CLCs) can facilitate the lifelong lifestyle needed to complement the standardized learning in formal classrooms. For CLCs to truly function as podia for ubiquitous learning, they must be adequately equipped to play this role. To attract children to use the CLCs, computers with necessary software and reliable internet connection must be in place. These should be accessed for free and allow flexible times. The suggested CLCs meet the stated requirements though they are not planned to actively facilitate learning together of children and parents as custodians of cultural learning.

The CLCs model proposed encourages a greater investment on ICTs that are compatible with community needs and are placed in community learning spaces. This is important because learning because part of the community's ways of life. Both learners and the community members are given the opportunity to learn together. In a situation like this, the principle of 'each one teaches the others' becomes significant in giving children confidence of being capable learners and co-creator of knowledge. Unlike in formal classroom environments, children do not rely on teacher-directed/instructed learning but children and their parents have freedom to decide what to learn, when and how. It is important that parents too be given this opportunity to learn with their children and help to see how what is learned connect to their context (situation that surround them in the community) thus promoting the development of lifeskills. Everybody, children and adult will appreciate learning as ubiquitous.

2. Overview of Botswana's foundational education

In 2018 Botswana's population was estimated at 2.33 million and this population context is as indicated below.

Every citizen has rights to education and the government of Botswana cogently stated that in providing any services, no-one would be discriminated either by religion, language, ethnic background, gender, etc. (Republic of Botswana, Presidential task [2]). **Table 1** is meant to shed light of ages at the foundational years of education. The population statistics indicate that young people (0-24 years) constitute a larger fraction of the population and the discussion in this paper focuses on this group.

To give a clearer overview of education in Botswana, one would have to reflect on both types (school-based and none school based) and levels of education from early childhood education to post graduate studies. However, the primary focus of this chapter is foundational years of schooling and the focus shall be at this level.

Botswana's education has a clear structure and pattern. Basic or foundational years of schooling as referred to in this chapter take a total of twelve years of formal schooling. This duration excludes early childhood education that has recently been recognized as an integral aspect of formal basic education. The twelve years has

Age structure	Males	Females	Proportion of the population
0-14 years	357, 003	350, 657	31.95%
15-24 years	207, 209	211, 629	18.91%
25-54 years	401, 082	450, 437	38.45%
55-64 years	51, 195	69, 835	5.46%
64 years & over	50, 206	65, 605	5.23%

Source: CIA World Factbook [3].

Table 1.
Population age structures, 2018.

been divided into seven (years) of primary education, three (3) years of junior secondary school and two (years) of senior secondary school [1]. The table that follows gives a bird-eye-view of the said continuum (**Table 2**).

Botswana has committed to ensuring that the right of every child to schooling is adhered too. First and foremost, public education is the responsibility of the government of Botswana through free school fees and feeding arrangements. As of now, there are two types of schooling paths, public and private schools. This means that all children 6 or 7 years who are ready to start primary schools are not barred by school fees. A handful of children (10%) of those eligible still do not go to school. The current policy driven education in Botswana is Education and Training Sector Strategic Plan [1]. Coming up with this plan was inspired mainly by the shortcomings of the current education systems; among them, poor quality of educated, restricted access or closed access for some children like those in the rural area, minority ethnic groups and people with disabilities. What other notable effort to ensure that all children get education is the launching of out-of-school education for children (OSEC). OSEC was launched in March 3, 2020, making a great milestone in efforts towards leaving no one behind in education.

While it is commendable that many children are in public schools, the country still faces challenges in providing an excellent start for all children from 0 to 16 years children to lay a good foundation for their future learning. Some children, perhaps many, judging by the performance in the exit standard 7 examination are whisked into progressing from one level to another because of automatic progression. It may be recalled that automatic progression is seen by some countries like Botswana as an open access strategies to basic education. Open access should be accomplished by quality education. Quality at the foundational years of schooling

Classification of education	Level of education	Grades	Learners' age	Duration	Award
Primary	Primary School	1 to 7	6 to 13	7 years	Primary School Leaving Certificate (PSL)
Secondary	Junior Secondary School	8 to 10	13 to 15	3 years	Junior Certificate (JC)
	Senior Secondary School	11 to 12	15 to 17	2 years	Botswana General Certificate of Secondary Education (BGCSE)

Source: [1].

Table 2.
Structure of the primary and secondary education system in Botswana.

means given learners a good start to proceed and succeed in their future learning. Successful foundational years are imperative to turn children aspirations for bright future learning and living into reality. Botswana needs to do more to provide a very strong start in education for its young children as the foundation is currently shaky.

A focus on the level of education that follows the foundational years also indicates that Botswana is yet to work hard to achieve quality education. This quality means that education must exhibit relevance to the needs of the country. This is learning that comes more as a result of the interplay of schooling and individual efforts. At this stage learners are to be given opportunities to develop their lifelong learning prowess; to be given a space for self-directedness and become active drivers of their learning. It is a learning discourse that develops "personal qualities needed for life and work" [1]. According to the ETSSP, this stage targets children of ages 16 to 18 years. The school for them is means to nurture personal qualities needed for life and work. Schools are there to continuously enable learners to "learn to improve their skills and enrich their lives" [1].

The continuum described in the two preceding paragraphs is illustrated in the figure below (**Figure 1**).

It has already been mentioned that the first goal of "providing an excellent start in education so that they (learners) have better foundation for future learning" has been dolefully attempted especially in the period targeted by the ETSSP, that is, 2015-2020. Many children have progressed from primary to secondary school with low pass marks and some having failed. In fact Makwinja [4] reveals that poor results have been regular trends in Primary School Leaving Examination, which comes at the end of 7 years of primary schooling; Junior Certificate of Education done at the end of the third year of the lower secondary education and the Botswana General Certificate of Secondary Education, that marks the end of their high secondary education, before proceeding to tertiary education. Many children in these years of school had been failing. Many reasons have been given for these failing performances.

In Makwinja's [4] study that explored reasons for continuous poor performance in schools, it was reported performance in schools has "plummeted year after year despite the various innovations embedded in the educational policies" (p. 48). She cites (p. 49) a number of reasons, that,

> *in remote rural areas, the way of life of the communities exacerbate the dropout rate since children may leave school to follow their parents during seasonal harvesting and planting seasons. Some may be affected by migratory patterns of semi-nomadic communities, language barriers and economic pressures on poor families,*

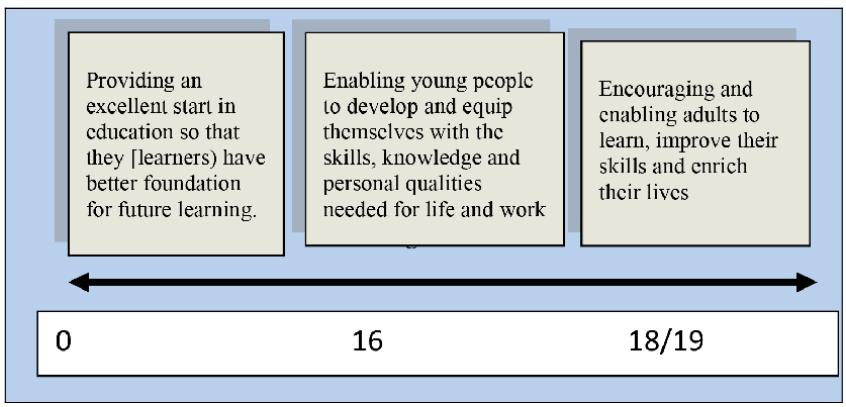

Figure 1.
Continuum of the education system. Source: [1].

Percentages/marks	Grade	Grade description
80-100	A	First Class Honours (Outstanding)
70-79.99	B	Second Class Upper Division (Very Good)
60-69.99	C	Second Class Lowe Division (Good)
50-59.99	D	Third Class (Pass)
40-49.99	E	Fail
0-39.99	F	Fail

Table 3.
Botswana education grading system.

> *especially the boys. At secondary school level, girls drop out more due to teenage pregnancy.... Some children from poor families or disadvantaged minorities work as farm labourers.*

She has also acknowledged that some children in the remote areas are challenged to walk long distance to school, making it impossible for them especially during inclement weather. These conditions affect interest and pattern of attendance as well as progression to higher levels of education hence poor results year after year. Makwinja clarified her contention of poor performance using 2014 Botswana General Certificate of Secondary Education (BGCSE). During this year (2014), "only 25.75% (5, 796) obtained Grade C or better. The rest of the candidates obtained Grade D or below" (p. 49). The grading system in Botswana follows this pattern (**Table 3**).

Formal education is expected to empower learners to move from lower to higher level of education. Those children who progress with poor performance end up joining hundreds of millions of children worldwide who reach young adulthood without even the most basic skills like calculating the correct change from a transaction [5]. For Botswana, this would be an unfortunate situation as education is one of the areas given receiving the largest share of total government expenditure. Expenditure on education, for example, averaged 28% of the total national budget in the years 2006/7 to 2009/10 [1]. The example of Botswana here is a case of high spending in education that does not translate into more learning and improved human capital [5]. It is important for countries experiencing this challenge to be very direct about how to address the situation. The proposed use of community learning centres (CLCs) as podia for ubiquitous learning is meant to complement poor performance at the foundational years of schooling. Poor performance is a consistent reminder that if levels of performance do not improve then young people, who are engines of productivity in the future are ruined [6]. As Adesina urged, all African countries should educate their youth in order for them to ignite a new age of inclusive prosperity on the continent. A good start should be at the foundational years of education.

3. Community learning centres as a potential podia for ICT driven ubiquitous learning

Discussion about potential use of technology to enhance learning cannot leave out an issue of partnership in learning. The government is responsible for public education in Botswana, for example, at the foundational level, free tuition and feeding is provided. A comprehensive and inclusive approach requires government

to partner with other stakeholders and indeed Botswana a long history of wide stakeholder involvement in the education delivery and financing [1]. This tradition would be most useful in the proposed involvement of community members at the foundational education level. Community Learning Centres (CLCs) could be powerful platforms for both use by community members as well as serve as podia for technology enhanced learning. CLCs are structures located in the communities to be used for free by community members. Examples of CLCs are shown below.

The proposed idea in this chapter is to use the above structures in the communities (CLCs) as podia for ubiquitous learning to complement the first ten (10) years of schooling in Botswana. Structures in **Figure 2** above are found in respective communities and provide free and easy access to computers and internet. As of now, these structures are not meant to be podia for completing the formal education systems. Rather, they are centres where people can go to access technology (computers and internet) for wide-ranging purposes like social connection, business ideas and lifelong learning purposes. A brief description of each CLC is given below.

3.1 Kitsong Centres

In 2009, Mascom Kitsong Center initiative was introduced in response to the global need of transforming small villages into knowledge based economies. The initiative is also meant to empower the youth and supports the current Vision 2036 pillar of Sustainable Economic Development by enabling digital literacy (The Patriot Newspaper) [7]. *Kitsong* Centres are operated through a private-public partnership Private Public Partnership (PPP) with the then Ministry of Communications, Science and Technology. As of 2018, there were about 110 villages

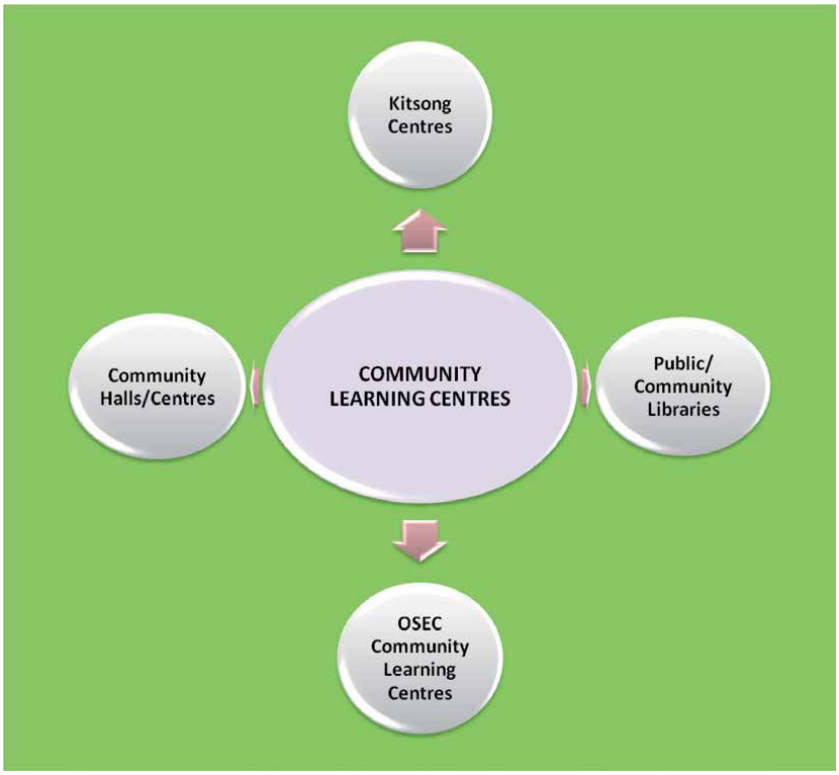

Figure 2.
Potential CLCs for ubiquitous learning.

across the country that is serviced through these centres. Services provided among others, include Internet, access to local content on important areas such as agriculture, entrepreneurship, financial and government support. Training, and business support and web hosting are part of the services. The services have made tremendous improvement in the lives of some Batswana.

