Global Voices in Higher Education

Edited by Susan L. Renes

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Meet the editor

Susan L. Renes, PhD, is an associate professor (with tenure) at the University of Alaska Fairbanks, Fairbanks, Alaska, serving from 2007 to the present day. She received the Elders Award in 2013. Awarded by Alaska Native Elders, this honor acknowledges those whose deeds and practices promote cultural understanding and balance in all things for a better world community. Dr. Renes is an editorial board member of the *Journal of Excellence in College Teaching*, an associate editor of the *Journal of Curriculum and Teaching*, and a journal reviewer for *Educational Research and Review.*

Contents

Preface

The changing world of higher education challenges all of those involved in very unique ways. While some are concerned about the potential of higher education to influence economic development, others are worried about the increasing workloads of teaching professionals, and still others are concerned about student voice. In *Global Voices in Higher Education*, scholars from 10 different countries share their work, describing not only their research but also the context in which their work exists. Traveling from Zimbabwe to New Zealand and on to Ghana and the United States, the global voices of higher education are presented in a way that only scholars from these regions can fully articulate and understand.

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Tectonic Plates: Leading and Advancing Technology Enhanced Learning

Dominique Parrish and Joanne Joyce-McCoach

Additional information is available at the end of the chapter

Abstract

A blended approach to teaching in higher education, which integrates online with face-to-face teaching, has been found to result in higher student satisfaction, increased student motivation and positive student performance and outcomes. Blended learning promotes flexibility, self-pacing and access as well as providing manageable solutions to issues associated with large classes. However, the adoption of blended learning in higher education frequently relies on repackaging traditional teaching approaches in a new medium rather than harnessing the potential of incorporating online or eLearning pedagogies. Effective online learning requires academics to rethink how they might transform old practices utilising the affordances of new and emerging technologies. This transition involves considerable realignment of pedagogical approaches and a shift in the existing culture. Further, it necessitates appropriate professional development and support. This chapter describes an initiative that sought to support and guide the advancement of eLearning through the conceptualisation of an eTeaching Framework. The resulting Framework could be used at an individual, unit, and institution level to inform staff professional development, probation, promotion and recruitment, funding and support decisions, and evaluation and progression of online learning.

Keywords: eTeaching, eLearning, capability Framework, pedagogy, transformation

1. Introduction

Blended learning is a term that broadly refers to the integration of online with face-to-face teaching [1]. It is an approach that has been found to result in high student satisfaction, better student performance and increased student motivation. Further, the advantages of blended

learning include flexibility, self-pacing, and access as well as a solution to issues associated with large classes [1]. However, the adoption of blended learning in higher education tends to rely on repackaging traditional teaching approaches, rather than harnessing the potential of emergent online or eLearning pedagogies and technologies [2]. The effective integration of eLearning requires academics to rethink how they might transform traditional practices to embrace the affordances of new and emerging technologies and pedagogies. For universities it requires significant change and adaption to accommodate the impact of technology on learning [3]. This does not necessarily mean replacing old technologies but rather subtly changing how and when they are used [2]. Similarly, pedagogical progression is in relation to education theories and models [4]. Some illustrations of how technology and pedagogy might transition from traditional to emergent are outlined in **Table 1**.

	Traditional	Emergent
Technology	Printed text, books, oral narration, visual media (e.g. TV, photographs, movies), note-taking, word-processed documents,	Computers, mobile phones, ipods, email, web-based resources, social networking, wikis, podcasts, content management and learning management systems
Pedagogy	Drill and practice approach to learning, transmission mode of teaching, behaviourism, cognitivist approaches, experiential learning, posting to discussion board, downloading content for face-to-face interaction, 'Sage on the stage', academic role is one of instructor	Self-directed learning, co-authoring and networking, Communities of Practice, Connectivist approaches, creating wikis and blogs, fully online courses that are accessed anytime, anywhere, 'Guide on the side', academic role is one of instructor

Table 1. Illustrations of how traditional approaches to learning might transform in an online environment [2, 4].

Transformation and effective integration of eLearning not only require considerable realignment of pedagogy and assimilation of new and emergent technologies, it also involves a shift in the existing teaching culture. Some higher education teachers are reluctant to embrace the affordances of eTeaching and this has a detrimental impact on students' learning [5]. There are many reasons for this reluctance: (a) perceptions that online learning erodes teachers' status; (b) fear that teachers will be shown up as incompetent due to lack of ability and knowledge in basic technology; (c) lack of technological expertise; (d) resistance to change; (e) lack of incentives and rewards to facilitate eLearning; and (f) being overwhelmed by the rapidly changing technological environment [5–7]. Teachers' perceptions, attitudes and abilities in online teaching and learning are significantly linked to their utilisation of technology and integration of eTeaching approaches [3, 6]. Studies suggest that a current lack of research on academics' blended learning practices as well as the lack of appropriate professional development and support, are barriers to the adoption of eTeaching approaches [1, 6, 8].

Fear and uncertainty in eTeaching needs to be alleviated if transformation of pedagogy and adoption of new technologies is to be achieved. The literature suggests that this transformation can be initiated and progressed through strategic planning and initiatives that include:

- Professional development:

  ○ Guides how technology can be integrated into teaching strategies, such as curriculum materials developed from eLearning technologies and accessed from a variety of media.

  ○ Elucidates how innovative student-centred learning experiences can be created, for example, through the use of a range of tools and technologies to enhance learning.

  ○ Strengthens understanding of pedagogical, technical, and content knowledge.

- Learning design and styles are offered in the context of online education, meaning appropriate pedagogy is adopted in selection and use of eLearning technologies.

- Students' online learning needs are addressed, such as access to necessary hardware and software, proficiency in using technology, and adequate written communication skills.

- The provision of institutional infrastructure and support is provided, including learning management systems, help desk assistance and intuitive software programs that operate proficiently across all technology platforms.

- Blended learning scholarship and research is ongoing, for example research into academic blended learning practice, the pedagogical value of technology in learning contexts, or the most effective means of transitioning from traditional instruction to online teaching.

- The re-imagination of technology enhanced assessment approaches are encouraged, for example podcasts, video vignettes, and wikis [1, 7, 8].

Given these recommendations for supporting eTeaching and eLearning transformation, this chapter presents a Framework designed to support, guide and inform learning and teaching transpiring in an online environment. The intention is for the framework to compliment University eLearning Strategic Plans and be of value and have applicability across the higher education sector. The focus of the Framework is centred on (a) the promotion of excellence in learning and teaching and guiding the development and administration of curriculum renewal, (b) pedagogical practice and the ongoing adoption and integration of educational technologies and (c) supporting innovative approaches to teaching and learning. This chapter describes the initiative that resulted in the Framework, the iterations that the Framework progressed through, and offers suggestions for how the Framework might be used at the individual, unit, and institutional levels.

2. A Framework to guide and support the development of academics' eTeaching capabilities

The ability to adapt to change has been highlighted as a crucial factor in the successful transition from traditional to emergent eLearning and eTeaching approaches [2, 3]. The role of the eTeacher is constantly evolving and, as such, difficult to explicate, develop, evaluate or quantify [5]. Descriptions of eTeaching and eTeachers include: those who use technology teaching tools [6]; "instructor, designer, guide, mediator, curator and mentor" ([2], p266); role-model

in the effective use of technology for learning [5]; and having a sound understanding of technology as well as encouraging eLearning [8]. There is still recognition that a good teacher in an online environment is no different in principle to a good teacher in the face-to-face setting. That is, they require "awareness of student needs, levels of understanding and knowledge, ability to plan effective learning experiences, ability to communicate accessibly and stay in touch not just with current discipline knowledge but also with contemporary influences on students' learning" ([5], p267). eTeaching and eTeachers have been acknowledged as more aligned and therefore skilled in regard to technology related principles and capabilities [1]. It is in reference to these principles and capabilities that interventions are needed, to develop academics' eTeaching, so that contemporary pedagogically appropriate approaches are used in the online environment [1, 3, 7].

Effective eTeachers need expertise in pedagogical, social, managerial and technical capabilities [2, 7, 8]. Further, the literature suggests that successful eTeaching requires attendance at a range of diverse professional development and training opportunities [6, 7], more research into blended learning and associated academic practice [1, 6], and supportive systems and institutional infrastructure [1, 3, 9]. This inventory of requirements informed the conceptualisation of the Framework that was developed as part of the initiative that is the focus of this chapter. In this chapter the reference to capabilities encompasses both the individual's ability to do 'something' as well as the extent to which they can do 'something'. eTeaching capabilities provide a means of defining the sequentially developmental implementation and utilisation of tasks and resources to promote student engagement, learning outcomes and experience. These capabilities enable both student and teacher performance to be purposely organised in a progressive sequence that builds on prior learning and ensures foundational skills are acquired before progressing to complex levels of competence.

Across the higher education sector, learning and teaching standards are being increasingly used as a means of establishing the knowledge and skills that are important for effective learning and sound teaching as well as guiding and progressing change. These standards and their associated criterion assist universities to prioritise and better use resources as well as enabling the astute identification of potential enhancements [10].

As a mean of assisting academics and institutions to transition and navigate through the terrain of eLearning and eTeaching, change targeted resources and initiatives have been developed [2, 3, 7]. These resources and initiatives have focused on the dimensions of technology, pedagogy and context, and the aligning of these dimensions when designing eLearning environments [2–4, 7]. The emergent technologies incorporated in eLearning resources and initiatives include mobile devices as well as social media and networks. Connectivism, Communities of Practice (COP) and other co-authoring learning styles are relevant pedagogies to consider for the eLearning environment. Connectivism is a new learning theory that describes how technologies afford opportunities for individuals to learn through the virtual sharing and communication of information. A key feature of connectivism is peer and self-directed learning that transpires through technologies such as Web browsers, email, online discussion forums, wikis, YouTube, or any other means by which information can be shared. Communities of Practice (COP) is a reference to the process of shared learning in relation to a

particular area of concern or interest. COP foster relationships, the engagement and interaction of individuals to collectively learn about a topic or how to do things better. Co-authoring is the essence of these learning styles whereby learning does not occur in a one-way direction but rather is jointly constructed by two or more people.

The initiative that is a focus of this chapter sought to develop a resource that would promote and support the progression of eLearning and eTeaching across both the faculty and broader institution.

3. The initiative

Discussions with key personnel at the University of Wollongong highlighted the absence of a specific framework to further develop eLearning and eTeaching at this institution. It was rationalised that the establishment of such a framework could provide a consistent understanding of the dimensions of eLearning and eTeaching and that it could also guide and inform the aspirational goals for teacher development in eLearning and ensure that eLearning and eTeaching was sustainable, innovative, adequately supported, and effectively reviewed.

The project team sought and acquired institutional funding to support the development of the Framework, including strategic collaboration with an international higher education partner, which had extensive experience with delivering online courses. The project team engaged in a comprehensive global search of the higher education sector to identify world leaders with a reputation for excellence in online learning and teaching. There were other criteria used to narrow this search including geographical location being a prioritised partnering location for the University, the strategic priorities of the partner institution aligning to the University's priorities, and the potential to establish a partnership with a university that was not already a partner institution of the University.

A subsequent partnership with the Indira Ghandi National Open University (IGNOU) was forged. IGNOU is situated in India and delivers approximately 228 certificate, diploma, degree and doctoral programmes to over "3 million students in India and other countries through 21 Schools of Studies and a network of 67 regional centres, around 2,667 learner support centres and 29 overseas partner institutions" ([11], preamble paragraph 3). The University has nearly 810 faculty members, 574 academic staff and approximately 33,212 academic counsellors [11]. IGNOU has been recognised internationally for its use of innovative technologies and methodologies and the provision of seamless student-centred quality education across numerous learning platforms and management systems. IGNOU has an abundance of online programs and web-based methods to enhance the teaching and learning processes of their programs [11]. Given this reputation and acumen, collaborating with them was viewed as being strategic, viable and beneficial.

The Framework initiative was implemented across a number of developmental stages (see **Figure 1**), which iteratively developed and progressed versions of the consequent Framework. Underpinning the Framework was an extensive review of literature related to principles and
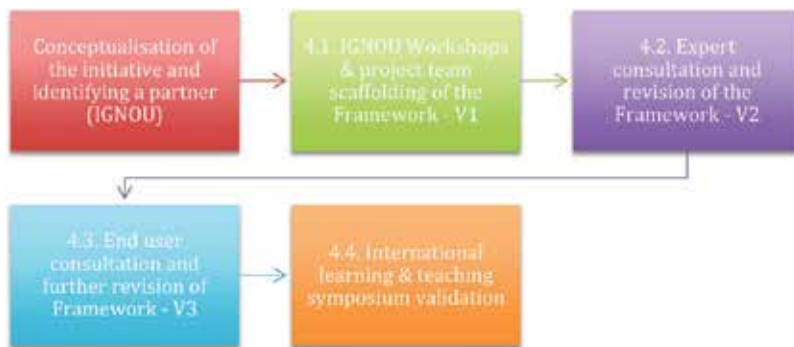
Figure 1. The methodological stages that were implemented across the course of the initiative.

practices of effective online teaching and with a specific focus on the benchmarking of learning and teaching. As a consequence of this literature review, the project team established that in the online environment students need to have a variety of interactions that are separated into self-contained segments and that provide assessment and constructive feedback on mastery of each interaction.

3.1. Workshops to scaffold the Framework

The seed funding, secured from the University of Wollongong International Committee, supported the initial development of the Framework. This funding enabled the project team to travel to India to work with IGNOU partners. The initial face-to-face meeting in India, was considered essential to establish a strong relationship and harness the concerted efforts of the team members from the partner organisation. The first iteration of the Framework was conceptualised across a number of structured workshops, specifically designed to facilitate comprehensive discussions on important aspects of effective online learning. These workshops were followed by collaborative project team sessions that further developed and conceptualised the Framework. Prior to the workshops, a detailed work plan and associated schedule was negotiated, which comprised 1 day of collaborative engagement involving both the institutional teams, followed by a day where just the project team worked on contextualising the joint output for the UOW environment. This work plan and schedule were arranged for 4 days with Day 5 focussing on mapping a strategic plan for finalising the Framework and identifying potential future collaborative projects, between the two institutions/teams, which could be fostered out of this principle initiative. The primary focus of the workshops was to rationalise the elements, knowledge, skills, and enablers for eLearning that would inform the development of the Framework. The following questions guided discussions and planning that transpired across the workshop days:

• Are the capabilities and criteria appropriate and organised logically and aptly?

• Are there any capabilities/criteria missing?

• Is there indicative evidence that could inform the assessment of the criteria/capabilities?

- Are there any capabilities that should be rationalised as minimum standards?

- Where/How should the institutional enablers be recorded, if at all?

- Are there any other questions that need to be asked/addressed?

Figure 2 and **Table 2** are the first version of the Framework that resulted from the stage 1 workshops. This initial Framework illustrates early thinking about the elements of eLearning that were being considered, the responsibilities associated with delivering these elements and the first attempt to differentiate between eLearning and eTeaching capabilities. This version of the Framework comprises a set of responsibilities, grouped under three themes of (1) Teacher Capability and Scholarship, (2) Curriculum Design, Delivery and Evaluation and (3) Student Progress and Achievement, and then assignment of responsibilities according to whom it was perceived should have the associated accountability – teacher or institution.