A case to use to clarify the benefits of Kitsong centres is that of Sethamiso Derrick Lehutso who graduated Bachelor of Science (BSC) in Software Engineering and operate a Kitsong Centre in Kopong Village. He commends the centres as true liberating Information and Communications Technology (ICT) services for the residents of Kopong. He described the centres as playing a major role to inform, educate and create awareness on ICT among the different segments of the society. Village authorities like Dikgosi (Chiefs) have been taught how to use computers and Molefe Primary School teachers have been skilled in how best to use Microsoft word, Excel and PowerPoint and all these have been great success. As documented in The Patriot Newspaper [7], in all parts of the countries, the centres community members have received the following services

- email and internet
- computer training
- graphics design services
- mobile money services
- bought SIM cards and airtime
- secretarial services
- online company registration

In addition to services listed above, Kitsong Centres have benefited entrepreneurs and farmers in different ways like cattle registration system commonly known as (BAITS) and mapping coordinates and locations of boreholes and farms in the area. Currently, Kitsong Centres are favourable to success and the country can take advantage of this positive reception to re-orient them to work ad podia for ubiquitous learning as suggested in this chapter.

3.2 Public/community libraries

Provision of computers with internet in the public libraries has known as Sesigo project in Botswana was sponsored through Bill and Melinda Gates Foundation, Global Libraries Initiative on the African continent. It was launched in 2009. Public libraries in about 78 of the 98 libraries of different types of public, branch and village reading rooms have made possible to free access and use of computers and the internet by everyone [8]. The Centres provide a computer communication system to enable public access to integrated e-mail and online information, especially for rural people. They disseminate locally generated, user-friendly, relevant information and knowledge resources [9]. In 2013, at the officially closing a global libraries initiative project the then Minister of Minister of Youth, Sport and Culture Mr. Shaw Kgathi applauded the public libraries for having transformed the lives of Batswana in diverse manner. The minister noted that the project has accelerated government efforts to roll-out e-services to the public. As well, access to computers

and internet is a great learning opportunity to communities in general. He noted positive contribution such as training on basic computers and accessing the internet to improve livelihood, like engaging in vegetable gardening [10]. Speaking at the same closing ceremony, Sebusang indicated that the project has begun to provide opportunities to pre-primary school going kids to acquire computer knowledge [10]. The foundation has thus been laid to create a friendly culture of parents using the libraries together with their children to promote skills that help improve performance in the first ten (10) years of schooling.

3.3 OSEC community learning centres

Lifelong Learning Centres are targeted at improving literacy levels and advancing general basic education to deserving citizens, particularly out of school children [11]. The OSEC Community Learning Centres are operated by the Ministry of Basic Education (MoBE), Department of Out-of-School Education and Training (OSET). Unlike the Kitsong and Libraries, these centres are not equipped with computers and internet for free use by the public. These centres provide specialist services to the out of school community, including those learning at OSEC Sites [11]. These centres provide learning and can be easily equipped with the needed network computers to provide technology enhance ubiquitous learning for parents and their children. They can be organized to promote communities with free and relaxed learning.

4. Advancement of CLCS AS podia for technology enhanced ubiquitous learning

A number of challenges experienced in the Botswana foundational years of schooling have been cited earlier in this chapter and some can be addressed by learning that takes place within community learning centres (CLCs), as proposed in this chapter. CLCs, for example, can contribute to the development of lifelong learning lifestyles and life skills that can help improve children's school performance. For CLCs to be effective, Botswana needs an appropriate policy together with the right mix of resources such as networked computers available for free and friendly environments and flexible time for the use of computers. It has already been stated that CLCs are found in many villages and some like Kitsong and the public libraries are equipped with computers and internet. Those with computers and internet are said to be indiscriminately benefitting the communities.

Furthermore, the proposed idea of using CLCs as podia for ubiquitous learning would mean organizing these centres to promote participation of community members as partners in the foundational education. Learning together of families and their children is a powerful strategy of fostering positive attitude towards lifelong learning and this arrangement can challenge educational disadvantage (Family Learning [12]). The goal is for parents to be actively engaged in their children learning in order to help improve their performance at foundational years of schooling. CLCs are not meant to duplicate education in schools but rather to give parents the platforms to take advantage of internet connectivity in CLCs to ignite lifelong learning habits; skills in reading, promoting creativity and thinking; using games to improve performance in a number of subjects like mathematics, languages and practical subjects. Again, with the involvement of parents or community members, embedding lifeskills in learning is possible. Skills mentioned above are key pillars for future learning and school performance of children who have acquired these skills can improve.

Finally, as stated in the Botswana Education, Training Sector Strategic Plan (ETSSP -2015-2020), "Botswana has a long history of wide stakeholder involvement in the education delivery and financing" [1]. This history would be most useful when deliberating in the proposed coordinated systems of Community Learning Centres (CLCs). To work towards equipping CLCs to function as podia for ubiquitous learning that can complement the first 10 years of education requires pulling of resources not only from the government but various sectors like the industry, the public and academia. Computers with internet have to be available to attract both children and their parents. Using computers with their parents would help children to be watchful and direct their children to access information that give them knowledge using in their education and homes. It is believed that the quality of learning outcomes can be promoted by aggressively harnessing Information technology to support teaching and learning in all schools and communities [13] and the proposed model of community learning centres advances this idea. Through this model, Botswana would invest in ICT that reinforces learning that acknowledges community members as learning mentors for their children. In this way, strong interpersonal relationship and unity of family can also be achieved. This type of interconnectedness gives a common purpose to families to ensure that none of their children is deprived to learn like others because of lack of access to computers and internet.

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Chapter 14

Limitations and Proposals for Improvement of the Bilingual Program of the Community of Madrid in Public Primary Schools

Esmeralda Sotoca Sienes

Abstract

The aim of this study is to analyze the limitations of the Bilingual Program of the Community of Madrid and present proposals for improvement to solve them. The methodology used is based on the collection of information through different sources. The limitations indicated are as follows: the attention to the students with specific need of educational support; the coordination of teachers; teacher training; English language assistants; human resources; material resources; the motivation of students, teachers, and English language assistants; the methodology; the loss of content and vocabulary in the mother tongue; the need for language academies or extracurricular activities in English to complete training; and segregation. It is concluded that the greatest and most urgent limitation of the program is the attention of students with special educational needs. Proposals for improvement are presented, especially in relation to training and coordination with specialist teachers.

Keywords: bilingual education, bilingual program, limitations, proposals for improvement, primary education

1. Introduction

In this work, the basic characteristics of the Bilingual Program of the Community of Madrid (hereinafter, C.M.) will be analyzed, the factors that can influence the success of the bilingual programs will be presented, and the limitations and proposals for improvement in relation to this program will be shown. Finally, the conclusions that have been considered most relevant are indicated.

In the context of the European Union, language learning is one of their concerns. In this way, interest in the implementation of bilingual programs in schools in Spain has been growing in recent years, demonstrating that this fact is the proliferation of different programs in the autonomous communities. However, there are not so many studies that evaluate, analyze, or compare them and hence, the importance of studying the limitations and proposals for improvement in relation to these programs.

The Spanish Royal Academy (RAE) defines "bilingual" in reference to a bilingual school as one that provides its education in two languages. Article 17 of the Organic Law of Education (LOE) establishes that Primary Education (hereinafter, P.E.)

helps to develop in children the skills that allow them to acquire, in at least one foreign language, the basic communicative competence that allows them to express and understand simple messages and to deal with everyday situations. Order 796/2004 refers to bilingual education as the one that allows teaching in English at least one third of the weekly teaching schedule. In this way, the purpose of the C.M. Bilingual Program is not that the students are bilingual but that the students reach the highest possible level of linguistic competence in the second language.

The C.M. Bilingual Program was implemented in the 2004/2005 academic year in 26 public schools. Currently, more than 300,000 students, ranging from preschool to Baccalaureate and vocational training, benefit from these teachings. In the 2008/2009 academic year, it was also implemented in charter schools.

It is based on the Integrated Content and Language Learning approach, which is characterized in that the student not only learns English as a foreign language but also learns some of the subjects in English in order to acquire content in that language. The English language becomes a vehicular teaching language or learning language. The subject of First Foreign Language-English is taught in English, along with two other areas of the curriculum, social sciences and natural sciences preferably. All areas of the P.E. curriculum could be taken in English; however, an exception would be granted for mathematics and Spanish language and literature. The areas taught in English will follow the curriculum established by the C.M. and will be taught entirely in that language. The objective of communicative competence is to obtain an A2 level at the end of P.E. (according to the Common European Framework of Reference for Languages, hereinafter CEFR).

Teachers who teach subjects in English at Primary and Secondary Education must be qualified (with a C1 level of the CEFR) and the teachers who teach the Advanced English curriculum in Secondary must be accredited. These teachers receive a productivity supplement and are assisted by conversation assistants, who are native university graduates. There are specific foreign language training plans for teachers, coordinators, and management teams that include courses that are taught both in Spain and abroad, as well as online. There are also European training programs such as Erasmus + or Etwinning, international programs such as Global Scholars, the Twin Schools program...

The objective of this study is to analyze the limitations of the Bilingual Program of the Community of Madrid and present improvement proposals to solve them. The methodology used is based on the collection of information through different sources.

2. Factors influencing the success of bilingual programs

Below are a series of contributions from different authors regarding the factors that influence the success of bilingual programs. Thomas and Collier [1] indicate, among these factors, the potential quality of the type of program, the quality of the type of program in relation to its implementation, the breadth of the program's instruction focus, the quality of the school's learning environment, and the quality of available instructional time.

Lewelling [2] emphasizes factors that promote or inhibit success in the second language: cognitive development and linguistic competence in the first language, age, uninterrupted academic development, attitude, and individual differences.

Cummins [3] notes that the outcomes of bilingual programs can be improved by understanding the nature of the English language and its links to Spanish by teaching for L1/L2 transfer through bilingual instructional strategies, which promote L2 mastery and literacy, active promotion of literacy engagement, exposure of students

to creative activities in both languages, and encouragement of reading at school and at home (L1 is a speaker's first language and L2 is the second).

Thomas and Collier [1] point out a series of factors for a successful reciprocal immersion (a kind of bilingual education), which could be applicable to the C.M. Bilingual Program: A development over time of the bilingual instruction program of at least 6 years; focus on the core academic curriculum; quality teaching in reference to the four basic skills in both languages, in addition to integrating them into thematic units; curricular separation of the two languages of instruction without performing translations or repetitions of the subjects; representation of a single language for each teacher; reinforce the concepts worked through both languages in a spiral curriculum; use of the non-English language for at least 50% of instructional time; an additive bilingual environment that adds a new language at no cost to the first one; support an active collaboration between management teams, teachers and parents; promotion of positive relationships between classmates and between teachers and students; and highly qualified and competent teachers in the language of instruction.

Madrid and Roa [4] states:

> *Studies on the evaluation of the effectiveness of bilingual education have been proposed from various points of view and have been developed around different groups of variables related to students, family, community, school, types of program, coordination and organization of the programs, teacher training, teaching and learning processes, exchanges and stays abroad, materials and resources, assessment techniques, and the results obtained by the students. Therefore, it is the success of bilingual programs that depends on the integration and harmonization of several factors that interact appropriately (Pérez Cañado, 2016; Ortega Martín, Hughes and Madrid, 2018). (p.85).*

In the study by Madrid and Roa [4], teachers pointed out the importance of didactic preparation in CLIL, training in curricular content, and having sufficient human and material resources.

3. Limitations of the bilingual program of the C.M. and proposals for improvement

The limitations of the C.M. Bilingual Program that have been considered more important are listed below, as well as the respective improvement proposals. This program has numerous limitations, but also strengths compared to the bilingual programs implemented in other Autonomous Communities. Due to its long history, essential aspects such as teacher training and endorsement have been improved. However, the most significant limitations must be analyzed.

3.1 Specialized attention to students with a specific need for educational support

A pending and fundamental issue on the part of the Educational Administrations is the lack of support in the areas taught in English for students with special educational needs (hereinafter, SEN students). According to article 73 of the Organic Law of Education (LOE 2/2006, 3rd May [5]), they would be the students who require, during a period of their schooling or throughout its entirety, certain supports and specific educational care derived from disability or serious behavior disorders. The rest of the students with a specific need for educational

support have not been considered either, that is, the students who require different educational attention than the ordinary for presenting special educational needs, due to specific learning difficulties, attention deficit disorder and hyperactivity, high intellectual capacities, late incorporation into the educational system, or personal conditions or school history (article 71 of the consolidated LOE).

The C.M. [6] states that during the 2017/18 school year, the percentage of SEN students in nonbilingual public schools was 4.0 and 2.5% in bilingual public schools. He also points out that this difference is getting smaller, increasing the presence of SEN students in bilingual school centers.

The Federation of the Community of Madrid of Associations of Parents of Students "Francisco Giner de los Ríos" (hereinafter FAPA), in 2009, states that SEN students normally have problems acquiring the skills of the program and that they are not given an adequate answer. It also exposes the problems raised by students who do not join the program from the beginning (nonbilingual repeaters who enter the program by repeating the course) and students with extraordinary schooling (students who enroll after school has commenced).

Laorden and Peñafiel [7] indicate that more than two thirds of the management teams surveyed in their study state that the Bilingual Program makes intervention with SEN students difficult and makes it more difficult to cater to their needs. Very few claim that English classes motivate SEN students. One third points out the difficulties these children face that prevent them from following classes in English. A slightly lower percentage shows that they need more adaptations and have less follow-up. In relation to immigrant students whose mother tongue is different from Spanish, more than half of the respondents affirm that the project is carried out in the same way as with ordinary students, that is, they do not observe that the difficulties of the Bilingual Program affect them as much as the SEN students.

Arigita [8] found in her study on the Bilingual Program of the C.M. that the level of proficiency in English reached in the section "language to which the students are exposed: vocabulary-topics" by the students who finish the second year of P.E. is higher, in average values, in the group of students who do not have any students with a specific need for educational support. According to the author, the (significant) curricular adaptations seem to cause a slowdown in the teaching-learning process of the rest of the students and a decrease in the performance achieved at the end of the school year.

FETE-UGT Madrid [9] carried out a survey of teachers about the Bilingual Program of the C.M. and discovered that 94% of the Primary teachers and 87% of the Secondary teachers affirm that this program hinders the integration of the SEN students and students with a specific need for educational support in the areas taught in English. Among proposals to improve their integration they recommend: flexible groups or support teachers in the classroom, teach all the subjects in Spanish and that the SEN students receive more support sessions from the special needs teacher and the speech and language therapist while in the home classroom subjects are being taught in English, consider English as another instrumental area and that students can receive reinforcements in that area, and adaptation of curricular materials and special needs teacher also teaching subjects in English.

FETE-UGT [9] points out, among others, the following proposals taken from a teacher survey: a bilingual project that caters to the diversity of students; no more than 15 students per classroom, splitting groups of pupils into levels; teaching more subjects in English but with support for students who have difficulties; duplication of teaching hours, teaching science in Spanish and English for example; and use of texts in both languages.

Lova et al. [10], although their study refers to the bilingual program of another autonomous community in Spain, they discuss the theme of the adaptation of

students with a specific need for educational support to bilingual classes. These authors indicate that all the teachers surveyed highlighted the complexity of incorporating students who have taken nonbilingual courses and that when they repeat the course, they join bilingual courses. The teachers also included problems and difficulties with SEN students and immigrants. It also points out the importance of increasing support in subjects taught in English in relation to SEN students and immigrant students.

Acción Educativa [11] argues that it is necessary to guarantee that improvements in the educational system benefit everyone and, if this is not the case, priority should be given to the most disadvantaged, SEN students and students who present learning difficulties. It exposes the need to introduce measures to ensure equity and inclusion in bilingual programs, designing specific support programs for those who present greater difficulties. In addition, it includes as a proposal for improvement, the introduction of educational support and reinforcement measures that guarantee that all students are able to speak two languages at the end of their schooling.

In short, as proposals for improvement in relation to SEN students, I propose: (1) improve the training of the special needs teachers and the speech and language therapists in relation to SEN students care in the bilingual program, (2) specialize certain bilingual schools in the attention to SEN students, (3) counting with more material and human resources, (4) offer resources, support and adapt bilingual school centers that have preferential attention for students with autistic spectrum disorder, (5) use texts in both languages, (6) adapt curricular materials, (7) use a spiral curriculum that allows the same contents to be worked in areas taught in different languages, (8) design specific support programs for SEN students, and (9) provide more special needs teachers and speech and language therapists to bilingual school centers. With regard to this last aspect, it is necessary to incorporate teachers specialized in special needs with the bilingual endorsement, in addition to the special needs teachers who already provide support in instrumental areas. Additionally, in the schools in which said specialist already has the endorsement, he/she must be allowed to give the support in English and in the areas taught in English.

In reference to attention to diversity in general or students with a specific need for educational support, I propose, in line with what FETE-UGT points out in 2014, a ratio of no more than 15 students per classroom, split by levels or flexible groups, more support teachers within the classroom, work the same topics in subjects taught in English and Spanish so that students acquire vocabulary and content in both languages, use of texts in Spanish and English, adapt curricular materials in English...

Finally, it should be noted that the proposals made correspond to what was stated by Madrid and Roa [4] in the sense that the success of bilingual programs depends on the integration and harmonization of various factors that interact appropriately.

3.2 Coordination

Lova and Bolarín [12] affirm that CLIL methodology is based on the coordination effort between teachers and conversation assistants to guarantee the quality of teaching and the success of the bilingual program. They also consider that the coordination is carried out outside the school, since the exchange of experiences with other schools constitutes a training resource and an example of good practice, which could help the continuity of the program in Secondary.

Gerena and Ramírez-Verdugo [13] state that teachers report an increase in the teaching hour load with the bilingual program, as well as a lack of time to plan work with the team of teachers and assistants.

In the study by Laorden and Peñafiel [7], the management teams indicate that it would be positive if the teachers involved in the project had a greater time offload to dedicate to coordination and teamwork. They also expose the need for greater coordination through meetings within the school and with other schools.

Halbach [14] points out the importance that all teachers in bilingual schools coordinate their teachings on the topic being studied. It is about integrating the teaching of language, in addition to content teaching, while simultaneously teaching the same topic in the different subjects (not only those taught in English). Such an integration will support seeing it from different angles that together form a unit that has meaning and that students can remember. In this way, by coordinating all the subjects around a theme, the fragmentation of the curriculum and of the subjects taught in Spanish and English is avoided. The topics and vocabulary studied will be known by the students in both languages, further developing the mother tongue.

Durán [15] considers as one of the most positive consequences of bilingual programs the fact that they promote coordination and group work, especially among English teachers and other teachers in the bilingual program.

Thus, in relation to the improvement proposals, it is essential to promote and facilitate the coordination of the bilingual teachers, other teachers who teach the bilingual program group, the assistants, as well as the coordination with other schools. For this, the educational administrations should expand the human resources in the schools so that the teaching staff involved in the program are freed from certain teaching hours, as well as nonteaching hours, dedicating that time for coordination. This allocation of time during school and nonschool hours within the working day is necessary not only to maintain coordination sessions, but also to prepare materials, research, collaboration...

Taking into account that the contents should not be worked on in isolation but instead under a holistic vision, coordination is essential. For this, the different subjects should be worked on in a coordinated way, integrating the contents through different subjects taught in different languages (Spanish and English). In this way, for example, the contents that are studied in science, will also be worked on in the rest of the areas (Spanish language, mathematics...) to make sure that the students are learning content and vocabulary in English and Spanish. You could do readings, reading comprehension activities, dictation, problem solving... on the subject being studied in science. Only through close coordination of the teaching staff is this possible.

3.3 Teacher training

Gerena and Ramírez-Verdugo [13] point out that the primary and secondary teachers and the English language assistants of the Bilingual Program of the C.M. consider that not enough training is offered, and thus, they request more training and support in methodology and in the way of integrating assistants in the class.

Acción Educativa [11] argues that teachers who teach the second language must be required to have a sufficient level of communicative competence, as well as specific training on the alternation of linguistic codes and on CLIL methodology.

Laorden and Peñafiel [7] state that management teams indicate that the training received is scarce and perceive the need to continue training.

FAPA [16] states that there is a problem with the training and accreditation of teachers who are part of the program. They point out that, although this problem did not initially exist, progressive implementation requires a greater number of specialists. In this sense, the FAPA proposes providing the schools with native teachers if there are not enough trained teachers to teach this program.

In relation to the improvement proposals, the FAPA [16] proposal to provide native teachers to the schools would create a very difficult situation, since in order to access to public teaching, you must overcome a public examination and it is not specified in what way this teaching staff would access. The solution is to train teachers, encouraging them, and facilitating their training. In this sense, FETE-UGT [9] points out a series of proposals made by teachers in relation to the training of the bilingual program: (1) expand the current insufficient offer, (2) extend training to all, (3) offer varied and specific training (other areas, attention to diversity...), (4) make training compatible with work and personal life (licenses, paid leave, during school hours, during the summer or weekends, more training centers or training in the school itself), (5) training aimed at obtaining the linguistic qualification (during the course, by blocks and free), (6) to give a greater role to the Official Language Schools, (7) to promote training abroad through courses, and (8) exchanges with teachers from other countries and stays abroad.

The C.M. [17] indicates as a proposal for improvement of the Bilingual Program of the C.M. encouraging collaboration and exchanges, both for students and teachers, with other schools.

In short, the training of bilingual teachers must be a priority and there must be a continuous, varied, quality offer of courses accessible to all, because it requires ongoing training. The Administration must facilitate the completion of courses (inside and outside school hours, on weekends and holidays, greater ease to carry out seminars and work groups in the school itself with the presence of experts, more training centers...) and encourage teachers to continue training voluntarily (continue with the remuneration supplement for teachers who teach areas in English, paid study licenses and training permits, courses during school hours, courses and stays abroad courses). In relation to this last aspect of encouraging teachers, recognition of their work is essential.

Likewise, the empowerment of teachers must be facilitated through courses accessible to all teachers at no economic cost. In other words, it is not just about improving the continuous training that bilingual teachers need, the channels to obtain linguistic qualification must also be facilitated through courses, specific training, preparation for the exam...

Other proposals for improvement would be: carry out workshops to exchange experiences between different bilingual schools recognized with credits; coordination with other bilingual school centers to present different ideas, materials, experiences, and carry out joint activities; promote training abroad through courses and exchanges with teachers from other countries...

Teacher training should be integrated into their working day and, if possible, within their own school, as is the case in other countries. For example, in Singapore, only one third of their working day is direct teaching with students; during nonteaching hours, teachers can train, research, collaborate, and coordinate with other teachers and schools during their working hours. We must also highlight the prestige and value that is given to teachers in that country. Another example that could be presented is the case of Finland in relation to the reduced number of teaching hours for teachers, the rigorous selection process, and the prestige that teachers have.

It should be noted that in this section, teacher training in general has been addressed, taking into account the existence of a double aspect: linguistic and methodological. Section 2.8 will refer to the methodology, regarding the linguistic aspect, in the C.M. There are two procedures for obtaining linguistic endorsement according to Order 1275/2014: (1) posessing degrees or certificates issued by certain institutions, so that teachers are required to accredit a level equivalent to C1 or C2 of the CEFR. But such titles or certificates must have been issued by one of the

prestigious institutions included in the call and must have been obtained less than 5 years ago at the time of submission of the application for each call. (2) By passing knowledge tests to obtain linguistic qualification. These tests consist of two phases, in the first one reading comprehension, written expression, listening comprehension, grammar, and vocabulary are assessed. And in the second, an interview is conducted in the foreign language to assess communication skills.

It is important to note that the intention of the C.M. is not that the students are bilingual but that the students reach the highest level of linguistic competence in the second language that they can. Teachers, in most cases, are also not bilingual. Therefore, the objective for them must be to constantly train and develop their skills.

Similar results have been found in other autonomous communities in relation to the demand for higher quality training for teachers and the need for teacher coordination [18–20].

3.4 English language assistants

FETE-UGT [9] states that the majority of teachers (61%) positively value the work of conversation assistants. Those who do not value them positively or negatively point out that it depends on their training, interest, and enthusiasm plus they express the added difficulty that they do not speak Spanish. Gerena and Ramírez-Verdugo [13] state that students consider the assistants responsible for their linguistic and cultural advancement, and that they are very helpful in practicing conversation, intonation, pronunciation, grammar, fluency, communication skills, and exam preparation. On the other hand, it is also pointed out that for some teachers, team teaching in addition to the class preparation and dynamics takes a lot of work and time. Another negative aspect that has become exposed is the lack of training and experience in teaching by the assistants.

Frigols and Marsh [21] indicate a series of requirements for the correct development of the work of the teaching staff in partnership with the conversation assistant and students: always communicate in English with the English language assistant, take advantage of the presence of the conversation assistant as a resource to improve their linguistic competence, use the English language inside and outside the classroom with the students most of the time, plan the sessions where the assistant is present so that the activities are mainly related to listening and conversation skills, coordinate with the assistant to jointly plan the sessions and avoid improvisation, and objectively evaluate the development of the program, making any improvement proposals it deems appropriate.

Frigols and Marsh [21] point out tasks that can be assigned to the English language assistant under the coordination and supervision of the bilingual project coordinator: always communicate in English in the educational environment, teach conversation classes to the teachers of the school, act as linguistic support for teachers, get involved in all the activities carried out in the sessions, attend the coordination meetings to plan together, provide adequate didactic material whenever possible, transmit traditional aspects of the culture of their country, integrate into the educational environment, attend the support and follow-up meetings called by the educational administrations, help in another class in the absence of the specialist, objectively evaluate the development of the project by making improvement proposals, and present a final report.