The process undertaken to differentiate between eLearning and eTeaching capabilities involved a number of iterative discussions between the project team as well as consultation with the project partner IGNOU. The conceptualisation by the project team of the capabilities and practices pertinent to eTeaching are illustrated in **Figure 2**. This figure was designed to incorporate key components of eTeaching, which were rationalised as: Paradigm 1 Teacher Capability and Scholarship; Paradigm 2: Curriculum design, delivery and evaluation; and Paradigm 3: Student
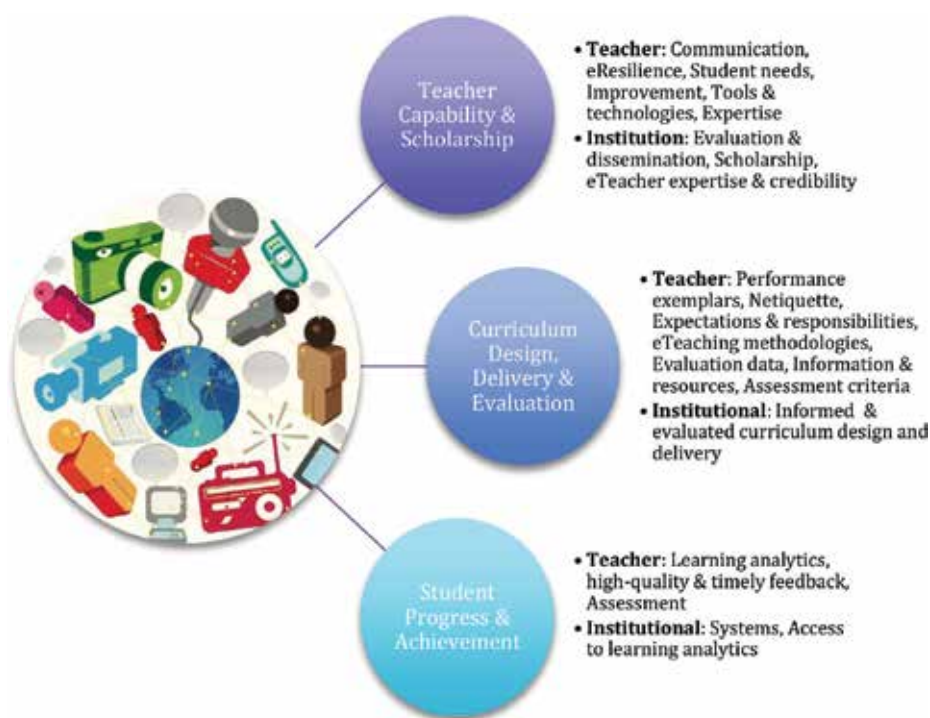
Figure 2. The first iteration of the Framework.

Progress and achievement. Each of the three paradigms of the Framework incorporated both teacher and institution responsibilities because the project team and IGNOU partners established that for eTeaching development, both teachers and institutions shared the key responsibilities.

The responsibilities that were identified as being critical to the three paradigms associated with the first iteration of the Framework are detailed in **Table 2**. These responsibilities focused on communication, role-modelling, student support and engagement, effective facilitation of learning that is informed by evidence; and pedagogy for teachers. For institutions the Framework identified responsibilities aligned to quality assurance and evaluation as well as the promotion and facilitation of best practice. The development of the specific responsibilities that were rationalised for teachers and institutions emerged as a result of the brainstorming activities undertaken by the project team. These brainstorming activities started by identifying the broad areas that were perceived to contribute to successful eTeaching and then conceptualising the specific responsibilities that would most significantly contribute to these success factors in relation to the individual teaching and the institution (acknowledged to collectively be the Faculty, School, Department or Institution). After conceptualising the responsibilities there was some synthesis and further rationalising of responsibilities, which eventually arrived at the first iteration of the Framework detailed in **Table 2**.

	Teacher capability & scholarship	Curriculum design, delivery & evaluation	Student progress & achievement
Teacher responsibilities	• Communicate clearly & convincingly • Promote, exercise & facilitate eResilience[1] • Recognise & appropriately respond to students' learning needs • Use feedback to inform & improve eTeaching & the curriculum • Utilise suitable tools & technologies • eTeachers have appropriate subject & pedagogical expertise/credibility	• Exemplars of desired assessment performance are provided • Netiquette[2] is explicitly stated, promoted & maintained • Realistic indications of time & effort commitments are explicitly stated • eLearning & eTeaching expectations & responsibilities are explicitly stated • A range of appropriate eTeaching methodologies are used & used effectively • Programme evaluation data is regularly reviewed which then informs eLearning/eTeaching • Students & teachers have adequate information & resources to meaningfully engage in the eLearning/eTeaching • Assessment marking criteria are clearly stipulated, applied and moderated	• Learning analytics informs the facilitation of student progress & achievement • High-quality feedback is provided to students • Timely feedback is provided to students • The efficiency, efficacy & relevance of strategies employed to assess student progress & achievement is regularly reviewed & renewed • eTeaching reflection informs the renewal of strategies employed to assess student progress & achievement

	Teacher capability & scholarship	Curriculum design, delivery & evaluation	Student progress & achievement
Institutional responsibilities (*these may be associated with faculty, school, or department accountability*)	• Content, facilitation & efficacy of eTeaching is regularly & rigorously evaluated & the outcomes are disseminated publicly • Scholarship of eLearning & eTeaching is widely disseminated • eTeachers have appropriate subject & pedagogical expertise/ credibility	• The curriculum is informed by contemporary educational scholarship • The curriculum is developmentally sequenced & suitable paced • Feedback is used to inform & improve the curriculum • Learning outcomes are clear • The curriculum is designed to ensure specified learning outcomes are achieved • Learning outcomes are constructively aligned to assessment tasks & curriculum content • The University regularly provides programme evaluation data to relevant stakeholders including eTeachers • Marking criteria are clearly linked to the intended learning outcomes & assessment tasks • eLearning & eTeaching expectations & responsibilities are explicitly stated • Students and teachers have adequate information & resources to meaningfully engage in the eLearning/eTeaching activities • Programme evaluation data is regularly reviewed & informs continuing eLearning/eTeaching development • University systems exist to collect & store programme evaluation data, including student feedback • University resources ensure access to high quality & timely support for the development of eLearning materials	• University systems exist to collect & store data regarding student progress & achievement • The University regularly provides eTeachers with access to learning analytics to assist them to identify students 'at risk' of not progressing or achieving • The University provides an online system to facilitate students to collect & collate evidence of their progress & achievement throughout their programme

[1] eResilience in this framework refers to the ability of those using technology to bounce back after a negative encounter. It includes the ability of the user to learn from, change and adapt to the situation and technology use, ultimately developing the flexibility needed to deal with the uncertainties and harness the opportunities of technology.

[2] Netiquette refers to commonly accepted conventions of behaviour in a networked online environment.

Table 2. Version 1 of the Framework and the associated eTeaching responsibilities.

3.2. Refinement and revision of the Framework

Following the conceptualisation, refinement and creation of the first version of the Framework, the project team initiated an expert review and consultation. This involved the identification of senior higher education leaders from Australia who were reputed globally for their significant experience and expertise in eLearning and/or eTeaching. These experts were identified on the basis that peers considered them to have extensive knowledge, prolific publications and advanced capabilities in online learning and teaching. The project team sent the framework to these identified senior higher education leaders for feedback as critical friends. This group of critical friends were invited to provide comment on the importance or usefulness of this first iteration of the Framework. They were also asked to identify any additional responsibilities that would be relevant and necessary inclusions in the Framework. Finally, they were asked to indicate any similar resources that may be useful in informing the ongoing development of the Framework. On receipt of their feedback, the project team met to discuss the recommendations and then further refine the Framework. This resulted in the creation of version two of the framework (See **Table 3**). This version of the Framework comprised a set of principles/capabilities instead of responsibilities, which could be used to identify the professional development needs that could advance academics and institutions in regard to their eTeaching performance. The primary focus of the first iteration of the Framework was maintained in this second iteration of the Framework but greater detail in relation to some of the responsibilities, now principles/capabilities, was incorporated. Those critiquing the Framework did not always glean the intent of some of the responsibilities. This highlighted the need to not only provide further explanation to clarify what was intended in some of the responsibilities but also in some cases add additional principles/capabilities or tease a principle/capability out to two or more subsequent principles/capabilities. The organisation of the Framework was also significantly revised to present the Framework more holistically for different levels of engagement and operationalization. The principles/capabilities were worded and framed to encourage stakeholders to engage personally with the aspiration of how eTeaching and eLearning could be enhanced. The anticipated stakeholders who would use this Framework were notionally identified as teachers including sessional staff, subject coordinators or those with leadership responsibility for teaching and the institution. It was acknowledged that the institution was more concerned with enabling others than having specific principles/capabilities to facilitate eTeaching.

3.3. End user consultation and revision of the Framework

The next stage of the Framework development encompassed consultation with end users via an online survey and facilitated focus groups. These end users and key stakeholders were identified as potentially being the most impacted and influenced by the implementation of the Framework, particularly in relation to operations, management, career planning, promotion and probation.

The online anonymised survey and focus groups were advertised through professional organisations and institutional channels. In addition to basic profile questions about gender and place of work, both the survey and focus groups explored the following questions:

Teacher including sessional staff at subject level

Capable eTeachers:

- Communicate appropriately clearly and convincingly including but not limited to:
    - Avoiding use of technical language and jargon
    - Providing clear concise subject information
    - Providing compelling explanation of the importance and relevance of the subject to the students
- Model, monitor and maintain appropriate netiquette
- Promote, exercise and facilitate eResilience including but not limited to:
    - Being open to the use of new and emerging technologies
    - Actively seeking opportunities for enhancing pedagogy through the use of new and emerging technologies
    - Willingly trying new and emerging technologies with persistence and commitment to acquiring expertise in those technologies that may advance pedagogy
    - Effectively managing technology setbacks, anxieties or failures
- Recognise and appropriately respond to students including managing their expectations and support needs for online learning
- Reflect on their own performance and subject delivery in light of content feedback and subject level learning analytics to inform and improve eTeaching
- Select appropriate eTeaching tools and technologies relevant for desired learning outcomes and uses them effectively
- Have appropriate subject and pedagogical expertise/credibility
- Ensure an evidence-base informs their eTeaching practice
- Work collaboratively with members of the eTeaching team to ensure consistency in the facilitation and quality of student learning and assessment experiences

Subject coordinator at subject level

Capable eTeaching subject coordinators:

- Provide exemplars of desired student performance in assessment tasks
- Ensure that relevant eTeaching and eLearning information is explicitly stated in subject materials, including but not limited to:
    - Netiquette
    - Realistic indications of time and effort commitments
    - Assessment marking criteria
    - eLearning expectations
    - eTeaching responsibilities
- Encourage eTeachers to use a range of appropriate eTeaching tools and technologies relevant for desired learning outcomes
- Regularly reflect on evaluation data to inform eLearning/eTeaching strategies and content
- Ensure eTeachers have adequate information and resources to meaningfully facilitate eTeaching
- Ensure that appropriate assessment techniques are employed for electronic assessments

Institutional enablers

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eTeaching administrators ensure that:

- University resources ensure access to high quality and timely support for the development of eLearning materials
- The University provides robust and reliable technical systems
- The University regularly provides eTeachers with access to learning analytics to assist them to identify students 'at risk' of not progressing or achieving/facilitate student progress and achievement
- The University provides an online system to facilitate students to collect and collate evidence of their progress and achievement throughout their programme
- Content, facilitation and efficacy of eTeaching is regularly and rigorously evaluated and the outcomes are disseminated publicly
- Scholarship of eLearning and eTeaching is widely disseminated

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Table 3. The second iteration of the Framework.

- To what extent could the eTeaching principles and capabilities be useful in developing your learning and teaching?

- What are the most important or useful eTeaching principles and capabilities? Why?

- What are the least important or useful eTeaching principles and capabilities? Why?

- Can you identify additional eTeaching principles and capabilities that would be useful in building teaching capacity to enhance the online learning of students?

- What are some similar resources that may be useful in informing the development of the eTeaching principles and capabilities?

A total of five facilitated Focus Groups were held in 2014 and there were 10 respondents to the online survey. Participant's responses diverted largely into 'examples of practice' and suggestions for 'how tos', which spoke more to personal journeys towards eTeaching than offering comment on the Framework. Transcripts of the focus groups were created and the survey responses were added to these data sets, all of which were analysed by an external researcher. The project team met to discuss the findings from the analysis of both the focus group transcripts and the online survey. This discussion incorporated a consideration of the perceived relevance and usefulness of the framework as well as how aspects of the framework could be enhanced.

Based on the feedback and findings, the project team decided to audit other frameworks that were highly regarded by the sector and used for assessing and progressing quality learning and teaching. These subsequent identified resources were evaluated using four criteria: presentation; content; usability and potential alignment to the Framework. A synopsis of the relevance of these identified resources and how they informed the refinement of the Framework is detailed in **Table 4**.

Version three of the Framework saw the project team also refine the visual presentation of information. This third iteration of the Framework was sent electronically to the IGNOU team for them to review, provide feedback, and annotate. Their feedback was incorporated into the

Resource	Presentation	Content	Usability	Alignment
ACODE benchmarks for technology enhanced learning M. Sankey 2014		X		X
Australian university teaching criteria & standards Framework	X	X		X
The UK professional standards Framework for teaching and supporting learning in higher education higher education academy 2011	X			
SOE: standards online education M. Parsell 2013 Version 1		X	X	

Table 4. Existing quality learning and teaching resources and a summary of how they informed the 3rd iteration of the Framework.

third version of the Framework (See **Table 5**). This version of the Framework established a set of seven criteria that it was perceived provided a scaffold under which all of the rationalised eTeaching principles/capabilities could sit. The seven criteria were:

1. Learning activities, learning resources and materials, for a unit, course or degree program are appropriately planned, designed, developed and prepared.

2. eTeaching and support for students' eLearning is of high quality.

3. Assessment tasks are aligned with student learning outcomes and appropriate and timely feedback is provided to students.

4. An effective, supportive and engaging eLearning environment is developed and maintained.

5. Scholarship, research and professional activities are integrated into teaching practice, curriculum design, student engagement, and in support of sound eLearning.

6. Professional practice is evaluated and continuing professional development encouraged.

7. Infrastructure and capacity to support and promote student and staff eTeaching criteria and capability is established and progressed.

Other than for criteria 7, which had a suite of institutional enablers detailed, the other criteria had illustrations of eTeaching capabilities and eTeaching leadership capabilities. These two

Criteria	eTeaching capabilities	Indicative evidence
1. Learning activities, learning resources and materials, for a unit, course or degree program are appropriately planned, designed, developed and prepared	**eTeaching capabilities** • Effective and appropriate use of eLearning technologies • eLearning activities support the content and pedagogical intent of the subject learning outcomes • Curriculum materials are provided using a variety of media **eTeaching leadership capabilities** • Integration of eLearning technologies adopts the TPCK –technology, pedagogy, content knowledge approach [12] • The eTeaching team are appropriately prepared and competent in the use and management of the integrated eLearning technologies • The basics of Cognitive Load Theory [13] are applied to the instructional design of learning across the subject • Actively seeks opportunities to enhance eLearning pedagogy through the use of new and emerging technologies • Regularly reflects on evaluation data to inform eLearning/eTeaching strategies	Student feedback Feedback from eTeaching teams Expert peer review on course/program materials and design External peer recognition Awards and citations
2. eTeaching and support for students' eLearning is of a high quality	**eTeaching capabilities** • A range of eTeaching is undertaken • A range of eTeaching tools and technologies, relevant to the learning outcomes and pedagogy, are used • eLearning expectations are explicitly communicated to students, including realistic indications of time and effort commitments • eLearning activities are facilitated using technology to enable and enhance learning • Reflect on own performance and subject delivery in light of feedback and learning analytics to inform and improve eTeaching • Recognise and appropriately respond to students' support needs for online learning **eTeaching leadership capabilities** • Create and provide students with comprehensive guides on how to use integrated technologies • Work collaboratively with members of the eTeaching team to ensure consistency in the facilitation and quality of student learning • Students have access to online resources that promote understanding of key concepts and skills	Student feedback Awards and citations Feedback from eTeaching teams Awards, recognition and citations Adoption of innovation by others

Criteria	eTeaching capabilities	Indicative evidence
3. Assessment tasks are aligned with student learning outcomes and appropriate and timely feedback is provided to students	**eTeaching capabilities** • Timely feedback is provided electronically to students • Social media is used to promote student and teacher engagement and communication • Feedback seeks to promote positive messages alongside the critiques **eTeaching leadership capabilities** • Examples of desired student performance in assessment tasks are provided electronically • Assessment techniques employed for electronic assessments are appropriate • Work collaboratively with members of the eTeaching team to ensure consistency in the facilitation and quality of assessment	Student feedback Learning analytics Feedback from eTeaching teams Evidence of examples Awards, recognition and citations Peer review Adoption of innovation by others
4. An effective, supportive and engaging eLearning environment is developed and maintained	**eTeaching capabilities** • Model, monitor and maintain appropriate netiquette • Promote, exercise and facilitate eResilience including the effective management of technology setbacks, anxieties or failures • Intentional efforts are made to communicate specific encouraging messages to individual learners • Build a positive learning environment by deliberately facilitating student introductions, and using discussion starters to facilitate conversations among students • Model good online engagement including being an active participant in online discussions.	Student feedback, both formal and informal

Criteria	eTeaching capabilities	Indicative evidence
	eTeaching leadership capabilities	Feedback from eTeaching teams
	• Ensure members of the eTeaching team have adequate information and resources to develop and maintain an effective, supportive and engaging eLearning environment	Extent and participation in student engagement innovations
	• Leadership in promoting inclusive eTeaching practices and technologies that encourage cultural diversity, equality, indigenous culture and traditions, support for students with special needs, and support for students in transition (e.g. 1st year, postgrad)	
5. Scholarship, research and professional activities are integrated into teaching practice, curriculum design, student engagement and in support of sound eLearning	**eTeaching capabilities**	Student feedback
	• Open and willing to integrate new and emerging technologies, as appropriate to course design and pedagogy, with persistence and commitment to acquiring expertise	Peer review of teaching
	• Ensure an evidence-base informs eTeaching practice	
	• Share eLearning/eTeaching strategies and exemplars with peers and colleagues	
	eTeaching leadership capabilities	Feedback from eTeaching teams
	• Actively seeks opportunities to enhance pedagogy through the use of new and emerging technologies	Expert peer review on course/program materials, design and implementation
	• Technology expectations that are evidence-based and contemporary are established	Awards & grants
	• Ensure eTeachers have adequate information and resources to meaningfully facilitate eTeaching	Proceedings & publications
	• Contribution, co-authorship or authorship of publications, presentations or workshops on eTeaching and learning	
6. Professional practice is evaluated and continuing professional development encouraged	**eTeaching capabilities**	Completion of formal qualifications (e.g. ULT, Graduate Certificate)
	• Maintain appropriate subject and pedagogical expertise/credibility	
	• Engage in professional development related to eTeaching and eLearning	
	• Reflect on feedback and learning analytics to evaluate and develop own practice/performance	

Criteria	eTeaching capabilities	Indicative evidence
	eTeaching leadership capabilities	
	• Expectations around technology competence and integration are monitored and achieved	
	• Mentoring and coaching opportunities to encourage continuing professional development for members of the teaching team are fostered	
	• Progressive innovations to enhance eTeaching practice and ongoing professional development of eTeaching are promoted	
7. Infrastructure and capacity to support and promote student and staff eTeaching criteria and capability is established and progressed	**eTeaching institutional enablers**	
	• Ensure access to high quality and timely support for the development of eLearning materials	
	• Provide robust and reliable IT systems	
	• Regularly provide eTeachers with access to learning analytics to assist them to:	
	• Identify students 'at risk' of not progressing or achieving	
	• Facilitate student progress and achievement	
	• Provide an online system to facilitate students to collect and collate evidence of their progress and achievement throughout their programme	
	• Content, facilitation and efficacy of eTeaching is regularly and rigorously evaluated and the outcomes are disseminated publicly	
	• Scholarship of eLearning and eTeaching is widely disseminated	

Table 5. The third iteration of the Framework.

categories of capabilities were the iterative development of the previous categories of: *teachers including sessional staff* and *subject coordinators or those with leadership responsibility for teaching*. The capabilities were expressed so that stakeholders using the Framework could facilitate a self-assessment and decide which assessment outcome was most applicable:

a. 'Yes' signifying they were achieving the capability and thus should maintain this performance standard;

b. 'Yes but' signifying they are largely achieving the capability but some further development is warranted and should be planned;

c. 'No' signifying they are not achieving the capability and as such this capability is an area for further development and potentially the focus of subsequent professional development activity; or

d. N/A signifying the capability does not relate to the job role or associated responsibilities.

The inference in the design of this iteration of the Framework is that the capabilities listed are illustrations of desired performance as well as best practice that should be either maintained or espoused. Examples of indicative evidence that could be used to inform the self-assessment is provided, which is also intended to encourage robust and substantiated assessment based on fact rather than personal assumptions based on "gut" feelings. The capabilities are not intended as a definitive list but rather a starting point from which discussions about career progression and development needs can transpire, between the stakeholder and their supervisor/governing body.

3.4. International peer review and validation

The final stage in the development of the Framework was the presentation of version three at an international learning and teaching symposium - The 12th Annual Conference of the International Society for the Scholarship of Teaching and Learning (ISSOTL), held in Melbourne, Australia in October 2015. This stage was designed to ascertain and validate the relevance of the Framework to the higher education sector. An opportunity for interested academics to self-nominate for a peer review roundtable symposium, to interrogate the Framework, was provided. Roundtable participants were asked to:

• Undertake a brief priority analysis of the Framework criteria and capabilities (a matrix of how important and how common each of the capabilities were);

• Suggest strategies for engaging and getting buy-in of academic staff in the use of the Framework;

• Identify challenges that might face leaders trying to utilise a tool such as this as a means of facilitating innovation, particularly regarding eLearning; and

• Rationalise how the Framework capabilities differ in the online and physical teaching environments.

As a result of the roundtable, feedback was gleaned that could inform the development of a strategic plan to accompany and inform implementation of the Framework, across the higher education sector.

4. Discussion

Originally the focus of this project was to develop an eLearning Framework but early in the project, during discussions with IGNOU, the need to identify eTeaching capabilities as the antecedents to eLearning became very obvious. This realisation led to a premise, which subsequently guided the initiative, that effective eTeaching is the foundation for successful eLearning.

Across all of the consultation forums, facilitated to develop and progress the Framework, the importance of institutional infrastructure and culture to promote and progress eLearning and eTeaching capacity was noted. The eTeaching capability of teachers was acknowledged as both a means of progressing online learning and a potential barrier to advancement depending on level of competence. There was recognition that eTeaching responsibilities differed between teachers facilitating the learning and leaders responsible for the administration of the learning, which included program directors, course coordinators, faculty executive and institutional managers. This perception led to the differentiation of capabilities, in the final version of the Framework, for eTeachers and eTeaching leaders.

A direct outcome of the expert and academic consultation was the need to review and align to existing learning and teaching frameworks and quality measures of teaching, valued across the international and Australian Higher Education sector. The importance of this activity in the development of the Framework was to ensure that the final version of the Framework was aligned with existing tools and therefore added to the quantum in online teaching. The frameworks and quality measurement tools that were subsequently reviewed included:

- ACODE TEL Benchmarks

  (http://www.acode.edu.au/pluginfile.php/550/mod_resource/content/7/TEL_Benchmarks.pdf)

- Australian University Teaching Criteria and Standards Framework

  (http://uniteachingcriteria.edu.au/)

- UK Professional Standards Framework (https://www.heacademy.ac.uk/ukpsf)

- Standards for Online Learning (https://www.onlinestandards.net/)

The Framework was recognised at the international learning and teaching symposium as a means for individuals, units and institutions to identify:

- Staff professional development requirements and criteria that could be used for assessing probation and promotion, eTeaching performance.

- Support and resource needs, this included funding for: development and implementation of online learning courses and units; targeted staff appointments to assist with instructional

design, technical support and online content development; and robust and appropriate systems to support online learning and management.

- Criteria for gauging the effectiveness and opportunities for enhancing online learning.

- Strategies and electronic tools to support student learning and quality eTeaching.

The Framework is intended to be underpinned and informed by evidence; and while a range of indicative evidence artefacts have been suggested in the final version of the Framework, how these are used will depend on the individual, unit and institution as well as the situation. The Framework has been developed to deliberately be generic so that is can be adapted to suit varying contexts, audiences and needs.

A major limitation of the initiative described in this chapter is the sample size of reviewers and critical friends who contributed, through the consultation forums, to the development of the Framework. A reassurance that the project team had to this limitation was that those who did contribute were able to knowledgeably do so and as such their contributions were valuable and highly beneficial to the conceptualisation of the resulting Framework.

5. Conclusion

The Framework that has been developed and described in this chapter is the subject of ongoing user testing and evaluation. Further refinement of the Framework is anticipated as a result of this process. It is intended that a framework for eLearning, which will guide and scaffold the development of students' technological competency will be produced. The expectation is that this framework would also guide teachers in their employment of technologies and design of online learning.

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Ghana

Balancing the Focus of Quality Assurance Frameworks of Higher Education Institutions in Africa: A Ghanaian Context

Francis Ansah, Patrick Swanzy and
Hope Pius Nudzor

Additional information is available at the end of the chapter

Abstract

Higher education institutions in Africa appear to be completely copying the quality assurance (QA) frameworks of developed countries instead of conceptualising their own frameworks for delivering quality higher education outcomes in Africa. Certain factors (limited funding, inadequate infrastructure, inadequate staffing, relatively low research outputs, and limited graduate employable skills) characterising higher education are peculiar to developing countries including Africa. Using a qualitative case-study approach through interviews and document reviews, and a "PPP" conceptual framework, this study examined the foci of quality assurance frameworks of three flagship universities in Ghana. The findings indicate that the least attention is given to facilities in the quality assurance frameworks even though limited facilities pose a major challenge to the quality of higher education outcomes of the universities. The findings indicate that most attention is paid to programme areas such as teaching and learning. The results of the study recommend regular and appropriate balancing of the foci of quality assurance frameworks in the universities to enable them to give optimum attention to all key operational areas for quality outcomes.

Keywords: balancing, focus, quality assurance framework, higher education institutions

1. Introduction

Quality assurance (QA) now stands as one of the top priorities of contemporary higher education systems in Africa [1, 2]. In the past two decades, many countries in Africa have established national quality assurance bodies in order to ensure that higher education institutions do not

compromise on quality. Due to the pressure of globalisation and internationalisation, African higher education systems and institutions have had to adopt quality assurance frameworks from the higher education systems in the developed world in order to gain acceptance and credibility [3]. Numerous factors influencing the establishment of quality assurance in higher education appear to be global in nature; however, some of the factors are peculiar to Africa.

Higher education systems in Africa have been characterised by limited funding, inadequate infrastructure, inadequate staffing, relatively low research, mass student enrolment, and limited graduate employable skills [2, 4]. It requires a pragmatist approach to conduct quality assurance in Africa's higher education systems. Higher education institutions in Africa must conceptualise their quality assurance frameworks strategically in order to make such frameworks fit for purpose [2]. For instance, in developed countries, higher education systems are characterised by adequate facilities, and therefore, facilities might attract less attention in the framing of their quality assurance systems. Higher education systems in Africa are characterised by inadequate facilities which require that quality assurance frameworks in African higher education systems give more attention to facilities than those of developed countries.

Improving low employable skills and improving research quality are constantly reported as key concerns of the higher education systems of Africa [2]. This gives an indication that quality assurance frameworks in contemporary African higher education do not appear to be adequately addressing the quality challenges of the higher education systems. Quality assurance frameworks of many African higher education systems depict robustness but in actuality, do not adequately address the peculiar nature of quality concerns currently experienced by African higher education. Of course, there are global standards for quality assurance in higher education to enable comparability of outcomes, but quality assurance also needs to include localised differences [3, 5] so that quality assurance frameworks are compatible with context. Quality assurance frameworks in Europe and Africa may have the same features but at a particular point may focus on different areas in order to balance quality assurance activities for improved outcomes. A pragmatist conceptualisation of quality assurance frameworks needs to mirror the prevailing quality concerns it seeks to address. This calls for continual balancing of the foci of quality assurance frameworks to reflect the changing concerns of quality in higher education [6].

Currently, the foci of quality assurance frameworks of higher education institutions in Ghana, particularly universities, are understudied, resulting in a gap in information to inform effective balancing of the foci in order to improve higher education outcomes. This study sought to investigate the coverage of quality assurance policies and practices of universities in Ghana and the proportional attention given to each operational activity covered by the quality assurance frameworks. The study was intended to contribute to the debate on what should be captured by the quality assurance frameworks of universities and how to ensure effective balancing of the foci of quality assurance frameworks in order to address the changing concerns in the Ghanaian higher education system. Therefore, the research question for the study was "What do quality assurance frameworks of higher education institutions in Ghana give the least attention to, and why?"

Ghana, the site of this study, is a republican state located on the west coast of Africa, bordered to the west by the Republic of Côte d'Ivoire, to the east by the Republic of Togo, to

the north by the Republic of Burkina Faso, and to the south by the Gulf of Guinea. Ghana gained independence from Britain on 6th March, 1957 and subsequently became a republic on 1st July 1960. Ghana's population is 25,905,000 with females comprising 51.3 and males 48.7% [7]. The country's population growth rate is 2.1% and life expectancy is estimated at 61 years [7]. The country's adult literacy rate is 74.1% [8]. Oil, gold and cocoa are Ghana's main exports. Ghana is also endowed with agricultural potential, including forests and significant tracts of savannah land with high agricultural value; however, these are not being fully developed [9]. Ghana's economy is the fastest growing and the second-largest economy in West Africa after Nigeria [10]. Its gross domestic product (GDP) is US$ 48.18 billion and the gross national income (GNI) per capita stands at US$ 1770 [7]. Ghana is an emerging economy and is currently classified by the World Bank as a lower middle level income country [10]. The country's vision is to attain fully-fledged middle-income status by the year 2020 [11]. Ghana wants to achieve this via human resource development and industrialisation [11]. Despite these aspirations, Ghana's current economy appears gloomy. Ghana faces key challenges in its development, including higher education. In addition, Ghana has a large balance of payment deficits, particularly large for a country classified as lower middle income [12]. Ghana's quest to sustain its economic growth and seek competitive advantage in the globalised knowledge economy will be supported by the higher education institutions graduating a highly skilled and knowledgeable workforce.