In relation to the improvement proposals, it should be noted that the conversation assistants are a very important resource, but they should be better utilized. For this, it is essential that the training of English language assistants is related to education and, if possible, that they have had experience and/or practices in

schools. It could be added as improvement proposals: always communicate within the educational context (both inside and outside the classroom) with teachers and students in English, coordinate teachers with the assistant to maximize their participation in classes in relation to conversation and listening activities planning their performance in writing, prepare materials together (teacher and assistant), co-evaluate together and continuously introduce the improvements they deem necessary, dedicate at least one weekly session, outside of direct teaching hours, to training everybody who is interested in English (both in the Bilingual Program and not), presentation made by the assistant in relation to their country of origin, culture, traditions...

3.5 Teaching staff

Laorden and Peñafiel [7] indicate that the majority of management teams recognize that a greater number of teachers is necessary, especially support teachers.

FAPA [16] points out the lack of human resources and its progressive decrease. There is another added problem, which is that of substitutions or leaves of absence, since they are not always carried out by teachers with the bilingual endorsement.

In relation to the staff, FETE-UGT [9] states that the implementation of the Bilingual Program has negatively affected the composition of the teaching staff of the schools, causing job cuts, forced displacement and causing salary and administrative differences.

The improvement proposals would be: an adequate endowment of human resources, not skimping on them and especially supporting the most disadvantaged populations, the students with a specific need for educational support and, more specifically, the SEN students. In this way, the presence of more support teachers, in general, and special needs teachers and speech and language therapists, in particular, is essential.

In reference to the teaching staffs' plans, the official teachers (defined as teachers that passed the public examination and obtained a post in a school and they want to continue working there, sometimes they have been working there many years) must be respected, and the staff must be modified without affecting them. For example, a vacant Primary position for retirement transform it into a Foreign Language with bilingual endorsement, consult the management teams about the possibilities of expanding bilingualism without affecting the official teachers, use as teachers to support those whose profile is no longer necessary, use the different specialties of the teaching staff to make a change of specialty within the school and not displace him/her...

In short, the issue of teaching staff with the consequent forced displacements and job cuts is avoidable, because there is a lack of teachers in schools in general, and in bilingual schools, it is even more necessary in order to give adequate attention to those students who show more difficulties in learning.

3.6 Material resources

Laorden and Peñafiel [7] point out that the management teams demand more spaces for the bilingual project (classrooms, libraries, or language laboratories). In relation to the material received and budget, they consider that it is insufficient.

FAPA [16] exposes the lack of material resources and its progressive decrease.

However, the subject of material resources is not a recurring theme in the studies, because the bilingual program of the C.M. is accompanied by an economic endowment. Nonetheless, it is true that the more resources teachers have, the greater the chances of success of the program. The Community of Madrid [6] notes that there

has been a progressive increase in relation to the resources of the bilingual program, including materials.

Regarding the spaces dedicated to the program, whenever there are available spaces, their creation should be favored in order to split groups of pupils into levels or have classrooms dedicated specifically to languages.

3.7 Motivation of students, teachers, and English language assistants

In relation to students, de la Rica and González de San Román [22] explain the importance of student motivation. Laorden and Peñafiel [7] indicate that very few management teams surveyed in their study state that English classes motivate SEN students and point out the difficulty these children face to follow classes in English. In reference to the motivation of teachers and assistants, Gerena and Ramírez-Verdugo [13] indicate that, in their study, they were very satisfied with their role in bilingual programs, that teachers considered bilingualism as very important for the future and as a way of preparing students for globalization, and that assistants considered themselves as promoters of English and perceived the motivation of students in relation to bilingualism and learning more about American customs and culture. Teachers and assistants perceived motivation on the part of the students and their interest in becoming bilingual. The students were aware of the benefits of bilingualism and felt pride and comfort when speaking in English, not showing fear of making mistakes, they also considered that their future would be better for their participation in the bilingual program. The aspects that motivated them the most were: establishing relationships with native English speakers, learning through videos, songs, the Internet, and games. On the other hand, they negatively value the extra effort that it implies in relation to a greater concentration and more study time and homework. Some students indicated that they believed they had losses in knowledge of content and vocabulary in Spanish.

FAPA [16] states that the initial illusion of teachers has been fading with the passage of time, sometimes even leaving the teaching program that they started and moving to nonbilingual schools.

Regarding the improvement proposals, different incentives have been indicated in the previous sections: economic; reduce school teaching hours; coordination with teachers, assistants and other schools inside and outside Spain; exchanges, training and stays abroad; training during school hours; etc.

In reference to this last aspect, one of the greatest incentives for teachers would be that training integrates into their working day, including times for research, collaboration and coordination with other teachers and schools.

Regarding student motivation, methodological aspects that promote student interest and motivation are described below. The improvement proposals included in the section on students with a specific need for educational support can also be considered.

3.8 The methodology

Halbach [14] indicates that using an active methodology constitutes a way to overcome the linguistic difficulties encountered when teaching or learning a foreign language that is decontextualized. This author also points out that the fragmentation of subjects should be avoided by intertwining them with each other, presenting the same subject from different points of view. Avoid doing the same activities in both languages but complementing them to give them meaning and to remember them. It also highlights the importance of learning through action, promoting active participation and practical experimentation. Lastly, it states that the contents and

activities must revolve around themes to provide real, motivational moments of use of the language with a clear purpose.

Gerena and Ramírez-Verdugo [13] expose a series of effective practices that are not used very often in the C.M. Bilingual Program classrooms: activation of prior knowledge before seeing the topic, use of questions and orderly reasoning activities which include advanced and critical thinking skill development, student-centered teaching, encouragement of active student participation, pair or group activities and hands-on interactive activities, and effective use of linguistic and cultural knowledge of English language learners. Besides the fact that most of the classes focus on listening, reading, and writing, they should instead focus on oral communication. In this sense, they indicate the need to promote the development of oral language.

It is important to mention Johnstone, Dobson, and Pérez Murillo [23] for the contributions they make in relation to good practices and the methodology used. However, it should be noted that their study focuses on the external evaluation of the British Hispanic integrated curriculum in public schools. That is, it is the other bilingual program of the C.M., that of the Ministry of Education and Science and the British Council. These authors expose the following strategies of good teaching practices focused on the specific focus of the language: it encourages students to focus on linguistic form, function and meaning, tries to be precise in transmitting meaning, introduces deliberate errors for the students to identify and correct, ask the students to expand their oral responses using more vocabulary, highlight the different words (nouns, verbs...) with different colors, allow a reasonable degree of use of Spanish, help students to look at keywords, develop clear definitions, describe object properties, contrast concepts, develop classifications, and use the passive voice.

Johnstone, Dobson and Pérez Murillo [23] point out the following good practice strategies focused on the language used for teaching in general: involve all students, check student results, show willingness to collaborate with peers, stay firm but pleasant, uses visual support, provides clear explanations to the students about what they have to do, reviews the results of the students with them, clearly indicates how to use the new technologies in the classroom, the teachers presence is important in the classroom and they are available, manages to keep the students' attention, avoids giving them everything solved, presents the tasks clearly, draws up a list of errors to discuss later with the students, selects appropriate web pages for the level of the students and helps students find their own solutions.

In short, in relation to the improvement proposals, the use of good practices by the teachers is essential, as well as an active, participatory, and motivating methodology with a transversal treatment of the topics in the different subjects and prioritizing oral language. In this way, teaching should be focused on the student and not on the teacher, that is, not conducting expository classes only by the teacher, but involving all students and promoting their active participation, as well as experimentation. To do this, the teacher must be willing and available to help students who need it, especially SEN students, based on the student's level of competence and selecting the appropriate resources at their level. It should help students to identify key words and make definitions, classifications, descriptions, comparisons, mind maps... It can help them by working on previous knowledge, explaining clearly and in different ways, exemplifying, repeating more difficult concepts, revising with them the mistakes they would have made in the tasks... In addition, you can keep the attention of the students using a variety of activities, examples, demonstrations, experiments, cards with pictograms or images, new technologies (videos, games, online platforms...). You can also promote cooperative learning and work in small groups and in pairs, work on projects, make flexible

groups... To do this, you must have more support teachers and have time for coordination with teachers of other subjects, assistants...

In reference to the CLIL approach, it is about combining it with other methodologies that work in the context of a specific school, with a specific group of students... It is about adapting it according to the needs that arise. Other methodologies currently being used are gamification, flipped learning... However, the CLIL approach uses methodology based on scaffolding, in which the teacher provides support to the student to gradually withdraw themselves as the student does not need them anymore. It is about the student actively building knowledge; for this, the learning must be contextualized and adapted to the student environment.

Finally, the possibility of using alternatives to the textbook should be pointed out, for example, through project work, materials prepared by teachers, the European Portfolio of Languages... Textbooks are closed material; however, these alternative materials allow adapting to the needs of the students and contextualizing in a specific environment and school. If the textbook in the English area is replaced by the portfolio and materials prepared by the teachers, the possibility of reinforcing other areas is allowed, for example, working on science in English class sessions. Obviously, this elaboration requires much more time and work, so resources, especially human resources, should be increased.

3.9 Loss of content and vocabulary in the mother tongue

FAPA [16] considers that the contents do not comply with the Bilingual Program and manifests the lack of preparation of students in science. On the other hand, they point out that the important thing is the acquisition of instruments and tools, not considering the knowledge as essential because it can be acquired later.

FETE-UGT [9], in relation to the acquisition of technical vocabulary in Spanish, states that 81% of the surveyed teachers who teach subjects in another language use a series of strategies, more commonly: use Spanish exceptionally, use of bilingual glossaries in the different didactic units, coordination with the teachers who teach areas in Spanish, and complementary tasks to be carried out at home. Other strategies used include rewarding students with higher vocabulary knowledge in both languages with higher scores, writing new terms in both languages, and family collaboration at home to expand knowledge in the mother tongue.

Acción Educativa [11] points out the importance of ensuring the alternation of the linguistic code in the subjects taught in English to ensure that the mother tongue and the second language complement each other. To this end, it proposes that a "curriculum development center" facilitates the work of teachers to master both languages by providing them with models and workshops, didactic units and projects, as well as bilingual curricular materials. Another proposal it makes is to repeal the third section of Order 5958/2010 to eliminate the obligation to teach bilingual subjects exclusively in English.

Genesee [24], on the contrary, affirms that bilingualism is a good investment because students study at the same time as monolinguals, with the same schedule, and do not lose skills in the first language when studying a second language.

One of the most criticized aspects of the Bilingual Program has been the loss of knowledge in relation to the content and vocabulary in the mother tongue due to the teaching of science in English. In this way, below, I present a series of improvement proposals in relation to this limitation: the same topics or contents could be worked on in different subjects taught in English and Spanish so that students can learn them in both languages (work transversally in other areas), translate into Spanish punctually at specific times (for example, when introducing a new topic of special difficulty, explaining it first in Spanish and later developing it in

English), use of bilingual glossaries, activities that students can carry out without help at home according to their level, simple tasks at home such as looking up in the dictionary the related subject vocabulary studied, using curricular material in both languages (textbooks, activities, posters...), and use of bilingual teaching resources (web pages, platforms...). In short, it would be a matter of working the vocabulary and the contents in the two languages in a transversal way, for example, using the Foreign Language English class to treat or reinforce science content and the science classes to work English through greater exposure and use of said language. The rest of the subjects (language, mathematics...) should also be used to work on the same content in Spanish. This transversal work involves many hours of coordination. For this reason, the Educational Administrations must facilitate and encourage such coordination by freeing the teachers, giving them reduced teaching hours, and providing more support staff in the schools.

3.10 The need for language schools or extracurricular activities in English to complete the training

FAPA [16] indicates that there is unanimity in the need for extracurricular supports in English by families. It shows that the students who are helped with extracurricular classes in academies, or at home, are those who have guarantees of progress within the program.

However, in this aspect, it is not so important to carry out extracurricular activities in English or go to academies or courses abroad, as it is to offer children a favorable and motivating environment for the English language every day at home.

Interestingly, de la Rica and González de San Román [22] make a comparison between Sweden and Spain in relation to language proficiency in English. Swedish students have a much higher level of English despite having a later exposure to English compared with Spain, and they have fewer homework hours and fewer hours of English instruction. However, exposure to the English language is much higher at home, in reference to parents' knowledge of the English language and children's exposure to media such as television. It is argued in the study that exposure to English in nonformal contexts is fundamental for improving oral comprehension and that it has a greater influence than traveling to English-speaking countries or having relationships with people who speak English.

Cummins [3] points to the promotion of reading, both at school and at home, as a way to improve the results of bilingual programs.

In short, the improvement proposals in this section are aimed at creating a favorable environment and promoting exposure at home to the English language, rather than resorting to extracurricular activities, academies, or courses abroad.