2. Ghana's higher education sector

Ghana's higher education system was bequeathed to her by Britain but the system has since been reformed following independence from Britain in 1957. Currently, higher education in Ghana covers universities and non-university institutions such as polytechnics, colleges of education, colleges of nursing, and other institutions [13]. Higher education institutions in Ghana are public, private, national or internationally owned. The universities offer bachelor, master and doctoral degree programmes while the non-university institutions deliver diplomas and certificates [13, 14]. The mode of higher education teaching in Ghana includes traditional on-campus, distance and online formats [13]. Ghana's higher education system is not immune to global trends. It is characterised by mass participation, a decline in state funding, globalisation, internationalisation and privatisation [4, 15]. Enrolment in higher education has increased sharply in recent times and continues to rise. For example, higher education enrolment rose from below 9997 in 1992 to more than 132,000 in 2010 (Bailey 2011) and 396, 264 in 2015 [13]. This notwithstanding, only about 10% of the age cohort from junior secondary schools gain admission to higher education institutions [16]. In Ghana, enrolments in the higher education sector tilt towards humanities but the country requires a ratio of 60:40 sciences to humanities human power base to propel its development agenda [17]. For instance, science, technology, engineering and mathematics (STEM) and arts/humanities ratio between the years 2002–2003 and 2007–2008 in Ghanaian public universities stood at 35:65 and 38:62, respectively [17]. Ghana's higher education sector is also characterised by gender disparity. The number of female students enrolled in the sector is far less than males except in the nurses training colleges where females outnumber males in a ratio of 7:3 [13].

The government primarily finances higher education in Ghana. Education covers 23.3% of Ghana's fiscal budget [18]. Out of this, 21.6% is allocated to the higher education sector [18] but unfortunately, this falls short of the funds required by Ghanaian higher education institutions due to growth in student enrolment. This situation has triggered several financial initiatives. The government has established Ghana Education Trust (GET) to assist higher education institutions with additional funds for infrastructural development [19] but this excludes private higher education institutions. Ghanaian private higher education institutions only obtain financial assistance from the government in the form of tax exemptions. Though these appear to have enhanced the financial viability of most private Ghanaian higher education institutions, compared to peers in the global north, higher education is still under-funded, impacting negatively on the quality of higher education system.

3. Quality assurance in Ghana's higher education system

Ghanaian higher education institutions have been placed mainly under two external quality regulators, the National Council for Tertiary Education (NCTE) and the National Accreditation Board (NAB) to monitor and control academic activities. NCTE oversees the proper administration of schools tagged as higher education institutions. It is responsible for ensuring that the academic activities of higher education institutions are financially sustainable and support national development [15, 20]. NAB on the other hand is Ghana's key quality assurance agency. It was established through the enactment of the NAB law 1993 (PNDC Law 317) but has subsequently been replaced by National Accreditation Board Act, 2007, Act 774 [21]. Its primary responsibility is to safeguard quality higher education provision in the country. NAB's main quality assurance strategy is accreditation. This covers institutions and academic programmes [15, 21]. In addition, NAB uses a strategy known as "affiliation" to ensure quality education delivery by outsourcing its quality improvement mandate to Ghanaian public universities. Affiliation in this context refers to a relationship in which, by mutual agreement, the affiliating partner agrees to accredit the academic programmes and issues academic awards to an affiliated partner institution [22]. In this regard, NAB requires Ghanaian higher education institutions, especially private university colleges, polytechnics, and specialised public colleges to be affiliated to long established Ghanaian public universities in order to offer academic programmes. This affiliation relationship is expected to last for a minimum of 10 years [23], and it is intended that the universities assist these institutions in building their internal capacity for quality assurance.

Professional associations are also major players in the enactment of quality assurance in the Ghanaian higher education system. Examples of such associations in Ghana are Ghana Medical and Dental Council, Nurses and Midwifery Council of Ghana, General Legal Council, and the Ghana Pharmacy Council [24–27]. Their involvement includes accreditation of professional study programmes, participation in accreditation panels set up by NAB and participation in curriculum review exercises [28]. Though these roles played by external quality assurance regulators have enhanced the image, deepened public trust and increased the attractiveness of Ghanaian higher education institutions, external quality assurance is still going through reforms and can best be described as "work-in-progress".

4. Conceptual orientation of the study

This study sought to answer the question "What do quality assurance frameworks of higher education institutions in Ghana give the least attention to, and why?" This question requires a focus on key operational areas that higher education institutions are responsible for. A "PPP" conceptual framework, which argues that higher education institutions are responsible for people, programmes, and facilities, was adopted for the study. The "PPP" is an acronym for people, programme, and place. The PPP was used by Filardo [29], the Executive Director of Twenty-First Century School Fund of the District of Columbia in the United States. She described PPP as a concept for planning physical facilities in education. PPP is a logical framework that could be used for classifying and analysing the operational activities of higher education institutions for the purpose of quality assurance and hence its adoption and adaptation. From a logical standpoint, a quality assurance framework for any higher education institution in Ghana ought to give attention to people, programme, and place in a balanced manner if it is to sufficiently address stakeholders' expectations of higher education quality. From the perspective of the PPP concept, a balanced quality assurance framework looks like **Figure 1**.
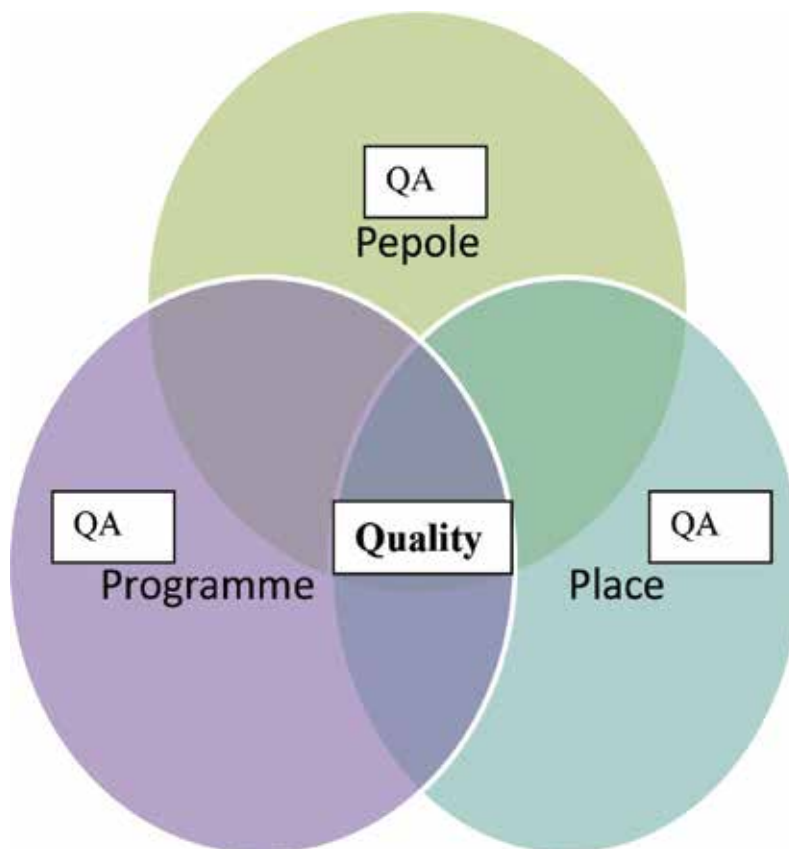
Figure 1. Balancing the focus of a QA framework in HEIs.

"People" in the context of the PPP framework for higher education is taken to refer to the coverage of internal and external stakeholders in quality assurance activities of higher education institutions. In a typical university context in Ghana, internal stakeholders include the governing council members, management team members, senior academic and administrative members, senior staff, junior staff, and junior members (students). External stakeholders on the other hand include graduates, employers of graduates, professional representatives, regulatory authorities representatives, and funders [30]. Given that quality has multiple perspectives which demand alignment of different perspectives [28], quality assurance activities within higher education institutions ought to cover and involve all these key stakeholders. Enhancing quality in higher education demands qualified and highly motivated staff members who are committed to quality outcomes [31]. This involves staff participation in quality assurance activities through effective and efficient top-down and bottom-up communication channels and rigorous staff recruitment processes, development, and incentive systems [31]. It also requires qualified, highly motivated, and empowered students who provide feedback on their learning experiences to inform improvement activities [32]. Equally, achieving quality also involves information from all key internal and external stakeholders through feedback loops [31].

"Programme" in the context of the PPP framework for higher education represents all the processes, procedures, and activities within an institution. This includes curricular design, teaching and learning, governance systems, leadership and management functions, professional development of staff, research and outreach activities, student assessment, staff recruitment, student admissions, institutional ceremonies, student support services, and partnership and cooperation. A quality assurance framework of a higher education institution ought to cover all these in addition to other operational areas and activities of the institution in order to sufficiently guarantee and enact stakeholders' expectations of quality.

"Place" on the other hand stands for space and facilities of an educational institution. It has been argued that maintaining and improving quality in higher education is directly proportional to the quality of facilities and space [33, 34, 35]. Appropriate space and facilities are required to support every activity of any higher education institution [35]. The quality of learning, teaching, research, and community service of a higher education institution is dependent on space and facilities of the institution [35]. Therefore, place ought to attract equal attention in a quality assurance framework of any higher education institution just like people and programmes. The common physical facilities which are usually under the microscope of QA activities are teaching and learning, residential, recreational, and transportation facilities, in addition to space for physical facilities development. The interplay of people, programme, and place supports positive outcomes in higher education. Quality is maintained and enhanced at the intersection of the circles containing the PPP as depicted in **Figure 1**. Quality cannot be maintained and enhanced by giving negligible attention to any part of the PPP framework discussed so far because high-quality educational outcomes depend on quality people and their involvement, quality programmes, and quality facilities.

5. Focus of a QA framework in higher education

We argue that a resilient quality assurance framework in higher education must meet the basic condition of stability if it is to achieve quality enhancement or improvement. A stable QA framework (internal or external) is a balanced framework where all the key components receive equal attention at some point, as represented in **Figure 1**. This framework offers quality assurance and enhancement opportunities for the institution.

However, a quality assurance framework in higher education institutions could become unstable as a result of less attention to one of the key components. In such a situation, the framework may look like **Figures 2**, **3**, or **4**, depending on which component is receiving the least attention. In **Figure 2**, it is evident that place receives the least attention in the quality assurance practices of the institution. In this instance, the assumption is that optimum attention has been given to all the three key operational areas but there are quality concerns with people and programmes, which have necessitated a shift of attention from place. In **Figure 3**, programme receives the least attention in quality assurance practices, and in **Figure 4**, people receive the least attention, suggesting that in these instances, prevailing quality concerns have warranted the shift of attention.
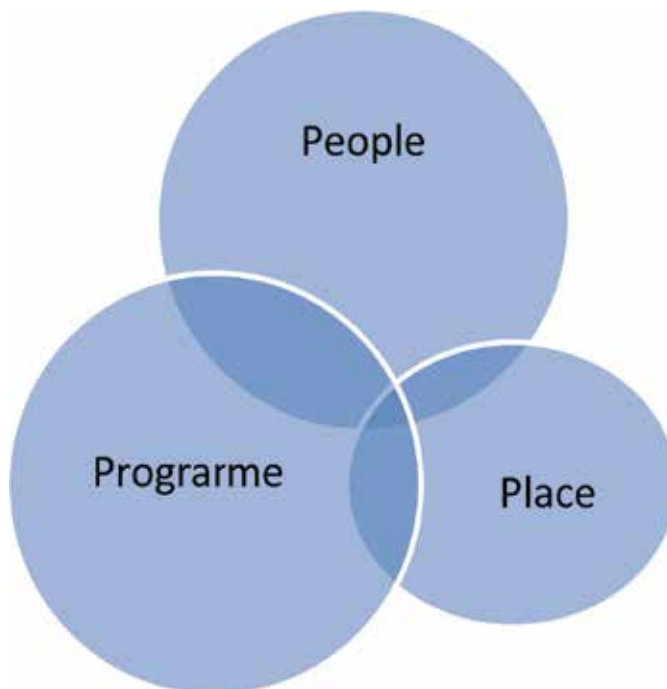
Figure 2. An unstable QA framework—least attention to place.
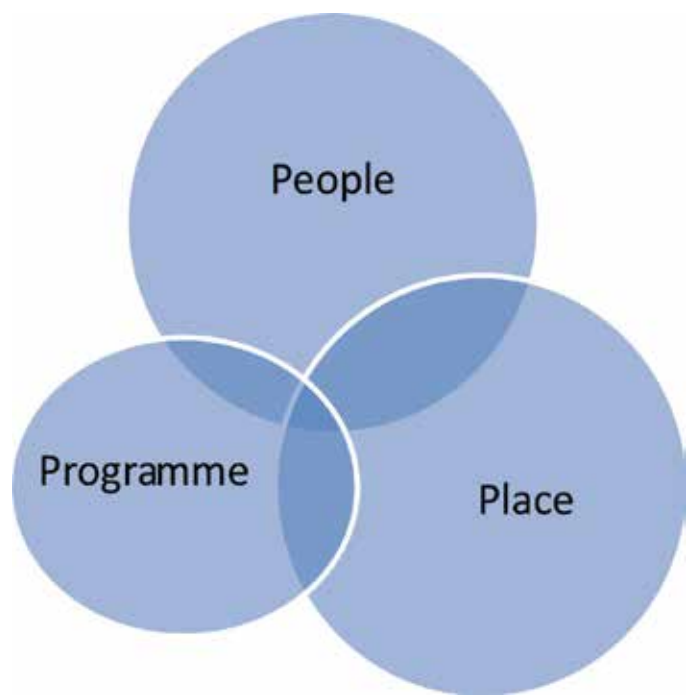
Figure 3. An unstable QA framework—least attention to Programme.
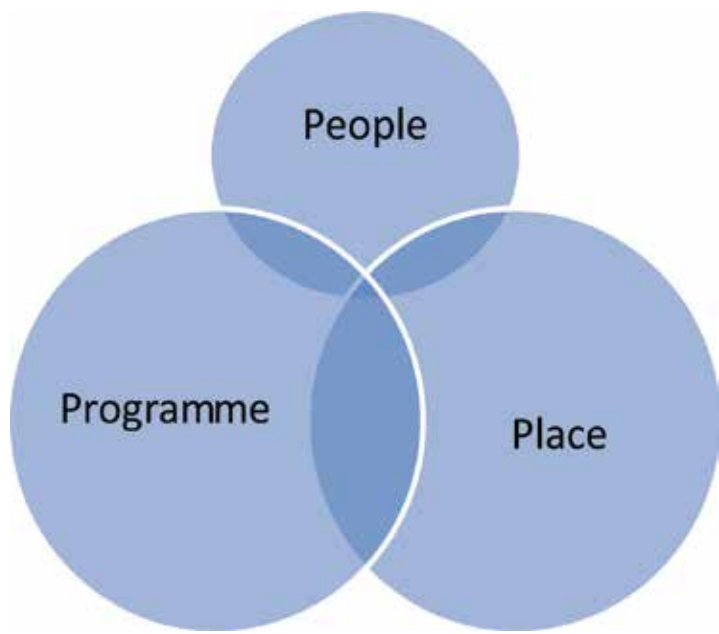
Figure 4. An unstable QA framework—least attention to People.

When such situations happen, there is the need to stabilise the quality assurance framework by increasing attention to the component that is receiving the least attention. We argue in this conceptualisation that this balance is a necessary condition for any resilient quality assurance framework in higher education because our operational definition of quality assurance is "mechanisms put in place by institutions to guarantee and enact stakeholders' expectations of quality" [28]. It stands to reason that at any particular point, there is likely to be disproportionate attention given to the three (people, programme, and place) areas of the quality assurance framework depending on the quality concerns of a particular higher education institution. However, stability of the framework is a pointer to an assurance of quality. In practical terms, policies and activities of an internal quality assurance framework of a higher education institution must focus on balancing the focus of the framework in order to facilitate quality enhancement.

6. Study methods

Investigating the quality assurance frameworks implemented by Ghanaian universities followed a qualitative approach because of the subjective views about quality in Ghana [36]. Adopting a case-study design [37], a purposive sampling technique was used to select three quality assurance officers from three flagship Ghanaian public universities whose quality assurance policies and practices are believed to have had a greater influence on other higher education institutions in Ghana. This made it more likely that information gathered from the quality assurance officers would be information rich [38]. As part of pre-interview arrangements, the officers were given information sheets. These noted the nature and purpose of the study and the benefits they stood to gain from participating. They were also informed that participation in the research was voluntary and that they were free to opt out at any time. The key informants were interviewed in-depth for approximately 1 hour. The interview interaction was fluid rather than rigid [39] but was shaped by the key question linked to the objectives of the study. The question was "What do quality assurance frameworks of higher education institutions in Ghana give the least attention to, and why?" During the data collection, the question was divided into two—the first part focused on collecting data on what receives attention in the quality assurance frameworks and the second part concentrated on what receives the least attention and why? Through in-depth interviews, the participants shared their quality assurance ideas and how these ideas were put into practice. The interviews were audiotaped to enhance accuracy. Data from the in-depth interviews were transcribed. Additional data were also obtained from institutional documents such as quality assurance activity reports and policies. These were coded and thematically analysed with the assistance of Nvivo 10 software. Preliminary themes were clustered into groups of themes [40]. Data from the interviews were corroborated and augmented with evidence from documents to enhance the credibility of the findings [41, 42]. Due to ethical considerations, confidentiality and anonymity of the respondents and the universities they work in were assured by assigning aliases to their names and their institutions [43, 44]. The major themes which the data were coded into were people, programme, and place.

The sub-themes present under people were internal stakeholders and external stakeholders who were involved in quality assurance practices of the universities. Programmes sub-themes were leadership and management practices, teaching and learning activities, student assessment, curriculum, professional development activities, research, staff recruitment, student admissions, and student support services. Place sub-themes were space, teaching/learning infrastructure, research infrastructure, and social amenities. These themes and sub-themes are presented and discussed below.

7. Results and discussions

We present and discuss the results under the major themes of people, programme, and Place, and in line with the two key parts of the research questions: what receives attention in the quality assurance frameworks and what receives the least attention and why?

7.1. What receives attention?

7.1.1. People

Collectively, stakeholders mentioned by respondents as involved in the case universities quality assurance policies and practices include senior members (academic), senior members (administration), students, senior staff, graduates, employers of graduates, professional bodies, regulatory bodies, and funding bodies but variations exist among universities. In university A, a respondent said, "*Here in this University, stakeholders involved in quality assurance practices are senior members (both academic and administration), students, senior staff, alumni, employers of our graduates, professional bodies, NCTE, NAB, and donor agencies.*" In university B, a respondent made this claim, "*We involve senior members (both academic and administration), students, senior staff, professional bodies, and NAB in our quality assurance practices.*" In university C, a respondent had this to say "In terms of people, our quality assurance practices involve *every member of staff and our external stakeholders such as, employers of our graduates, professional bodies, and NAB.*"

These responses were cross-examined through the quality assurance policy documents of the universities. In the quality assurance policy document of University A, it was stated that *in the effective implementation of this policy, there must be conscious efforts for collaboration internally (management, staff and students) and externally (other universities, industry and development partners).* University B's policy document states that the principles of its quality assurance include *external peer review, and ownership and involvement of staff and students of the quality assurance process.* In the policy document of University C, it is stated that *there will be regular external evaluations, involvement of professional bodies, potential employers and other relevant sections of the society, all staff, temporary and permanent, and all categories of students.*

It is clear from the interview responses and policy documents that relevant stakeholders are involved in the quality assurance policy and practice of the universities. The list of stakeholders from the policy documents which aligns with practice according to the interview data seemed comprehensive. This is consistent with best practice as reported in the literature [30, 31, 45] that all key stakeholders (both internal and external) must be responsible for

achieving quality in higher education. However, we did not explore the nature of involvement of stakeholders mentioned by respondents and the policy documents due to the focus of the study, even though we acknowledge that it is important. For example, if staff and students' involvement in quality assurance is only about validating their qualifications and results, respectively, then it is not enough because they should also be involved in providing feedback for continuous improvement [31].

7.1.2. Programme

Programme areas of coverage by the quality assurance frameworks of the case universities include leadership and management practices, teaching and learning activities, student assessment, curriculum, professional development activities, research, staff recruitment, student admissions, and student support services. However, these were not uniform across all the case universities. These programme areas represent collective responses that were coded. In University A, a respondent reported, "*Our quality assurance activities cover: Teaching and learning activities, Student Assessment, Professional development activities, Research, Staff recruitment, and Student admissions*." In University B, a respondent said, "*Our quality assurance activities cover: Leadership and management practices, Teaching and learning activities, Research, Staff recruitment, and Student admissions*." Responses from University C were similar to University B.

These responses were explored further through the quality assurance policy documents of the universities. University A's policy document indicates that it shall *develop strong quality assurance and planning mechanisms that apply to all programmes, processes, procedures, support services and structures across the University*. In the case of University B, it is stated that quality assurance activities shall be used to *advise the Academic Curriculum, Quality and Staff Development Committee on the determination and maintenance of acceptable levels of academic standards with respect to teaching, learning and research.* University C on the other hand has captured in its policy document that quality assurance shall focus on:

> *developing and maintaining, through enhanced support processes, quality academic programmes appropriate to the academic strengths of the University where a recognizable market has been clearly identified and ensure that all programmes are of high standard and of continued relevance to graduate labour markets and the needs of the workforce in the country.* It adds that *the University shall develop and refine internal quality assurance and enhancement mechanisms that are appropriate and shall apply such mechanisms systematically across all programmes offered by the University, all services rendered to society and all support services provided to students and staff.*

It is clear that the policy documents tend to provide the general framework to guide the practice of quality assurance and in most cases, do not define exact details of what the practitioners should do. For example, in University A, the policy document states that "it shall develop strong quality assurance and planning mechanisms that apply to all programmes, processes, procedures, support services and structures across the University." This, according to the interview data, was implemented to focus on "Teaching and learning activities, Student assessment, Professional development activities, Research, Staff recruitment, and Student admissions." Nonetheless, the alignment between policy and practice is discernible, just that some key programme areas such as student support services and institutional safety were conspicuously missing in quality assurance practice.

7.1.3. Place

Respondents from all the case universities indicated that their quality assurance practices cover physical facilities and locations even though there were differences in the type of facilities that were given attention to in their quality assurance practice. At University A, a respondent said, "*in our quality assurance practice, we check teaching and learning facilities, residential facilities, recreational facilities and spaces.*" A respondent from University B indicated, "*Our quality assurance practices cover only teaching and learning facilities because we are concerned with academic quality.*" At University C, a respondent stated, "*Our quality assurance practices focus on teaching and learning and research facilities.*"

We explored the quality assurance policy documents to find out if facilities and locations are captured. In University A's quality assurance policy document, a focus on facilities and locations is captured as "*the policy covers infrastructure and learning resources, social amenities and information dissemination structures.*" There was no clear evidence of quality assurance of facilities in the quality assurance policy document of University B, except that the scope and application section of the policy indicate that the policy applies to all academic areas and aspects of the University's operations. The policy document of University C captures facilities and location this way: "*we shall continually monitor and regularly assess the appropriateness and adequacy of support services provided for students and staff, especially in respect of adequacy and quality of Study materials, space and teaching/learning infrastructure; Social amenities, including health, catering, recreational and other services.*" Under the coverage of facilities and locations (place), there is a reasonable alignment between policy and practice. However, in practice, more facilities appear to be covered than indicated in the policy document.

We have so far analysed and discussed data on what receives attention in the quality assurance frameworks of the universities selected for this study. This is supposed to feed into the analysis and discussion on the second part of the research question that guided the study. This second part of the research question is "what receives the least attention and why," which is the focus of the next section.

7.2. What receives the least attention and why?

One of the assumptions of this study was based on the fact that quality assurance frameworks of universities may not provide attention to key operational areas equally, usually for strategic reasons. In this section, we present, analyse, and discuss findings on which key operational areas of the universities involved in this study receive the least attention in quality assurance frameworks. This part of the research question is addressed with findings mainly from the interviews because the focus is to examine what pertains in quality assurance practice rather than written policy. As usual and in line with the conceptual framework of this study, the findings were coded into key operational areas of people, programme, and place.

Respondents compared attention given to people, programme, and place in the practice of quality assurance in their universities. In two of the universities of this study, programme receives the greatest attention in quality assurance practice followed by people before place,

implying that place receives the least attention. At University A, this is what a respondent had to say

Regularly, about fifty percent of our quality assurance activities is devoted to programme operational areas of the university. We also give about thirty percent of our quality assurance activities to people involved in the university's operations while we devote the remaining twenty percent of our QA activities to our physical facilities. Teaching and learning activities formed the majority of our quality assurance activities regularly but we sometimes also look at curriculum, governance, research, student support services, professional development activities, student admissions and staff recruitment.

At University B, a similar response was provided. However, at University C, the greatest attention is given to people, followed by programme while place receives the least attention as a key operational area for quality assurance concentration. This is what was said at University C: "*We give about forty-five percent of our quality assurance activities to stakeholders involved in the university's operations and then thirty-five percent of attention is given to programme operational areas. The remaining twenty percent attention is given to our facilities.*"

The two Universities that give the greatest attention to programme as an operation area in their quality assurance practices provided the following reasons:

Programmes are the back bone or life-wire of the institution that needs much concentration because of the image it gives to the institution and without it, the University will not function. In addition, programme quality and activities related to it ensure competitiveness. Therefore, much attention is devoted to its coverage using experts and experience.

The core mandate of any institution centres on good programmes. The quality of programmes therefore seems imperative to be monitored. The core mandate of the university is teaching, learning and research. Without programmes, the university will fail to exist. Therefore, very much efforts are put into ensuring programmes are of standards.

The university that gives greatest attention to people also has these reasons to provide

The university recognizes that stakeholders are the most important aspect of quality assurance so they are included to ensure total quality management. Institution practice a culture of quality, there must be environments that all stakeholders must be involved in quality implementation to achieve what we call Total Quality Management. To a very great extent, both academic and administrative senior members are very much involved in the internal quality assurance practices that contribute to the quality of our programmes. Employers of our graduates, professional bodies, NCTE, NAB, some donor agencies, alumni and students also contribute to our quality assurance activities. However, some of these stakeholders are less involved in the quality assurance activities of the institution because they are not experts in the field of ensuring quality so we involve them only when we require their attention.

Place appears to receive the least attention even though all the respondents recognise it as a key operational area which must be given attention in quality assurance practice. These were some of the comments made by respondents:

Physical facilities are found to be factors of quality measurement and therefore contribute to quality practices. (University A response)

Efforts are put in to ensure convenient and comfortable physical facilities for the smooth running of the programmes, thus complementing quality assurance. (University B response)

Most of the facilities are key and strongly needed in the school to facilitate teaching and learning. In other words, teaching and learning facilities as well as residential facilities support student learning hence quality delivery cannot be effective without these physical facilities. Nonetheless, facilities form part of any quality assurance measure of every institution hence, their monitoring is a major concern though requires minimum concentration. That aside, there has been progress in recent times concerning the physical facilities of the institution and the massive build-up give credence to the assertions on percentages made in this area. (University C response)

From the responses, the importance of giving attention to place by quality assurance frameworks is not debatable. It is, however, intriguing that place receives the least attention in quality assurance practice. The reason provided for giving the least attention to place in their quality assurance frameworks is not consistent with the principle of equity in quality assurance practice to indicate that place has obtained optimum attention to the extent that attention could be shifted. It should be noted that quality higher education outcomes depend on quality people, programme, and Place [33–35].

8. Implications for quality assurance policy and practice in higher education

There is the need for higher education institutions to be strategic in the framing of their quality assurance policies and the practice of same and ensuring that equity is applied to key operational areas of their mandates. This will enable them to balance the foci of their quality assurance frameworks to achieve enhanced quality and also to make their quality assurance frameworks resilient to the changing dynamics of contemporary higher education. In doing so, the conceptual framework of this study offers higher education institutions a more comprehensive frame to classify their operational activities and weigh them on the scale of quality assurance to ensure a strategic balance needed for enhanced quality.

9. Limitations

Even though the study has measured quality assurance policy and practice of the universities involved, on a scale of three dimensions (people, programme and place) as key operational areas, it did not itemise activities under these three dimensions exhaustively. Therefore, not all indicators for quality assurance in higher education have been covered under the conceptual framework of the study. Similarly, the nature of stakeholders' involvement in quality assurance practice was not examined to warrant comments on the adequacy or appropriateness of their involvement.

10. Conclusion

It is now obvious that the scale of quality assurance frameworks of the universities involved in this study weighs in favour of programme, and place receives the least attention among the three key operational areas of the universities as defined by the conceptual framework of this

study. There is a clear indication of over-concentration of quality assurance activities on programme areas such as teaching and learning, curriculum design, research, student admission, staff recruitment, staff development, and student support services. Even under programme areas, teaching and learning appear to take the centre stage of quality assurance activities. This gives an indication of imbalance with regard to the focus of quality assurance activities in the universities. The over-concentration of quality assurance activities on programme areas suggests that these areas have the greatest quality concern that must be addressed as a matter of urgency. If this is the reality, then a strategic quality assurance framework is being implemented but even then regular balancing is required to maintain the stability of the framework. However, the context information provided in the earlier section suggests that the current major challenges facing universities, and the higher education sector of Ghana in general, are limited physical infrastructure and graduate employability due to skills mismatch [2, 4, 15]. These challenges are, to a large extent, attributable to insufficient facilities and stakeholder involvement in defining and implementing mechanisms for achieving quality rather than core activities of teaching and learning [16].