Some proposals for improvement could be: watching cartoons or movies in original version and with subtitles on television, as well as series or programs; listening to music or stories in English... In addition to the possibilities of listening to television in its original version, nowadays, through the Internet, you can access numerous free educational resources (videos and educational platforms, games...). So, it is essential to complete the most receptive and passive activities (for example, watching television in English) in addition to more interactive and active ones, such as computer games, online games, free websites, educational platforms, games, story reading or books in English... Also, whenever possible, go on holiday abroad, if possible, to an English-speaking country.

It is about children enjoying learning English, learning through playing or doing things they like, in order to associate their learning with something positive. At home, they can also have an environment suitable for learning, which includes all the resources that we currently have through new technologies and the many materials

and toys that are being created for this purpose. Likewise, the importance of learning other languages must be transmitted to them through their parents; they must be motivated, and they will learn if they enjoy learning. It is essential that parents are involved in their children's learning, encouraging and motivating them. Initially it is about getting the ear used to the noise in English, gradually they will gain confidence and security. A few years ago, the learning of foreign languages was based on the formal part of the language, on grammar, but nowadays, it focuses more on communication and the use of the language, in this way you have to start by practicing speaking and listening (oral communication and listening comprehension) and, later, study grammar. The CLIL approach is based precisely on using the second language as a learning tool of that language, instead of being the direct objective of learning.

3.11 Segregation

FAPA [16] states that the Bilingual Program selects students for the following reasons: (1) the demand for these types of positions causes the absence of vacancies for extraordinary schooling. (2) The students enrolled once the course begins usually request a change of school for not adapting to the program. (3) SEN students usually have trouble acquiring the skills of the program.

However, the C.M. [6] states that the percentage of students who leave the Bilingual Program to move to nonbilingual schools in secondary education is very low (609 students, 2.7% of the total), and in P.E., it is even lower (161 students, 0.5% of the total). When students pass from primary to secondary education, 2.6% (327 students) drop out of the program to move to nonbilingual schools.

Acción Educativa [11] exposes the topic of the segregation of the students in the secondary education institutes by marking two itineraries, section and program, as a direct consequence of the level of English reached in 6th of P.E. But this problem is not going to be discussed in the present study because we only focus on primary.

In relation to the improvement proposals, they have been previously exposed in relation to the SEN students and the rest of the students with a specific need for educational support. However, by providing more personal resources and specialized supports to the schools, a large part of this problem would be solved.

Other problems of the program that have been solved over time have been, for example, problems in relation to promotion to secondary school. Thus, FAPA [16] indicates that students have to move to centers that have the program, even if it is located in another municipality. In this sense, it sets out as an improvement proposal to ensure that there is continuity in the reference secondary schools and not in other centers or municipalities. Due to the progressive expansion of the program, more and more institutes are attached to it and, therefore, the problem has been decreasing.

In this sense, the voluntary participation in the program by the schools has also been pointed out. FAPA [16] explains that parents affirm that involvement in the program by the school and teachers is essential and that there must be a voluntary and strong enough commitment to remain over time. Genesee [24] points out that the commitment of the management team and the teaching staff is essential, as well as the adequate decision-making. The participation of the schools must be voluntary for the implementation of the program to be successful; for this, both the faculty and the school council must be in favor of it.

Finally, the fact that the program has been extended to pre-school (as well as the stages after P.E.) has been a success. Beginning the implementation of the program from pre-school facilitates the learning of the second language and normalizes and modifies denial attitudes. In this sense, Lasagabaster [25] points out the following:

> *Attitudes towards the foreign language could be improved thanks to the early teaching of the foreign language from the age of four (a practice almost universalized today in the schools of the CAV), which could have a positive effect in the long run on attitudes of those students more reluctant to English. (p. 418).*

It also points out that instruction in the second language must be as long as possible, both within school hours and throughout the courses of compulsory and noncompulsory schooling.

4. Conclusions

The Bilingual Program of the C.M. has a number of limitations. The most important would be related to the care of SEN students. In order to solve the problems derived from the deficient attention that this student population receives in the bilingual schools in relation to said program, it is indicated as a priority the training of the teaching staff, its coordination, and having the necessary personal resources. Specifically, regarding attention to SEN students in the bilingual program, training could be improved for special needs teachers and speech and language therapists. Additionally, the bilingual program could: (1) specialize certain bilingual schools in the attention to SEN students, (2) dedicate more materials and human resources, (3) adapt bilingual schools that have preferential attention for students with autism spectrum disorder, (4) use texts in both languages, (5) adapt curricular materials, (6) work the same contents in areas taught in different languages, (7) design specific support programs for SEN students, (8) equip bilingual schools with more special needs teachers and speech and language therapists. It would be very beneficial, in reference to this last aspect, that posts be created in bilingual schools for specialists in special education with the bilingual endorsement, in addition to the teaching staff of this specialty who already provides support in the core areas in Spanish. Finally in the schools in which said specialist already has the qualification, that he is allowed to give said support in the areas taught in English.

Another important conclusion is the fact that it is essential to promote and facilitate the coordination of bilingual teachers with other teachers who teach the group in the bilingual program, with conversation assistants and with other schools. To do this, the educational administrations must expand the human resources of the schools to free the teachers involved in the program teaching hours and be able to dedicate certain teaching and nonteaching hours to coordination, as well as for the preparation of materials and for research and collaboration with other teachers and schools. Furthermore, coordination is essential to work on content communally and not in isolation. In this way, the different subjects must be worked in a coordinated way, integrating the contents through different subjects.

In relation to the training of bilingual teachers, there must be a continuous, varied, free, and quality courses offered that are accessible to all, facilitating their implementation (inside and outside school hours, on weekends and holidays, seminars and working groups in the center itself with the presence of experts, more training centers...) and encouraging teachers to continue training voluntarily (paid study licenses and training permits, courses during school hours, courses and stays abroad, exchange with teachers from other countries, days of exchange of experiences between recognized bilingual schools with credits...). The most important aspect to ensure and facilitate the continuous training of all teachers would be for teacher training to be integrated into their working day and, if possible, within their own school, as is the case in other countries.

In reference to conversation assistants, the most important conclusion is that it is essential that their training is related to education and that they have had experience and/or practices in educational centers. In addition, other improvement proposals can be pointed out, such as: communicating within the educational context with teachers and students always in English, coordinating with the assistant to maximize their participation in classes in relation to conversation and listening activities, planning their performance in writing, teacher and assistant preparing materials together, co-evaluate and continuously introduce the improvements they deem necessary, dedicate at least one weekly session for the training in English of the teachers who are interested, carry out exhibitions in relation to their country of origin, culture, traditions...

A key aspect to guarantee the success of the program is related to human resources and staff (Madrid and Roa [4]). An adequate endowment of human resources should be made, not skimping on them and especially supporting SEN students. In this way, the presence of more support teachers, in general, and special needs teachers and speech and language therapists, in particular, is essential. In reference to the staff, the official teachers (defined as teachers that passed the public examination and obtained a post in a school and they want to continue working there, sometimes they have been working there many years) must be respected, and the staff must be modified without affecting them. For example, a vacant primary position for retirement could be transformed into a foreign language with bilingual qualification, consult the management teams about the possibilities of expanding bilingualism without affecting the official teachers, use bilingual qualified teachers to support those whose profile is no longer necessary, use the different specialties of the teaching staff to make a change of specialty within the school and not displace it...

Regarding the methodology, the use of good practices by teachers is essential, as well as an active, participatory, and motivating methodology with a transversal treatment of the topics in the different subjects and prioritizing oral language. Teaching should focus on the student and not on the teacher, all students should be involved, and their active participation should be encouraged, as well as experimentation. The teacher must be willing and available to help students who need it, especially SEN students, starting from the student's level of competence and selecting the appropriate resources at their level. You can help them by working on previous knowledge, explaining clearly and in different ways, exemplifying, repeating concepts of greater difficulty, reviewing with them the mistakes they would have made in the tasks... In addition, you can keep students' attention using a variety of activities, examples, demonstrations, experiments, cards with pictograms or images, new technologies (videos, games, online platforms...). You can also promote cooperative learning and work in small groups and in pairs, work on projects, make flexible groups... To do this, you must have more support teachers and have time for coordination with teachers of other subjects, assistants...

It is important to use a methodology based on scaffolding (CLIL approach), contextualizing, and adapting the learning to the students so that they actively build knowledge. However, the CLIL approach can be combined with other methodologies that work in the context of a specific school, with a specific group of students... In other words, it is about adapting according to the needs that arise. In this way, other methodologies such as gamification, flipped learning... can be used. It is interesting to point out the possibility of using alternatives to the textbook, for example, through project work, materials prepared by teachers, European Portfolio of Languages... These materials are not a closed material like textbooks and allow them to be adapted to the needs of the students and contextualized in a specific environment and school.

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The fundamental conclusion in reference to the loss of knowledge in relation to the contents and vocabulary in the mother tongue due to the teaching of sciences in English is that the vocabulary and the contents in the two languages should be worked on transversally.

In relation to the need for language academies or extracurricular activities in English to complete the training, it is proposed to create a favorable environment and promote exposure at home to the English language (see cartoons, films, series or programs in original version and subtitled; listening to music or stories in English; reading stories or books in that language; accessing educational resources through the Internet or computer games), rather than resorting to extracurricular activities, academies, or courses abroad.

Finally, it is important to note that the purpose of the C.M. is not that the students are bilingual but that the students reach the highest level of linguistic competence in the second language that they can. Teachers, in most cases, are also not bilingual. Therefore, the objective for them must be to constantly train and develop their skills. To do this, teachers will have to be motivated and incentivized, in addition to facilitating their training. It is also essential to increase the teaching staff in the schools, especially supportive ones, to provide more adequate and individualized attention to those students who show more difficulties in learning. Finally, another important aspect to highlight is the prestige and value given to teachers in other countries compared to Spain. The recognition of the teaching staff is essential, and the credit for the success of the program is theirs, due to their effort and dedication.

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Chapter 15

Is Experiential Learning Possible with Active Music Education?

Kivanc Aycan

Abstract

This study was designed to understand the effects of experiential learning style test on elementary music and movement education experiences of students. Despite the general music education in Turkey elementary music and movement, education was used. The students were expected to gain experience, by the way, perceiving the rhythm of the words, singing, dancing, and playing free and regular games. The rhythm studies similar to the prosody written according to the rules of classical Ottoman poetry were developed with the participants. And also the students interpreted the test results according to these experiences. At the end of the study, the rhythm studies similar to the prosody written according to the rules of classical Ottoman poetry were developed with the participants. While the rhythm of the syllables and words were studied by the applications and also the letters were provided with the correct accent and intonation during the syllables. The experiential learning style test was used to understand how the students affected their elementary music and movement education experiences. And also the students interpreted the test results according to these experiences.

Keywords: Orff-Schulwerk, Kolb learning style, active music education, MAXQDA 11+

1. Introduction

Policies of educational institutions, their vision of the future, and what type of students they want to raise are important (one-dimensional academics or multi-faceted academics who are artistic and knowledgeable about physical development, etc.). Through the active music education approach and methods, it will be possible for individuals, who will develop to be versatile, to discover themselves and their learning styles.

An example of this system in the world is the elementary music and movement education in Finland in which students gain experience by talking, singing, accompanying to the rhythm of words, exploring, playing games with and without rules (sound games, etc.), and dancing. The work of adapting the elementary music and movement education, the essence of which is learning through experience, in Turkey continues. Since there is still only a single type of music teacher trained in Turkey, the desired results have not yet been obtained. Programs that train music teachers have a general quality [1–4]. No expert music teachers are trained for primary schools, secondary schools, high schools, fine arts high schools, and universities. Only music teachers, with general knowledge in music education who

are partially specialized in their fields (experts who partly play instruments such as piano, recorder, baglama, guitar, and sing), are usually trained. The active music education experiences of these teachers are limited to *special teaching methods* and *games, dance, and music* lessons (among the courses added during restructuring by the Council Higher Education in 1996).

Firstly, since the academics, who know approaches and methods of active music education, who will apply *special teaching methods* and *games, dance, and music lessons*, are not trained in music education departments, there is also no willing and qualified instructors who will give music education and teach courses in *basic, pre-school, special education,* and *physical education departments* of universities. In the music, education departments only train a single type of teacher. According to the study data of Duru and Köse [2], in Turkey, one type of music teacher is educated for general music education; in Austria (University of Graz), two types of music teachers are trained for general music education and instrument training; and in Finland, two types of music teachers are trained for general music education and preschool music education (the University of Lahti and Lahti Polytechnic). In Denmark (The Royal Danish Academy of Music and the University of Copenhagen), two types of music teachers are trained for music schools and general music education, and in the USA (Texas University of Technology), four types of music teachers are educated for the basic fields of group music, choir, orchestra, and piano.