The situation requires more strategic attention to stakeholder involvement and facilities in quality assurance policy and practice. More attention to facilities is needed to enable qualified applicants to be admitted and to support quality programme delivery. More involvement of professional bodies, employers, and alumni is also needed in situations of skill mismatch. Meanwhile, the findings of the study suggest that stakeholder involvement is even over-concentrated on senior academic and administrative members making it "business as usual." A strategic quality assurance framework must be pragmatist oriented in order to solve practical issues. Over-concentration on teaching and learning activities suggests unstable quality assurance frameworks for the universities which are not capable of achieving enhanced quality. Therefore, there is the need to apply the principle of equity in quality assurance policy and practice such that quality key operational areas that have been underrepresented in quality assurance policy and practice are given more attention in order to stabilise the quality assurance frameworks for enhanced quality.

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Indonesia

Entrepreneurship Education within Higher Education Institutions (HEIs)

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Additional information is available at the end of the chapter

Abstract

Entrepreneurship education has been widely recognized as influencing the establishment of new businesses. Previous literature on the subject has reviewed the evaluation of entrepreneurship education within higher education institutions. However, the results of such reviews are unsystematic. Most literature focuses on main elements of entrepreneurship education consisting of courses, teaching methods, university facilities, and methods of measurement. This chapter proposes a systematic framework for promoting effective learning in entrepreneurship education within higher education institutions as a means of developing successful entrepreneurs.

Keywords: entrepreneurship education, higher education institution, systematic framework, successful entrepreneur

1. Introduction

Entrepreneurs are more probably made rather than born. Mistakes, hard work, and a consistent attitude combined with appropriate support at the right time do not constitute a magic formula [1]. Research found that entrepreneurs will typically exhibit a belief that events result directly from an individual's own behavior, a strong internal locus of control, and an ability to recognize opportunity, along with taking calculated risks and endurance [2].

The personal characteristics of entrepreneurs contribute to their willingness to innovate, determination, and success. Individuals with a high level of self-efficacy believe that they are capable of achieving a goal. They are more likely to be optimistic, having an internal locus of control and emotional stability. Individuals with a high need for success will achieve more

by setting goals based on their experience and ability. Besides, entrepreneurs always look for new opportunities or exploit familiar ones using novel methods. They are likely to recognize those not apparent to others, and they will ignore any instruction that hinders the exploiting of such opportunities. Moreover, entrepreneurs often show a greater willingness to tolerate ambiguity. They assume that, while unable to make fully accurate predictions about the future, they can take action to make a better one [1].

There is, in reality, no singular entrepreneurship gene. Nevertheless, there are characteristics and experiences that render an individual more disposed to the path of entrepreneurship and, therefore, successful. For example, the most accomplished entrepreneurs launched their first commercial enterprise at a young age. Among a survey of 685 leading entrepreneurs, more than half started their first company between the ages of 20 and 29 [2].

Most of the entrepreneurs surveyed did not get involved in their first business directly from higher education. Rather, they described themselves as "transitioned" (58%), meaning that they had gained some experience outside the entrepreneurial world before launching their own commercial venture. Among the survey respondents, some degree of business experience was considered to have significant importance as a necessary foundation in increasing the possibility of future success [2].

Many survey informants also confirmed that corporate sector experience provides an important grounding in business practices. Informants were most likely to select "experience as an employee" as having the highest impact (33%). Higher education was prioritized by almost one-third of informants (30%), followed by mentors (26%), family (21%), cofounders (16%), secondary education (13%), colleagues (12%), C-level executive/board (11%), friends (9%), and investors (5%) [2].

Despite higher education making an important contribution to commercial venture success [2], several countries face constraints relating to both formal and informal education and training, in developing start-ups into established business [3]. Entrepreneurship education (EE) has an important mission to guide all students toward having an entrepreneurial mindset [4]. The goal of EE within a higher education institution (HEI) is to expose students to entrepreneurial spirit and culture; in other words, to create highly intellectual entrepreneurs and new ventures that will create new job opportunities [5].

2. Is developing successful entrepreneurs through HEI study feasible?

The process of becoming a successful entrepreneur is a longitudinal process, starting in childhood. The literature highlights the following competences as instinctive and, therefore, difficult to teach:

a. Creativity and an opportunistic attitude [6]

Everybody can learn to be creative. Research studies found that, in this regard, nurture is more important than nature. A collection of studies suggests that two-thirds, or 67%, of

creativity skills are developed through learning, while only 25–40% of such competencies have been shown to be genetically determined [7]. The theory of psychosocial development posits that creativity is learned in early childhood, at approximately 2–3 years of age [8, 9].

b. The desire and willingness to take risks, accepting calculated risk and tolerance of failure [6]. According to psychosocial development theory, risk-taking behavior is learned at the preschool stage of 3–5 years old [8, 9].

c. Survival: this aspect is related to one's self-efficacy or high internal locus of control or perceived behavioral control [1].

These instinctual aspects can be understood by reviewing the theory of planned behavior (TPB). Proposing a model to measure the factors influencing the course of action, the theory was developed by Ajzen in 1988. It predicts the occurrence of particular behavior, provided that the latter is deliberate in nature. Individuals' intentions will influence their conduct. Intention is the antecedent meaning that individuals are prepared to demonstrate specific behavior. An individual's intention is determined by three factors: the individual's attitude toward the particular behavior, subjective norms (their beliefs about how people they care about will view the conduct in question), and perceived behavioral control. To be able to predict a particular type of behavior, we have to measure specific attitudes toward it, together with people's subjective norms. The individual's intention is more likely that of demonstrating certain behavior as well as more favorable attitudes, subjective norms, and perceived behavioral control. Perceived behavioral control (PBC) has been widely considered to be a key TPB component [10].

TPB implies that to become successful entrepreneurs, students must have a positive attitude toward this role and positive social support from their environment. Both aspects lead students to harbor both a positive opportunistic attitude and acceptance regarding risk and failure. Both positive attitudes and social supports are likely to exist to good effect if the students have high PBC. According to the literature, PBC is largely instinctive in nature [1]. While it can be taught, the learning process is protracted and impossible to complete effectively within the time limitations prevailing at educational institutions.

Alistair Shepherd, Kauffman Scholar, and the cofounder of Saber stated that "entrepreneurship can be taught to and accelerated by practitioners who are living within it" [1]. HEIs could give students valuable and systematic knowledge of all aspects of business, while equipping them with the necessary tools to prepare for all possible eventualities. The students could test ideas and concepts, besides which they could get worthwhile feedback in HEIs. In this aspect, nurture is important in developing students into accomplished entrepreneurs. Wright argued that anyone could learn the operations and techniques of how to run a business, but entrepreneurship is regarded as taking an idea and turning it into a sustainable business [6]. The key capabilities of creativity, desire, and boldness in taking risks and survival are instinctive. Therefore, some individuals will be more capable of demonstrating entrepreneurship than others. This implies that selecting potential students based on these criteria is very important in order to attain effective learning goals.

The next question is "Why do students have to learn all the activities and mechanics of running a business within an HEI context?" In order to provide an answer, one needs to refer to the age range that individuals undertaking study at HEIs fall within 19–23 years old. This represents a transitional stage between adolescence and early adulthood. Adolescents and adults are capable of using symbols that relate to abstract thinking. They can analyze multiple variables in systematic ways, formulate hypotheses, and consider abstract relationships and concepts [11]. In the light of this explanation, HEI students have the capability of solving problems and taking creative strategic decisions based on valid and reliable data. The resulting impact is likely to be that the business will operate with high accountability. Therefore, young entrepreneurs should be able to manage their commercial concern successfully in the long term (i.e., the business will be sustainable).

3. The role of HEIs in developing successful entrepreneurs

Before discussing further the role of HEIs in developing successful entrepreneurs, it is necessary to review Erik Erikson's psychosocial development theory [9]. Applying this theory, educators are able to learn about a life span's successive stages each of which confronts the individual with major challenges that she/he must successfully overcome in order to achieve healthy psychosocial development. From Erikson's perspective, there comes a particular point in an individual's life when each facet of his/her personality must have developed if it is, in fact, ever going to develop. When a particular facet does not develop on schedule, the rest of the individual's personality development is unfavorably influenced. That individual's capacity of dealing effectively with reality is then, in turn, compromised [9].

The theory of psychosocial development posits that college students are passing through a transition stage from adolescence to early adulthood. Adolescents need to develop a personal identity, a sense of self and during their teenage years do so in addition to exploring their independence. Adolescents who receive proper positive stimulation through personal experience will have feelings of independence, a strong sense of self and being in control. Otherwise, they will be confused about their self-identity and vision [9].

The central elements of learning at the adolescent stage include self-identity, understanding the meaning of success, critical thinking, risk taking, self-esteem, and fidelity. Young adult's central aspects of learning comprise critical thinking, risk-taking, self-esteem, independence, focus, and commitment [9]. This theory implies that HEIs must know their students' starting point, and that psychosocial development could inform this process. Due to the critical stage for adolescents of finding their self-identity, the university has to provide curricula and facilities that encourage students to achieve their self-identity as entrepreneurs in their first year of study. Over the following years, when students enter the stage of early adulthood, the university should then provide curricula and facilities supportive to students focusing on and committing to their passion (shape their self-identity). The university should also provide them with support in establishing their independence. The learning occurring within HEIs takes two forms: learning by observing others and experiential learning based on reflection.

Both forms are implemented by means of an entrepreneurial methodology through which the individual is active, process-based, collaborative, and multidisciplinary in the approach [12].

The major premise of social cognitive theory is that of observation-based learning. This work focuses on personality being developed through interaction between three elements, these being the environment, one's behavior, and one's own psychological processes. The theory states that modeling can have more impact than direct experience. The four conditions of behavior learning are attention, retention, reproduction, and motivation which involved in modeling. First, students have to pay attention to be capable of remembering what has been observed, to be able to translate their observation into an action, and can be motivated to do the observed example [13]. By observing others, students acquire knowledge and also learn about the usefulness of behaviors. The implications of this theory are that the university should provide good facilitators to deliver curriculum content, not only academics (lecturers) but also proprietors or managers of successful businesses (guest speakers). The facilities and delivery methods, such as an incubator, internet media, role plays, film and drama production, simulations, business plan development, internships, real-life case studies, interviews with entrepreneurs, games, project work, study visits, presentations, competitions, mentoring, among others, are intended to support successful implementation of the curriculum.

The most familiar experiential learning is that based on reflective action. This allows person as the main actor in the learning process. The learners reflect on their previous personal experience before interpreting and generalizing it to form a new learning. The learners are capable of building their own conceptualization (knowledge) through interaction with some sort of experience in their environment [14].

Kolb developed a theory seeking to clarify exactly how people learn by integrating their concrete emotional experiences will result different new learning. New learning is developed by comparing between concrete experience, reflective observation, abstract conceptualization, and subsequent active experimentation. The learning cycles are as follows: the learners live through a real life or workplace experience; the learners take some time for asking of their experience: about the nature and the meaning of experience; the learners get the lesson learned from their reflective action to make a conceptualization; and finally, the learners implement the new learning through active experience [15].

According to social learning theory and experiential learning theory, it is not sufficient for the university merely to provide such learning opportunities as observing others (guest lecturers), watching videos, role plays, simulations, study visits, interviews with entrepreneurs, internships, etc. It also has to provide real-life experience such as running an actual business in encouraging the students to be successful entrepreneurs. Since not all individuals learn from their experience [15], the institution must provide support for reflective thought such as mentoring or coaching sessions to encourage students to actively make sense of experience, link it to previous learning, and transform their existing understanding in some way. The interaction between reflective thought and the internal constructing of their own knowledge is effective when students have positive previous information regarding the expected outcomes (positive attitude, positive subjective norms, and high PBC).

4. The systematic framework of entrepreneurship education in developing successful entrepreneurs

The previous study proposed the systematic framework for entrepreneurship education (EE) within higher education institutions [16]. Their work provided the building process of its framework in a systematic way that consists of ontological, epistemological, and methodological assumptions. The systematic framework for EE can be seen in **Figure 1**.

Three important aspects for students to learn effectively are as follows: they must possess knowledge and skills that individuals apply in conducting their study, the process is focused on their recruitment and selection; they must have the supporting learning environment which provided by institutions that enable the students to undertake learning successfully
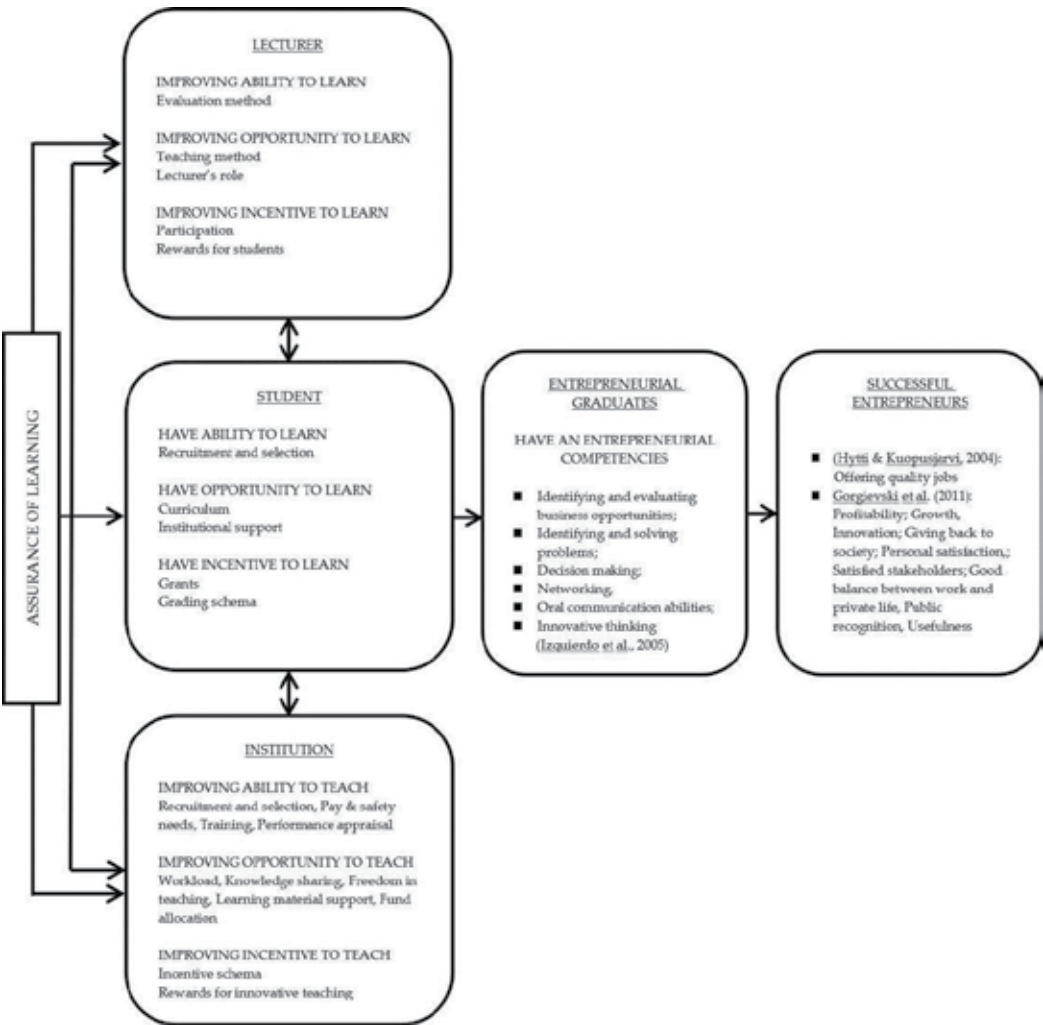
Figure 1. The systematic framework for entrepreneurship education in developing successful entrepreneurs [16].

such as curricula and facilities that are provided by institutions; and they must have something as a motivator such as grants and a grading system to conduct their study effectively.

The important aspects for lecturers are that they can improve their students' ability to learn through regular progress reviews such as learning evaluations; they can improve the opportunity of their students to learn satisfactorily, such as using the appropriate teaching method and provide mentoring if needed; and they have the capability of encouraging their students' motivation to learn such as using of reward to recognize their students' participation or performance.

There are several aspects necessary for lecturers to teach satisfactorily. The institution must improve the ability, opportunity, and incentive to teach. The institution should provide the mechanism or the process to acquire lecturers that enables to teach a particular subject or to undertake tasks successfully. This includes recruitment and selection of lecturers, pay and safety needs, professional development training, and performance evaluation. The institution should enhance the quality of lecturing capabilities to achieve learning goals. This includes appropriate workloads, knowledge sharing, pedagogical freedom, learning material support, and fund allocation. The institution also should provide positive motivation to teach satisfactorily such as the use of incentives and rewards for innovative teaching.

The output of EE within HEIs consists of entrepreneurial graduates possessing required entrepreneurial competencies such as identifying and evaluating business opportunity, identifying and solving problems, decision-making ability, networking skills, oral communication abilities, and innovative thinking [17]. Such individuals have the necessary competences to start new ventures (start-up businesses). The outcome of EE at HEI level is graduates capable of sustaining and growing a business beyond its launch to become successful entrepreneurs. The criteria for being considered as such include the ability to offer quality jobs [18], high profitability, significant business growth, unique business innovation, business contribution to society, personal satisfaction for the entrepreneur, stakeholder satisfaction with the entrepreneur, a meaningful work-life balance, strong public recognition, and product or service usefulness for consumers [19].

The contribution of previous study [16] is providing guidelines for effective learning to encourage students in becoming successful entrepreneurs, which reveals a research gap in the existing EE literature. This framework gives a better valuable insight than the previous studies [20, 21]. The framework provides clear whether key stakeholders' (students, lecturers, and institution) structured responsibility within a university relates to all important aspects of EE best practices, and it shows clear interaction among the institution's key stakeholders or the learning assurances in the implemented framework.

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Ireland

Challenging Performativity in Higher Education: Promoting a Healthier Learning Culture

Christine Deasy and Patricia Mannix-McNamara

Additional information is available at the end of the chapter

Abstract

The nature and context of education have changed dramatically in recent decades. The increased prioritisation of standardisation, performance indicators and metrics often means that holistic, affective and wellbeing education are seen as less important in the educational endeavour. The value of education for education's sake is under siege. Previous emphasis on the education of the whole person (i.e., moral and creative aesthetic development) is often replaced by a more functionalist perspective of education as servicing economic need and global capitalist interests. Marketization of education has increased at an exponential rate and has had an adverse impact on the health and well-being of both educators and students. This chapter elucidates how the triad of assessment, student well-being and academic well-being intersects in the ever increasing performative and neo-liberalist cultures of higher education. It demonstrates the reciprocal dynamic of stress that is becoming more and more evident among educators and students. The chapter makes the case for more empowering and human-centred educative contexts in order to facilitate better educational outcomes for students and healthier outcomes for all involved in the educational endeavour.

Keywords: performativity, higher education, neo-liberalism, academic stress, student stress, assessment

1. Introduction

Education is a site of significant change and is without a doubt under siege from external and economically driven forces [1]. Recent years have seen increased prioritization of standardization, performance indicators and metrics (see, for example, the prominence now given to the

results of international testing such as the Programme for International Student Assessment (PISA) [2], Trends in International Mathematics and Science Study (TIMMS) and the Progress in International Reading Literacy Study (PIRLS) [3], at the expense of broad and more liberal education agendas). In Ireland, for example, as a result of less than optimal performance in PISA [4], a national literacy and numeracy strategy [5] was swiftly introduced despite other equally pressing societal needs, such as the mental health crises in schools and suicide rates of 9.9 per 100,000 of young people aged between 15 and 24 [6]. There is some irony in the fact that the Organisation for Economic Cooperation and Development (OECD), responsible for PISA, is an organization driven by an economic and human capital agenda. The OECD has, in effect, created international league tables and in so doing has exerted overarching influence on national educational polices. This raises significant challenges with regard to the changing nature of the purpose of education. In 1948, at the height of political upheaval in the United States, Martin Luther King, in his speech at Morehouse College, evoked the function of education as to teach one to think – to think both intensively and critically. More pressingly, he advocated that education, which stops with efficiency, might indeed prove the greatest menace to society. He saw the prioritization of intelligence without attention to character formation and societal responsibility as deeply problematic. Despite strong critique of the growing trends of performance, measurement and narrowly focused accountability, neo-liberalist trends have continued to exert ever-increasing influence in education [1, 7]. These trends are worrying for several reasons, not least of which is the increasing pressure it places upon students and teachers, but also and even more worryingly, it has served to disempower teachers with adverse consequences on their agency and autonomy. Once cited as having legendary autonomy by the OECD [8], Irish teachers are increasingly deprofessionalized and disenfranchised in terms of their professional confidence and agency [9]. This is not limited to teachers in primary and post-primary schools; similar trends are also evident in higher education [10].

2. Higher education context

It would be naïve to state that at any juncture the perfect or utopian education system has existed. However, in past decades, Irish schools had more freedom in terms of the time available to attend the holistic development of their students. Schools in Ireland are now placed on league tables that are ordered by the number of students who progress to university. These league tables are published yearly in the national newspapers and are discussed across the national media (radio and television). This increased pressure on schools to educate students for university has meant that many schools have narrowed their focus and now tailor their content and pedagogy exclusively to the terminal exam, which is called the Leaving Certificate [9]. Similar to matriculation, results of this exam are high stakes for schools because the number of successful students to gain a university place (based on this exam) determines their place on the league tables. The results are also high stakes for students because their results determine access to a university course. This has resulted in exclusive concentration on exam performance in the latter years of schooling. The trend then continues into higher education, where neo-liberalism has radically changed higher education globally [11, 12].

Mercille and Murphy [13] identify the pervasive nature of neo-liberalism in the higher education sector in Ireland. According to Lipman [14, p. 6], 'Put simply neo-liberalism is an ensemble of economic and social policies, forms of governance, and discourses and ideologies that promote individual self interest, unrestricted flows of capital, deep reductions in the cost of labour, and sharp retrenchment of the public sphere'. It is not a new ideology and has been, according to Lipman [14] among others, 'the defining paradigm social paradigm for the past 30 years' (ibid). Inherent in neo-liberalism is the rise of individual competition, the destruction of the welfare state, control of the public space (i.e., controlling the right to protest), the privatization of services, marketization of education and control of the public intellectual (see Giroux [10]). Mercille and Murphy [13] draw attention to global studies that have discussed the impact of neo-liberalism on higher education. Among others, they cite Aronowitz [15] and Ball [16] who point to increasing commercialism and privatization agendas [17] and to consequent narrowing and elitism of higher education [18, 19]. Bousquet [20] has advocated that neo-liberalism in higher education is supported by a view of education that supports more standardization, more managerial control, a teacher-proof curriculum, top down control of curriculum, tenured management and the reduction of faculty to part time and temporary employees. The result is disenfranchised and disempowered intellectuals. Universities are now clearly experiencing significant challenges specifically related to budget cuts, tailoring of curriculum to meet the needs of the market [21–23], and the destruction of faculty agency. The pressures experienced by national public funding cut result in need to secure funding from private sources, from student fees (both national and international), from philanthropic donations [13] and from national and international research funding. Liefner [24 p. 269] identifies that 'A high proportion of funding for higher education institutions is now provided by private factors, for example, in the form of tuition and fees, gifts, grants, or research contracts. Their demand drives many activities of universities, faculty, and staff'. Indeed, Liefner's research identified that the performance demands associated with funding pressures (publications and citations) have meant that faculty tend to stay within their academic fields and avoid projects with uncertain outcomes. Faculty will in effect avoid what they see as risk (ibid). Consequently, universities find themselves positioned as having to provide services, research and labour to the corporate sector [13, 25]. Dependence on such indentured service provision comes at a high cost to traditional values such as academic freedom. The capacity for academics to freely offer societal critique is a capacity fast becoming a thing of the past [10]. So much so that Giroux cites Washburn [25 p. 227] who notes:

> In the classroom deans and provosts are concerned less with the quality of instruction than with how much money their professors bring in. As universities become commercial entities, the space to perform research that is critical of industry or challenges conventional market ideology—research on environmental pollution, poverty alleviation, occupational health hazards—has gradually diminished, as has the willingness of universities to defend professors whose findings conflict with the interests of their corporate sponsors. Will universities stand up for academic freedom in these situations, or will they bow to commercial pressure out of fear of alienating their donors?

These pressures exacerbate heavy workloads for many academics. Meeting performance measures such as research output and successful tendering for external funding are now indicators that academics must content with in addition to teaching. In Ireland, for example, the

new managerialist monitoring of performance (evident in the recent instigation of performance appraisals) places 'research output' (colloquially synonymous for paper publication in high quartile high-impact journals) on the performance agenda. In Irish universities, faculty now contend with balancing these new expectations of 'research output' with teaching and learning commitments. In addition, they grapple with increased post-graduate supervision duties through the proliferation of structured doctorate programmes and more and more administrative expectations. This model is, however, going through surreptitious modification with the nature of recent changes to academic work in Irish Universities such as the employment of College Teachers rather than Lecturers whose duties are teaching only. In itself this creates interesting hierarchies in terms of what is valued (research versus teaching debate). The increased appointment of non-tenured or contingent faculty erodes academic freedom even further [25]. This trend is not limited to European universities as Washburn [25] cites Bradley [26] of the American Association of American Professors who points to the 'silent self censorship of thousands of professors holding temporary, insecure appointments'. Washburn explains that in the United States between 1998 and 2001, full time non-tenure track appointments rose by 35.5% and by 2006, 60% of all college and university faculty held non-tenure track positions. Lack of tenure and precarious employment are powerful disincentives to discuss controversial issues or to express unorthodox views and is, according to Washburn, a troubling prospect for those who care about academic freedom [25]. The trend to disenfranchise academic staff has continued unchecked, so much so that on 15 March 2017, several education trade unions mobilized for the World Action Day against Precarity in Higher Education and Research [27].

For some institutions, accountability is now propelled by an 'output driven' corporate style of managerialism taken from the business world and from neo-liberal models of organizational governance [28, p. 46, 13]. Lynch [29] identifies that 'universities are increasingly under pressure to change from being independent centres of higher education and critical scholarship, maintaining their distance from powerful vested interests (commercial, political or other) to being service-delivery operations for the market economy'. The stress experienced by higher education professionals in recent years has been linked with the rise of neo-liberalism [30]. It is fuelled by the cumulative emphasis on quality, efficiency, accountability and performativity, which have occurred simultaneously with decreased resources and funding. Dowling-Hetherington [31] provides some useful insight into the changing demands faced by Irish academics in a case study of the School of Business at University College Dublin which is the largest university in Ireland. The case study identifies increased demands in terms of publications and research output in addition to increased administrative roles. These spiralling demands and expectations on academics occur in the context of eroded professional autonomy, a consequence of managerialism [32] and government cuts in funding for higher education [13]. Furthermore, linking of funding with outcomes as advocated by the Hunt report [33] (the policy document for higher education in Ireland) increases the potential for stress among academics.

A consequential and worrying trend of neo-liberalism in higher education is evidenced in the report of an expert group on fixed-term part-time employment in lecturing at third level in Ireland in 2016 [34]. The results indicate that up to two-thirds of lecturing staff in some higher

education institutions are not full-time or permanent [34]. Unions have argued that this constitutes strong evidence that precarious work is propping up much of the third-level sector [35]. This trend is not specific to Ireland, with similar trends reported in the United Kingdom. Such precarious employment increases stress for untenured academics and serves to silence potential dissent for fear of adverse contractual consequences. Lynch [29] warns of what is at stake. 'When success is judged exclusively by measurable performances (rankings and league tables of colleges, schools and people) what cannot be numerically recorded becomes inconsequential. The outcome is that the ethic of care for students (and for staff) is subordinated to market success'. She further warns that institutionalizing market values over-rides and weakens other values in education. She explains that social and moral values are relegated in importance, with trust, integrity, care and solidarity becoming subordinated to monitoring, control and competition. It is in this cultural context that individualism and the pursuit of economic self-interest and credentials among students and personal career interests among staff thrive. She further indicates that both student and staff idealism to work in the public interest are implicitly and, sometimes, explicitly discouraged [29].

The audit and performativity culture that has invaded university professional life [36] means that health and well-being of students and staff is in danger of becoming eclipsed. McDermott et al. [37 p. 248] note that 'in a performance-oriented culture, there is a pressure on individuals, organizations and sectors to engage in work that is visible and measurable, work that can be exteriorized and translated into results, so that one set of results can be measured and compared to another'. Highlighting the importance of some aspects of academic work (for example, research outputs in Institute for Scientific Information (ISI) journals) results in the non-audited elements of lecturer work becoming almost invisible (for example, personal tutoring or service activities) with potentially adverse consequences for individual well-being, resilience and career development [38]. The negative impact of the performative culture on space for the promotion of emotional health is clearly articulated by Ball [39 p. 30] 'The first-order effect of performativity is to reorient pedagogical and scholarly activities towards those which are likely to have a positive impact on measurable performance outcomes and are a deflection of attention away from aspects of social, emotional or moral development that have no immediate measurable performative value'. In this context, performance appraisals and mechanisms of new management can be seen as detrimental to staff well-being because they can cause undue stress which impacts negatively on an essential criterion of academia, cognitive thinking [40]. There is little doubt that these factors among others cohere to make the academic work environment increasingly performative, individualistic, competitive and consequently stressful. It is important to acknowledge that learning in itself is also stressful and stress makes learning, the goal of higher education, even harder to achieve because stress has been associated with impaired cognitive performance [41].

3. Stress among academics

Stress is an inherent feature of the work life of many higher education professionals and is a serious concern in higher education [42]. The available evidence suggests that academics are

experiencing increased stress levels [30, 42, 43]. This is of concern given that 'work-related stress has significant costs for the well-being of academics, their families, their colleagues, and their university and more broadly for the quality of higher education' [30, p. 231]. The combined responsibilities of teaching, research and community service coupled with work overload are reported as the most significant determinants of stress among this population [44]. Other significant stressors include emotion work [45]; email related stress [46]; work-life conflict [30, 47, 48] job insecurity/lack of tenure and bullying cultures. Increased student numbers and student diversity coupled with decreased student staff ratios [13] and increased student expectations can make it difficult for academics to balance competing demands. The increasing number of students with mental health issues [49] and the growing suicide rates among young people in Ireland [6] also added to the burden. For some academics, the prioritization of student needs over their own well-being, which may be linked to fear of having their teaching poorly evaluated by students, further exacerbates their stress.