One of the best and most successful examples of this system in the world is the elementary music and movement education in Finland in which students gain experience by talking, singing, accompanying the rhythm of words, exploring, playing games with and without rules (sound games, etc.), and dancing. The work of adapting the elementary music and movement education, the essence of which is learning through experience, in Turkey continues. These studies were initiated under the leadership of E. Zuckmayer in what is now called Gazi University the Department of Fine Arts, Department of Music Education, and continued until the 1970s. Muzaffer Arkan has made efforts to promote Orff-Schulwerk or elementary music and movement education in what is now called Hacettepe University State Conservatory. Since there is still only a single type of music teacher trained in Turkey, the desired results have not yet been obtained. Programs that train music teachers have a general quality [2]. With this "music education program," that has a generic quality, training people who will both be expert music teachers in their fields and can provide basic music education and who will also have conservatory level knowledge is no different from expecting a frog to turn into a prince, as in the fairytale. Is it possible, through graduate education, to train academics and fine arts high school teachers, who reflect upon and address the basic problems of music education in Turkey, with only a handful of eager and qualified graduates? Not quite. The most important thing at this point is to increase the quality of music teacher candidates during their undergraduate education. These academics and teacher candidates are required first to achieve the minimum score in foreign language test (50 points) and academic personnel and postgraduate education entrance test (50 points). For graduates of other departments (engineering, pharmacy and science, and social sciences), the minimum passing score may not constitute a problem. However, it is not easy for candidates who have been educated and graduated in the field of fine arts to achieve this minimum passing score. Candidates are required to receive special training and courses to train themselves in their area of specialization.

In 1996, changes were made to the level of undergraduate and graduate music education under the name of restructuring by CoHE. Lessons were rearranged and in the music education program, especially the courses related to the field were

tried to be standardized. However, when the music programs of other countries are examined, it is seen that the same departments in different universities do not follow the same curricula. Expecting the same departments in different universities in Turkey to follow the same curricula is not a very accurate approach in terms of the conditions of the educational environment. For example, when the music departments of Selçuk University and Gazi University are compared firstly, sociological, cultural, and economic differences according to their locations, the physical conditions of the departments, the levels of the students entering the departments, the number of instructors and their interests draw attention. Although the Council of Higher Education (CoHE) attempted to establish a standard teacher profile under the concept of restructuring in 1996, even in the current program, each department continues to educate teachers with their characteristics [5].

It is important that individuals, who have graduated from music education programs focused on raising the standard, a single type of music teacher, especially those who will give basic music education at universities, conduct their masters and doctoral studies on active music education approaches and methods. This will ensure a music education with consideration for the needs of the classroom and pre-school teaching. However, music department students at the undergraduate level do not have the chance to experience the practices and methods of active music education apart from *special teaching methods* and *games, dance, and music* lessons (among the courses established as part of a restructuring by CoHE in 1996).

To enhance these experiences, students firstly need organization of classroom environment, accurate determination of instrument needs, a workshop class with Orff instruments, receive specialized training, which will enable them to experience the active music education approach (as Orff-Schulwerk, elementary music and movement education) and its methods (as Kodály, Suzuki, Dalkroze et al.), from expert educators and discover their learning patterns.

At this point, the policies of educational institutions, their vision of the future, and what type of students they want to raise are important (one-dimensional academics or multi-faceted academics who are artistic and knowledgeable about physical development, etc.). Because through the active music education approach and methods, it will be possible for individuals, who will develop to be versatile, to discover themselves and their learning styles. For this purpose, the use of the experiential learning style test developed by D. Kolb (1984) will also be valuable. In studies conducted in both music departments and other academic units, the tests developed by [6] for the determination of the learning style of individuals (Kolb 2.0 and 3.0) were used in the studies of [7–11], however, it has not been examined whether the individual explored the experiential learning style or not through active music education approach and methods. Unlike writers who draw attention to the genetic and biological characteristics of the learning styles, Kolb views learning styles as permanent and durable states formed by the interaction of people and the environment. Individuals prefer different learning styles or use a few at once. According to this theory, four learning stages emerge as concrete experience, reflective observation, abstract conceptualization, and active experimentation. For example, in learning through concrete experiences, it is emphasized that it is considered important to understand the current experience and solve problems rather than understanding theories or generalizations. At this stage, feeling the situation is more important than thinking about the subject [12, 13].

The aim of the study: This study has been conducted to understand how the students involved in the study internalized, or learned, their experiences of elementary music and movement education. For these reasons, in this study, an active music education approach and methods that will enable the individuals

participating in the study to discover their learning styles were applied in basic sciences and music education. Besides music educators who will give basic music education, it is also important for students who will take this course to explore learning styles with an active music education approach and methods. This is because, in this study, the experience is created with both the educator and the student. In this study using elementary music and movement education, at the core of which there is experiencing and discovery learning, answers to the following questions were sought: What are the behaviors that individuals adopt through elementary music and movement training? Are individuals willing to learn by experience? Is the environment (class size, class order, etc.) appropriate for experiential learning? What kind of an impact their primary, secondary, and high school experiences have on music education and teaching? What is their perception regarding music education and teaching?

2. Method

2.1 Research design

This study includes the applications conducted by the researcher alone for understanding and solving problems emerging in the Department of Basic Education, music education class. Due to the role of the researcher as a participant and also a data collection tool, the study is *action* research [14].

2.2 Research sample

The study group consists of n = 77 students in the Department of Basic Education.

2.3 Research instruments and procedures

2.3.1 Document

To determine the learning styles of n = 77 students participating in the study, Kolb-3 learning style test was used. For the participating students to have in-depth knowledge of elementary music education, a semi-structured interview form was applied. This interview form is a written assignment that summarizes the activities carried out for one semester. In this assignment, students were asked to define and interpret the concepts of elementary, music, Orff-Schulwerk, and movement training. Additionally, the answers to the following questions were sought: Do the activities carried out for 14 weeks of lessons, in the basic sciences program and music education course in the fall of 2017–2018 have any relation to the elementary music and movement training? Could you comment on learning styles that emerge according to the Kolb-3 learning style? The writing format of the assignment was APA 6 style, which is the preferred format in academic writing, with the font Times New Roman 12 pt, in a justified alignment format. Also, the template consists of two sections, the introduction and the conclusion. In the introduction part, the concepts of elementary, music, Orff-Schulwerk, and movement training were examined. In the conclusion part, the answers to the following questions were sought: Do the activities carried out in the basic sciences program and music education course in the fall of 2017–2018 have any relation to the elementary music and movement training? What is the experiential learning style test? How do participants view their learning styles at the end of the test?

2.3.2 Observation

In the Fall semester of the 2017–2018 academic year, during 14 weeks of lessons, observations, and experiences, differences in students' experiences were noted in the individual class observation report.

2.3.3 Micro teaching

A study group was created in the WhatsApp application to reinforce and recollect the study. In this group, video summaries of the practices performed every week according to the micro teaching technique were recorded and shared and discussed for 5–10 min. The participant students, who made use of the videos recorded as a result of 14 weeks of education, formed groups consisting of 1-2-4 or 6 people and made presentations about nursery rhymes and counting rhymes. They made presentations about how they could apply elementary music and movement education practices in the classroom teaching course and gained experience.

2.3.4 Data analysis

The answers to the semi-structured interview form were coded with the MAXQDA 11+ software.

2.3.5 Validity and reliability

To understand the ways of gaining experience in the basic education, music education course, *KOLB-3 experiential learning style* tests the Turkish validity and reliability study was performed by Gencel [15]. To increase the internal reliability of codes created by the MAXQDA 11+ software, the coding was repeated by the researcher after 14 weeks (after the 2017-2018 Spring semester). Based on the title of the study topic, participants' experiential learning test results and their opinions on the test, the concept of elementary, elementary music and movement training, positive aspects of experiential music and movement practices and factors that prevent experiential music and movement practices were evaluated. The relationship of themes and codes was reviewed with an educational scientist who is experienced in computerized qualitative research and coding and unrelated codes were removed.

3. Findings

According to the data, regarding the Kolb learning styles, 30 of the 77-people students' group were converging, 21 were assimilating, 16 were diverging, and 10 were accommodating. As understood from the data, 51 students had abstract conceptualization skills and 26 students had concrete experiencing skills. While 41 students were observed to learn through active experimentation, 36 students learned through reflective observation (**Figure 1**).

P37: I have a converging learning style, according to Kolb. I can learn with abstract conceptualization and active experience. That's why I first put the actions that we learn in the course into perspective then I put them into practice. With the practices and experiments that we do in class, I try to acquire the right information. Since everyone in the classroom offers different ideas and we put these ideas into practice, I can approach the subject with different perspectives. I can participate actively in the course. **P30:** During our practices, we performed listening rhythm and harmonizing studies. We started from a specific topic in certain practices;

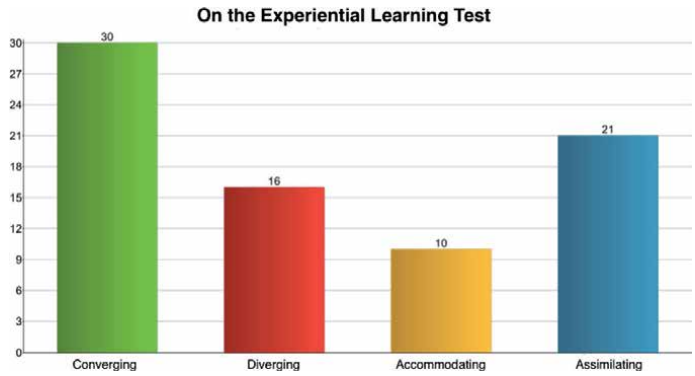

Figure 1.
Learning styles of students participating in the study.

it is sort of my area of expertise to concentrate on one thing, as in my learning style. In my learning style, it is essential to organize information and to focus on specific problems. **P22:** Converging individuals are defined as people who use abstract conceptualization and active experience learning stages and practical applier of ideas. They were expressed as deductive people with problem-solving skills, interested in technical matters. During class practices, generally, I observe first, and then give my opinions, if I have any. Since I think learning by doing is more permanent, I care about practice. So I participate in the practices and activities in class. So, I partially fit in with the converging style in the Kolb inventory. **P55:** I do not act without thinking. I am cautious. I'm more inclined towards objects and symbols. I learn best with projects, practical assignments, small group discussions. My learning style helped me in class. I am learning through problem solving, decision making, logical and systematic planning of ideas so in the course so I have always asked myself the question of "How." "How will I do it? How will it happen?" I received the answers to these questions by participating in the applications. I'm good at organizing information, focusing on specific problems. I am successful in problem solving and technical issues rather than social and interpersonal issues. However, in the course, I participated in activities as a part of the group. I have expressed my ideas and voiced my opinions about things that concerned me. I learn by doing, experiencing. That's why I have always been actively involved in the course. Again, it was me who found the mistakes one by one on the board. I constantly questioned the points that I found problematic and expressed my opinions, then we reflected on them together (**Figure 2**).

P72: While practicing in the course, I always asked myself questions such as; Why will I learn? How will I learn? and I found the answers in practice. I like to work individually, which is a characteristic of my learning style. However, thanks to the practices we do in the course, I've warmed towards group work and I have observed to be more efficient than when I worked on my own. My learning style made me ask more questions during practice. This allowed me to gain a more inquisitive identity and more awareness. **P10:** In fact, since observing and applying is important in most of the practices we do in class, this learning style helped me a little about learning. The fact that thinking is at the forefront in this learning style has enabled me to benefit from it in this regard since the practices we perform are related to thinking, researching, exploring. I prefer observation as it is in my learning style. I think I have developed myself in terms of learning through group work along with the course. **P70:** I learn by observing as in the assimilating learning style. I first examine, see then I start to practice it myself. Being preoccupied with details, I ask questions in class such as "Why are we doing these movements?" or "How and

where are we going to use them?." **P61:** I think the result of this test is right for me because to learn something in my life, first I would like to have information about that thing and to observe, to see how it is done. Before active participation, I like observing. If I were to interpret the Music and Movement course, which we took during the semester, in this context, I think that I have been forced to participate actively as an individual who prefers to do observation and that this has helped me improve to a certain degree in active participation. Because, in our lessons, I saw a process more appropriate for the active participation structure, rather than observation (**Figure 3**).

Sample expressions selected from several participants at the end of the study are as follows: **P14:** According to Kolb's learning style questionnaire, I was in a converging style, but I see myself in the accommodating learning style. The reason for this is that I take action without thinking; I reach the truth through trial and error. I prefer active participation and learn things by doing-experiencing while learning. This is how I learned music through the music lesson we were taught. **P48:** To be honest, I can hardly understand the narrow definitions of visual intelligence,

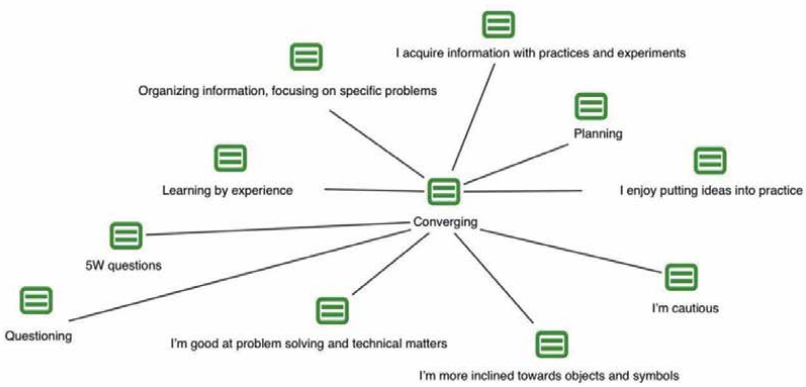

Figure 2.
The comments of the participants on the converging *learning style.*

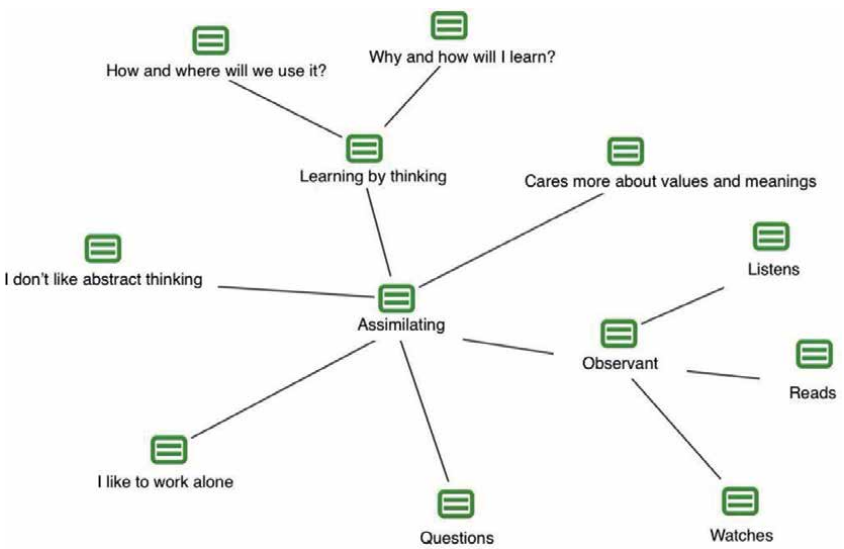

Figure 3.
The comments of the participants on the assimilating *learning style.*

auditory intelligence so it was very useful to do this test and find out my learning style. The diverging learning style summarizes me very well. I'm a serious observer. Even if I understand things, I refrain from action, think and judge within myself, ask questions of why and how but participating or sharing my ideas is not for me. That's why I never mentioned my ideas during practice. Things come to my mind because I pay attention to the course, it is my favorite lesson, but I always have trouble in participating in the class. After discovering my style of learning, nothing has changed. I still observe in the same way but I either participate because I have to, or I participate without sharing my ideas and thoughts. By watching, I learn in a calm, patient, elaborative, very detailed and objective way. However, I like working individually. **P43:** I think this lesson fits my learning style. It is because diverging learning needs sensory organs while learning. We are actively using our sensory organs in our course. Diverging learning mostly uses sight. In the course, we apply the movements by looking at our teacher. This means that we use our vision. I find the applications in the course parallel to my one-to-one learning style. **P56:** When shaping my ideas, I consider my feelings and thoughts. The reason why this learning style is called diverging learning is that individuals with this style show better performance when they are asked to create alternative ideas in concepts such as brainstorming. Thanks to our practices in the course, I warmed up more to group work and observed that I had more efficiency than individual study. My learning style made me ask more questions during practice. This allowed me to gain a more inquisitive identity and more awareness (**Figure 4**).

P42: I think I fit the accommodating learning style. I can easily relate to people, adapt to change, I like change. I always plan before doing anything. Planning is important to me. I trust my intuition. I prefer active participation in the lessons. Because as I mentioned above, I think a student learns best through doing and experiencing. When studying, I think that the more the subject appeals to the senses, the better the student understands. **P47:** I have an accommodating learning style. And according to this style, I have a character that can establish easy relationships with people, and sometimes I am very impatient. I'm open-minded and when I see that something we're doing is lacking, wrong or unusual, I speak my mind directly. However, individuals with this style are said to be able to adapt easily to changes, but I am a little stubborn and I can't easily adapt to changes (**Figure 5**).

P75: Elementary means simplification of complex education. The concept of elementary that facilitates learning has an important place especially in terms of the education of children. **P15:** The elementary concept of Orff-Schulwerk refers

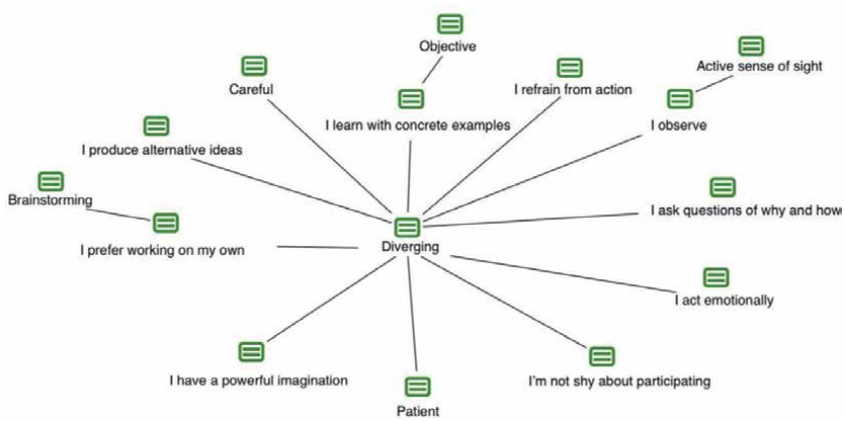

Figure 4.
The comments of the participants on the diverging *learning style.*

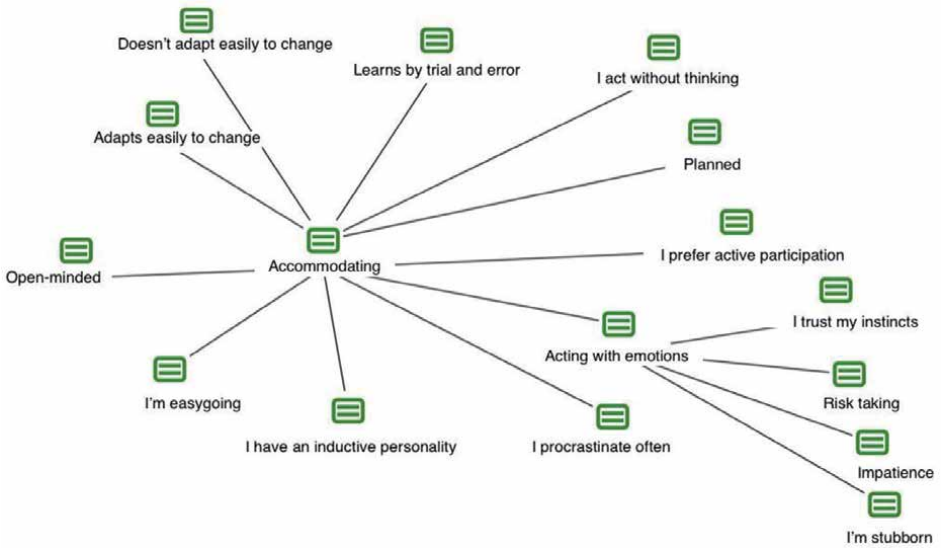

Figure 5.
The comments of the participants on the accommodating *learning style.*

to making education basic, easy and simple. Originating from the Latin word "elemetarius" means belonging to the oldest, beginning and basic elements, first-hand. We can say that it means transforming a complex structure into a structure that is easier and more solvable. **P61:** Breathing, tapping out the rhythm with the heartbeat, making sounds with tongue movements and giving music meaning with various body movements are the things we can frequently see in this concept. It is also possible to participate in this structure with simple instruments and simple dances that express the structure of music. In short, it is an area that individuals can use to express music by simplifying and transforming the complex theoretical teachings of music. It is expressing music by using the sounds in nature and sounds, rhythms and movements that are present in the human body (**Figure 6**).

P48: Orff Schulwerk and movement education is the expression of emotions that come from inside of the individual. It teaches children to move together, and the harmony that occurs when they adapt. It allows productivity through cooperation. The outputs provide enormous benefits in the cognitive, social and emotional areas of children during the process, they provide an aesthetic sense. **P39:** In Orff's exercises, the student-centered course type is taken as a basis. In these studies, the teacher determines the principle, purpose, method, and content, informs about "What?" to do, however "How?" it will be carried out is determined together with the students. Each work process is divided into stages in itself. The main methods of this practice are improvisation, gameplay, discovery, re-finding, experiencing, transforming and discussing. Among them, especially improvisation and gameplay are predominant. Also, various social forms such as group work, circle form, U form are frequently used. **P7:** In the Orff system, students discover and acquire knowledge. This makes the information permanent. Lessons become more fun and enjoyable. Music teachers' learning and using these methods well makes the lesson more enjoyable and ensures that the knowledge taught will be permanent. It will be useful to apply it to all schools. **P27:** Music is the means through which people express themselves. What's special about Orff teaching is that it enables the individual to move freely, improvise, express himself or herself with music. This art does not belong to a single culture in the world and is universal. Children need to develop their imagination. The formation of music is

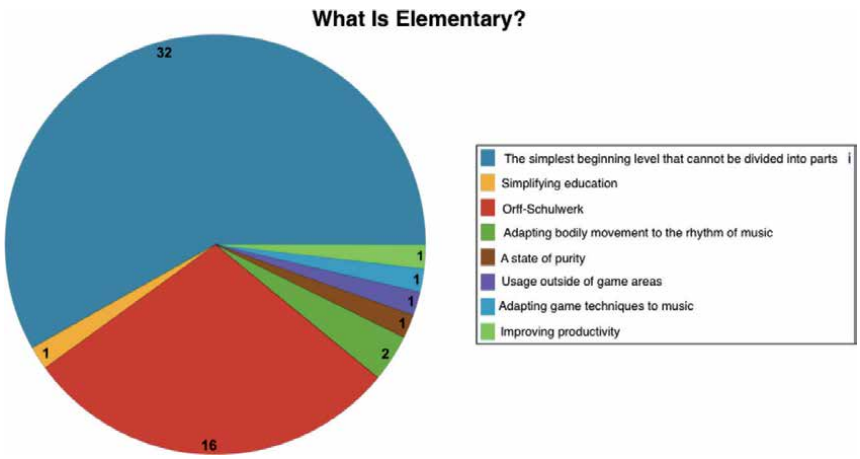

Figure 6.
The comments of the participants on the concept of elementary.

a result of movements. Music and movement constitute a whole. Even the generation of our voice occurs as a result of the movement of our vocal cords. Children's creativity improves. There are no single set of straight rules, and everyone is free to make the music they want. It is out-of-the-box music education. Children engage in creative activities by singing and playing. Music and movement arise as a result of children's free movement in an environment where they can think freely (**Figure** 7).

P7: In music lessons in our public schools, students sit at their desks without moving and the teacher talks. There is not much participation in class. In this traditional teaching, there is information and music is taught from the information. However, in the Orff method, the student is active, interacts with other children and the teacher guides. The student is the one who thinks, puts effort, researches. Improvisation encourages students to think in different ways. It is also a useful method for mental improvement. In the Orff system, the student explores and learns the information. This makes the information permanent. Lessons are more fun and enjoyable. Music teachers' learning and using these methods well make lessons more enjoyable and ensures that the information is permanent. It will be useful to apply it to all schools. What I do in the course will enable me to spend a lot of fun and active time with children when I start my profession. The student is completely active. With confidence, they will express themselves and their thoughts better. Even we find this lesson very different and have fun, I think children will love it. It will have an illuminating effect on their future. It is amazing...
P10: Another one of its effects on learning is that what is to be learned becomes a game with music and dance. In this way, especially kids who like to play games will enjoy learning more quickly without realizing it by taking pleasure. Such learning will also last longer and be permanent. Also, since this education style is aimed at all individual s of all ages, everyone becomes active within the learning process. In other words, not only those who are skillful on that subject, but everyone gets involved. In addition to developing creativity develops, the social and mental states of individuals will also improve. Through the development of creativity, it contributes to individuals' gaining certain skills in art. Also, since this training is carried out in free environments, through music, meaning through factors such as movement, rhythm and dance, individuals get the opportunity to express themselves. That is because music allows people to express themselves better. This type of education will improve the self-confidence of individuals since they can express

themselves better. Since this style provides learning by experience through music, it will arouse curiosity and interest in individuals (**Figure 8**).

About 20.8% of the participants stated that compared to previous experiences in music education, it may be difficult to implement music and movement practices due to crowded classes and material problems. While 11.5% of the participants have stated that long practices have a negative effect, 7.3% stated that the fact that Orff-Schulwerk or elementary music and movement practices in Turkey are not common and the classes where the practices are to be carried out are small are also preventative factors. About 10.4% of the participants stated that the division of the class into small groups of 20–25 people would reduce the factors that would adversely affect the practices.

P11: The elementary system can be applied to courses with suitable lessons and fewer people. It is not a system that can be applied in the classes where the number of people is high. Because for the movements to be carried out as a group and effectively, there should be fewer people. It is not a suitable system for every course. It is a system that must be implemented in classes since it is a system where the children express their thoughts, present their ideas, and the teacher is a guide and the students are in the center, as opposed to the memorization system. In our

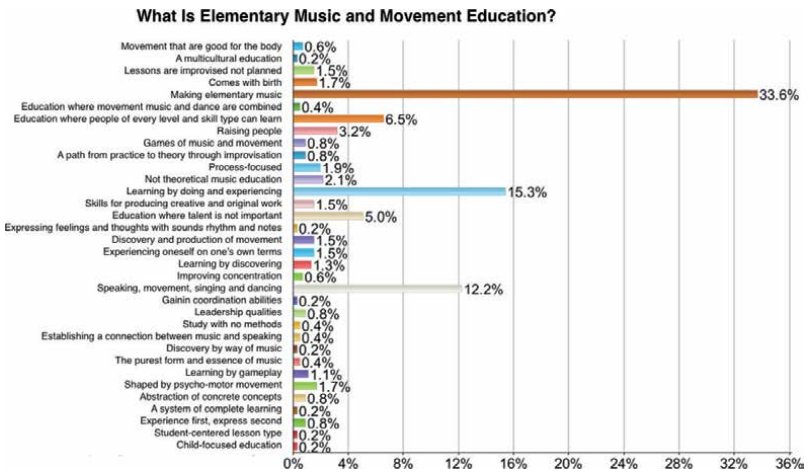

Figure 7.
The comments of the participants on elementary music and movement education.

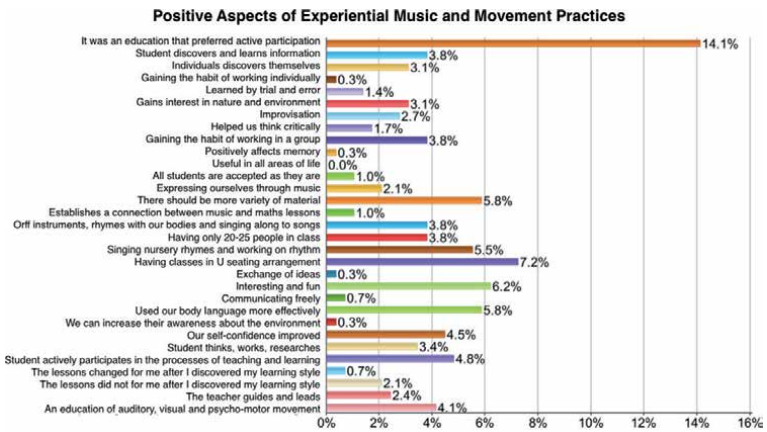

Figure 8.
Positive aspects of experiential music and movement practices according to the participants.

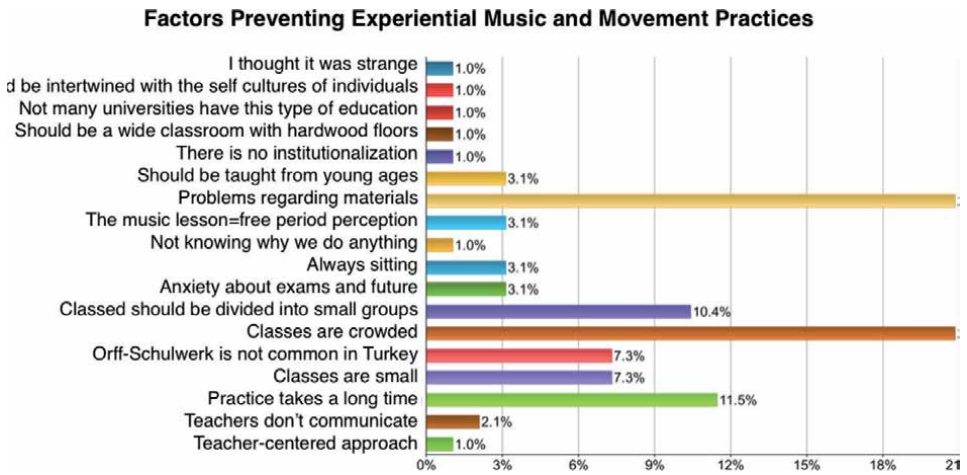

Figure 9.
Factors preventing experiential music and movement practices according to participants.

country, many academics and teachers are working on this subject. However, there is no institutionalization in this regard. **P50:** This education style is unfamiliar to me. Because I did not receive this education from the moment I started school at a young age and I got used to another style. And one of the things that are hard for people is to give up their habits. However, if this education is given to new generations, it will be easier for them than it is for us. **P32:** Applications with too many people in a small class sometimes lead a few students to get disconnected from the course, fail to establish one-on-one communication and to generate enough productivity. Therefore, the course environment and the class number should be taken into consideration. For that purpose, splitting into four different groups and changing the lesson times at the beginning of the semester have been much more useful. Consequently, for music and movement education, a special classroom and a limited number of students are required. **P60:** Since I have not had a proper music lesson until now, my skills and interest in music had become rusty. Because, since elementary school, we generally had free time during music lessons. **P45:** The state in particular should provide the necessary instruments for the universities and primary schools. And finally, our practices could be more energetic. The reasons why it could not be more energetic were due to both the size of the class and the unwillingness of students. Maybe a little bit of technology could have been utilized to make it more energetic; for example, a projection device could have been used to reflect on the board, we could have watched videos about Orff education, and our teacher might have wanted us to recreate what we saw similarly. Our teacher could have made an observation and joined when necessary, more fun activities could have been done in the classroom altogether. Songs could have been faster and played on the computer; we could have accompanied the song with our bodies and voices (**Figure 9**).

4. Conclusion, recommendations and discussion

4.1 Conclusions and discussion

In the preliminary interview with the students who participated in the study, they stated that their musical experiences were quite limited. The majority of the

students stated that music courses in primary, secondary, and high schools were empty and meaningless, that they solved tests in music class in middle school and high school and those who studied music at the primary or secondary education stage stated that they memorized only the names of notes and rhythmic structures in the course. One student stated that their teacher would sing to them and they would sing along the song while sitting at their desks.

In light of the data obtained from the study, to ensure active participation and observation of the students, the class of 76 people was divided into four groups consisting of approximately 20 people. To provide a "U" shaped seating arrangement, the desks arranged in rows were rearranged with the students. All students participating in the study found it positive that the course was taught by dividing the class into four groups. Also, they stated that with classes limited to 20–25 people the lessons were more comprehensible and everyone participated in class. However, some students stated that since there are crowded classes in the Turkish national education system, it would not be able to attain this ideal number and therefore these practices could not be implemented.

The students who participated in the study stated that everyone's opinion was taken during the 1–1.5-hour studies and creating ideas together had a positive effect on them. However, the lessons were long and exhausting since it was about interpreting and re-synthesizing instead of memorizing information. This is the negative aspect of the study according to them. They stated that at the beginning of the study, listening to sounds in nature or class during practice, speaking and imitating these sounds, imitating these sounds by hitting their bodies with hands, finding the corresponding sound of imitated sounds with *Orff instruments* and finally, transferring them on a graph (graphical notation) to A3-sized cardboard of using *EVA materials* increased their interest in the sounds of nature and the duration of these sounds. They stated that the same or a similar study could be used to improve the hand skills of students in the first and second grades of primary education. In the application of the study, problems were observed while making the sounds on cartons for the duration of the sound. Therefore, the studies were continued by transferring them to nursery rhymes and counting rhymes. In similar studies on nursery rhymes, sample works similar to the *aruz prosody* were developed with the participants. While working on the rhythm of syllables and words, they also made sure that the syllables and letters were uttered on time, with the correct emphasis and toning. Since the works resemble the *aruz prosody,* some information from Divan literature was transferred to the *Turkish language and literature* (**Figures 10**–**12**).

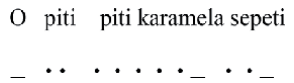

Figure 10.
Rhythmic expression of words with dots and lines: it is read by putting dots on short syllables, long lines on long syllables. (A counting rhyme similar to "Eeny, meeny, miny, moe")

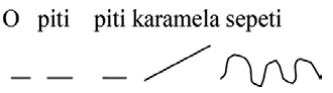

Figure 11.
Rhythmic expression of words with lines and wavy lines: For each word, it is read with short, long, straight, upward, and downward lines and wavy lines

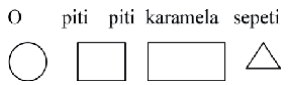

Figure 12.
Rhythmic expression of words with geometric shapes: before you read the letter O, a half circle is drawn upward from the center of the circle and breath is taken. Then the letter "o" is pronounced; "pi-ti," "karamela," and "sepeti" syllables pronounced in such a way corresponding to each edge of the square, rectangle, and triangle for as long as the edge lengths.

4.2 Recommendations

In similar studies on nursery rhymes, sample works similar to *aruz prosody* were developed together with the participants. While working on the rhythm of syllables and words, they also made sure that the syllables and letters were uttered on time, with the correct emphasis and toning. Since the works resemble the *aruz prosody,* some information from Divan literature was transferred to the *Turkish language and literature*. Therefore, it is recommended for future studies to be carried out in similar ways.

At the beginning of the studies, listening to sounds in nature or class during practice, speaking and imitating these sounds, imitating these sounds by hitting bodies with hands, finding the corresponding sound of imitated sounds with Orff instruments could be useful.

Participants stated that transferring them on a graph (graphical notation) to A3-sized cardboard using *EVA materials* increased their interest in the sounds of nature and the duration of these sounds. Similar practices to the same ones can be used to improve the hand skills of students in the first and second grades of primary education.

All students participating in the study found it positive that the course was taught by dividing the class into four groups. Therefore, it is recommended to perform elementary, music, and movement practices in this way. It is recommended that the courses are taught in classes limited to 20–25 people for the studies to be more comprehensible.

For the training of music teachers who are experts in universities, high school and fine arts high schools, and primary and secondary education, a music department must be established in the first place and under this department, preschool, basic education, special education, vocational education departments must be established. In the current structure, under the fine arts department, there are only music and drawing sections.

Instead of training music teachers with general knowledge of music education who are partially specialized in their fields (experts who partly play instruments such as piano, recorder, baglama, guitar, and sing), the departments dedicated to expertise, such as those in conservatories training specialized teachers in various fields, must be established. For example, theory and sound education departments for instruments (piano, string instruments, etc.) should be created. Applications conducted between 1994 and 1998 should be examined as examples [4, 16].

The limited experience of teachers, who are trained as a single type in general music education, should be enhanced with *special teaching methods* and *games, dance, and music lessons* (among the courses established under restructuring by CoHE in 1996). To enhance these experiences, students firstly need organization of the classroom environment, accurate determination of instrument needs, and workshop classes with Orff instruments.

Students need to receive specialized training, which will enable them to experience the active music education approach as Orff-Schulwerk, elementary music and movement education and its methods as Kodály, Suzuki, Dalkroze et al., from expert educators.

The Ministry of National Education (MoNE) and universities are required to ensure that active music education is provided in a standardized way. Nowadays, online training is carried out by private firms using the names of MoNE and universities. However, there are two types of training, namely, [17] training not based on active experience and group work, and practical training [18, 19] based on active experience and group work. As the name suggests, these types of training, which must be based on an active experience, cannot be delivered online. Because, in these training sessions, body memory is in the foreground, and these training sessions are incomplete when verbal and mathematical responses are not encoded in the body. Therefore, participation in practical training should be provided.

In solving the problems experienced in music education programs, the opinions of experts in education and music education programs should be consulted; several types of music teachers should be trained instead of a single type [20–22]. Music education programs resembling each other, having common points are positive for the credit system. However, it is important to train music teachers considering the needs of regions and cities in Turkey. For example, according to this need, while training music teachers who will give basic music education in Central Anatolia, specialized music teachers who will work in universities and fine arts high schools in cities such as Ankara, İstanbul, and İzmir may be trained. In identifying these needs, academic studies and comprehensive surveys conducted by professional firms for educational institutions are required.

National and international workshops and conferences, which will allow music department students to experience an active approach and method of music education in Turkey, should be organized. *These studies continue with the first International Istanbul Kodály training days, Orff-Schulwerk consultancy center and the national training and projects of Turkey* [23–26]. It is important to ensure that individuals who work or will work in both academic, private and public institutions participate in these training sessions with the encouragement of corporate managers. *The creation of joint programs in Turkey may be enabled with the studies to be carried out with the* Kodály Institute *and Orff-Schulwerk* forum. Significant improvements have been achieved with these studies conducted in both Europe and America.

Additional information

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Today's educators stand at the crossroads of globalization and technology. The world is rapidly shrinking. The workplace is being transformed before our very eyes. Technology is forever changing the way we perceive reality and the way we do business. Educators are required to equip students for a workplace that has yet to emerge. The skill sets of today's job market are often obsolete before students can enter the workplace. Now is the time for educators to rise to the challenges of our modern world. By embracing the vision of yesterday's practitioners and joining hands with tomorrow's practitioners, educators can transform our world and equip their students for the upward mobility and career flexibility required in tomorrow's workplace.

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