This constellation of conflicting pressures and demands on academics has translated into longer working hours [42, 50]. Research conducted in Australia found that academics tend to work longer hours than most other professional groups [50]. In the United Kingdom, a national study of academics found that 36% regularly work in excess of the 48-hour weekly limit set by the European Union's Working Time Directive, with almost one respondent in three working more than 50 hours [42]. High levels of workaholism are also evident in the Irish academic population [51]. The drive for an ever-enhanced student experience also adds to the stress and workload of academics. 'Universities put considerable time and effort into enhancing the student experience, and rightly so, but little consideration appears to be given to the implications for exhausted, demoralized and dissatisfied academics' [30, p. 231]. The emotional cost of the caring component of the academic role is often overlooked. Furthermore, the lack of risk assessment for stress by education institutions and the shifting of responsibility for self-care away from higher education providers to the individual academic suggest that institutions are neglecting their occupational health and safety responsibilities. In this context, it is increasingly challenging for academics to engage in self-care with potentially deleterious impact on their professional work and personal welfare. Deasy et al. [52] alert us to the tensions that exist between self and other forms of care in professional programmes such as nurse education [53] and initial teacher education [54] and which may provide some explanation for the neglect of self-care by these professionals. What is of deep concern is that sustained exposure to pressures can result in burnout [55], or negatively impact the well-being of academics [30]. Indeed, there is evidence of high levels of psychological distress (as measured by the GHQ12) among academics. For example, Kinman et al. [56] reported caseness[1] (significant levels of psychological distress) rates of 50% in a UK sample and Winefield et al. [57] reported similarly high levels of caseness (43%) among Australian academics. A systematic literature review to evaluate the prevalence of burnout among university teaching staff found that burnout in this professional group was comparable to that experienced by school teachers and healthcare professionals [58]. There are increasing demands on academics

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[1]'Caseness' is defined as whether or not a subject has the condition of interest based on the score they gain (in this instance on the GHQ). A cut of score (usually 5 or above in the GHQ 28) denotes a significant level of psychological distress, for example, and is referred to as 'caseness'.

that expand the pastoral care dimensions of the teaching role; for example, higher education students in the United Kingdom clearly articulated their perceptions of the role of academic staff beyond pedagogical development by asserting that lecturers 'are not there just to teach the subject' [59, p. 680]. However, academics in demanding working environments are less likely to be in a position to create optimum outcomes for students when they themselves are unduly stressed [45, 57]. Furthermore, Deasy et al. [52] argue that the increased workload and greater expectations on academic staff in terms of research outputs make it increasingly difficult for academics to dedicate time to developing and supporting students. The adverse consequences of increasing competitiveness and of greater demands and expectations on the health and well-being of academic staff [60, 61] raise queries with regard to their potential as role models for health. Indeed, we argue that conversely the high expectations of overworking and high tolerance of the stressed environment are actually sowing the seeds of workplace stress and burnout in the initial education experience of higher education students [62]. Burnout has been cited as having some genesis in the undergraduate education experience [63, 64], therefore programmes known to be stressful (especially those with vocational preparation components such as nursing and teaching) must incorporate effective coping skills to equip students with effective coping skills for use in their future careers to prevent engendering and sustaining cycles of distress and poor coping.

4. Stress among students

Stress is not limited to the academic work environment. Stress and coping have been identified as important variables affecting health [65–67]. The evidence points to increased stress and distress as adversely impacting the health of higher education students also [40]. Recent research by Deasy et al. [52, 68] found that 39% of higher education students were identifiable as 'cases' (scores > 5 on the GHQ) i.e., having distress levels indicative of poor mental health. Clearly, higher education students are vulnerable to psychological distress [68, 69]. Frequent reports of stress and psychological distress in student populations may have led to some acceptance of distress as a normal part of student life [70, 71]. Such acceptance precludes efforts to address the issue. Yet, the evidence suggests that significant numbers of students are experiencing psychological distress at a level that can adversely impact their mental and physical health [72], their lifestyle behaviours [73], their academic performance [74], retention [75] and ultimately their future professional careers. Furthermore, acceptance of student stress as normal serves to exacerbate reluctance of students to seek help [74] with potentially adverse consequences not only for students but also for higher education institutions in terms of student success and retention [76].

In the same way as the changing nature of the workplace has increased stress for academics, stress among students also results from a combination of academic and other demands that exceed a person's adaptive resources. Stress inducing factors include financial uncertainty, poor employment prospects, increased pressure to do well and technological overload [41]. Research indicates that the current economic climate has led to increased financial stress for students [77]. In Ireland, the changing higher education landscape has resulted in substantial

increases in student registration fees and reduced student grants. Less employment opportunities post-graduation also exacerbates the distress [52]. However, it is noteworthy that workload (similar to academics themselves) is the dominant stress-inducing factor. There is an interesting reciprocal synergy at play here. Assessment is the main stressor reported by students [52]. Assessment related workload is also a core stress flashpoint for academics. It is perhaps surprising that higher education fails at an effective level to address or even at minimum to engage in any discourse on the reciprocal nature of stress. Recognition of stress as structurally embedded and as deleterious to both staff and student health is clearly warranted if it is to be addressed in any meaningful manner.

The interaction of the many and varied stressors experienced by higher education students have been linked with a myriad of negative outcomes on achievement and academic performance [41, 71, 76, 78]. Cognitive deficits linked with high stress levels including difficulty concentrating and paying attention in class, which has the potential to impede learning and performance, have also been identified as problematic [78]. Clearly, stress negatively impacts student's judgement, their ability to think, to learn, to make decisions and to concentrate [41].

The nature of what it is to be a student is clearly changing also. Many students now combine their studies with work and family commitments, resulting in a significantly increased workload [79]. How students understand their workload is also an interesting concept as they often correlate workload with the number of assignments that they are required to complete rather than to the actual amount of work they do [80] which in itself is an interesting commentary on the Bologna process and the European Credit Transfers (ECTs) conceptualization of workload as envisaged by most European universities. European Credits are the credits associated with hours spent on module study. They vary somewhat between countries but on average, one ECTs credit equals between 25 and 30 study hours. In Ireland, as in Spain and Italy, one ECTs equates with 25 hours study approximately; in Finland, they generally equate to 27 hours; and in the Netherlands, 28 hours. This notwithstanding, some programmes of study remain the most heavily timetabled and workload heavy offerings, in particular teacher and nursing education feature predominantly. The potential adverse impact on both student well-being and learning suggests the need for action. It is perhaps not unrelated then, that these professions feature as among the most vulnerable to burnout in the future. Our recently published research [52, 62, 81] that listened to students voice their experiences resulted in some data that were quite stark. For example, one student explains:

> *'It's difficult sometimes, last week I had a lot of things so I found myself being up until 3 o'clock… four o'clock in the morning trying to finish off things and then you go into labs during the day and you're just wrecked, especially if it's a three hour lab where you have no breaks, you've been up until about three or four in the morning and nothing is going in and then when you try to reproduce the stuff from that Lab you found that you haven't really learned a huge amount'. (Interview 12)* [68 p. 1328]

Another student also discussed a similar experience with clearly adverse impact upon learning:

> *'I get so much work to do all of the time it can get you down…It is hard… I don't like the idea that you don't have time to study what you are learning because you are constantly doing work, so you still feel*

lost and you still feel behind because you are after spending a few hours doing an essay but you don't actually understand what you did in another class that might be more theory based you know, harder... that is really annoying because you are actually working I don't know what else you can do (Interview 19)'. [68 p. 1328]

Students are clearly not immune to the increasingly individualistic and competitive nature of higher education. The desire to secure a 'good' degree created competition between students.

'Stress, especially in third year and now because the QCA (Quality Credit Average) counts I've noticed like everyone seems to be in competition, which is different to like second year, first year...We used to all rely on each other... we shared our work and now we don't share our work (Interview 26)'. [68, p. 1328]

The potential of workload to build up and overwhelm students was identified.

'It just develops and develops and develops and it's like a stack of books, eventually they're going to all fall down on top of you... there's way too much workload (Interview 37)'. [52, p. 10]

What was interesting in the data was that students actually perceived lack of lecturer appreciation of the workload that they shoulder: *'I don't think lecturers understand that you've other modules as well; they don't seem to understand that at all' (Interview 2)* [52, p. 184]. However, without doubt, lecturers themselves are feeling the same overwhelming build-up of work tasks and pressures, and yet in some instances, lecturer behaviour was an actual stressor for students

'My FYP my tutor was a big source of stress because I didn't find him helpful... I did not have a notion how to analyse any of my results and he wasn't any help for me... he just said look it up on you tube or Google to find out how to do it. There was another guy, a post grad that was working with him that helped me and only for him I'd still be trying to do my FYP at this stage (Interview 26)'. [62, p. 8]

'I had a Lecturer there last year, he really stressed me out big time...He failed a lot of the course...I thought he was just acting up getting on a power trip.... it was stressful enough.... I didn't know if I was going to be able to go on teaching practice (Interview 25)'. [62, p. 8]

Evaluation in terms of examinations and assessment were significant stressors experienced by these students and appeared to create an unhealthy imbalance and to fuel a performativity agenda. This is problematic on a number of levels, not least because recent discourses in education are cautioning against the unhealthy and counterproductive over emphasis on assessment. Types of assessment were clearly problematic as illustrated in the following student narratives

'Presentations are very stressful...I had mine this day last week and for the week before I was waking up in a sweat over it... I get really, really bad panic attacks.... I actually had to start taking medication for it... college was a trigger I am not good with dealing with stress... I love college but it is stressful but if I didn't love it I probably would have given it up because it made me not feel well (Interview 56)'. [62, p. 8]

'I find around exam times it's stressful, the guilt of trying to manage the time you need for your exams and trying to manage home life as well.... in the couple of weeks coming up to exams I have the stress of the exams and the stress of feeling so guilty that I feel the kids are practically driving themselves around (interview 34)'. [62, p. 8]

It is evident that workload stress is getting in the way of optimal learning for several students.

5. Meaningful engagement with stress in higher education

Clearly, there is space for meaningful discourse to occur with regard to the impact of stress. We are not advocating a naïve stance with regard to academic stress for students and lecturers. We clearly acknowledge the impossibility of a stress-free experience for all. We also acknowledge that positive stress actually has a motivating role to play here. However, the voices of students in our research clearly call for a more thoughtful and 'care-full' educative experience for both staff and students in higher education. We were surprised by the students' responses to the stressful nature of group work and group assessment, given the increasing (often even overzealous) prioritization of collaboration in teaching and learning. The pedagogical over emphasis on working in groups was identified as significantly increasing pressure on students. Clearly, the nature of assessment is directly related to the stress experienced by students [82], including group work such as group presentations in professional-based programmes such as teaching and nursing that is deemed important (even essential) as they are perceived to provide a wealth of learning opportunities [83] and promote collaborative working, a valued graduate attribute. Nevertheless, the adverse consequences of group work must also be deliberated. Finding and managing the time required to work with several different groups is stressful for students. The potential negative impact of group work on student grades and the issues highlighted by students in relation to free riding need to be acknowledged and addressed in the interests of equity. One might be tempted to think that increased lecturer workload and higher student numbers [60] might mean that there are pragmatic as opposed to pedagogical reasons for the increased use of group assessment. It is possible that for some academic staff, group work is a means of reducing workload [83] or managing their large numbers of students to be assessed. In the current high stress academic climate, reducing the burden of assessment for both students and academic staff is critical [84]. However, it is also important to strike a balance between pedagogy and pragmatism so that students are exposed to a variety of assessment methods, which cater for different learning preferences and styles. It is also critical that lecturers using this method of assessment put strategies in place to minimize 'free riding' [83] and performance anxiety (easier said than done); however, these are key determinants of stress and therefore need to be addressed. Assessment processes need to be created cognizant of ensuring that students are not disadvantaged in terms of their grade potential by repeated exposure to the same assessment process, which has the potential to disadvantage them repeatedly [82].

At a practical level in order to break the cycle of assessment and performativity, university educators need to take an innovative and health enhancing approach to assessment. A greater balance between continuous and summative assessment and coordinated efforts to ensure that assignment submission dates do not coincide with end of semester examinations may serve to alleviate key stress flashpoints. A more holistic approach could be achieved by greater co-operation and linkage between those teaching and assessing different modules within programmes [85]. Student voices in our research suggest that a coordinated approach to assessment would go some way towards addressing stress triggered by having multiple assessments due for submission simultaneously. Students acknowledge that they contribute to their own stress by not balancing their work over the semester and should be supported to develop effective time management, stress management and life skills so that they can

better manage their workload and time. However, academic staffs have a duty to carefully plan and structure assessment and submission dates across modules to minimize unnecessary stress. At a macro level, more critical engagement with how stress has become embedded in and manifest in higher education and the deleterious consequences for all, both staff and students clearly require significant consideration. It is not beyond the bounds of society's creative thinkers (if they are not overstressed in the first place) to create a culture that supports themselves and their students to deliver a relatively stress free and enhanced quality of educational experience.

Healthier students learn better and have better educational outcomes [86]. Promoting health and well-being and proactively engaging with stress are important for health as well as for educational attainment. Increasingly, institutions of higher education are perceived as important settings for health promotion and are committed to address health as part of the health promoting university initiative [87, 88]. A health promoting university framework uses an ecological model and a systems perspective to promote a learning environment and culture that enhances the health and well-being of both students and staff [89]. The momentum for the healthy university approach is strengthened with the 2015 launch of 'The Okanagan Charter: An international charter for health promoting universities and colleges' [90] which replaced the initial Edmonton charter [91]. The Okanagan Charter 'calls upon higher education institutions to incorporate health promotion values and principles into their mission, vision and strategic plans, and to model and test approaches for the wider community and society' [90, p. 5]. Antonovsky's theory of salutogenesis is a useful theory to guide the Health Promoting University approach [89] as it evolved from his work on how people manage stress and stay well. There is increasing acknowledgement that universities need to focus on what is needed to create a well-being environment [45]. However, almost 20 years have passed since the healthy university concept was initially introduced [88] yet there has been limited progress in enhancing the health promoting ethos and culture of many higher education institutions and conversely the well-being of both students and staff appears to continue to deteriorate. To comprehensively address stress among the student population, educators need to critically analyse the structuring of their education provision and its potential to exacerbate stress among students and for themselves [52]. A review of curriculum, which genuinely considers student voice and which identifies opportunities to infuse health and well-being into curriculum, is warranted. There is a need to embed within curriculum, preventative strategies such as life skills, stress management and time management, along with promotion of self-care and resilience building activities to enhance students' personal resources in order to help them cope with current and future stressors [52].

Higher education educators need to adopt a more holistic approach to assessment as this is an integral but often overlooked determinant of student health [92]. Over emphasis on assessment, over reliance on particular assessment strategies and their potential to impact student health need consideration. The fact that assessment can be quite stressful for academics also needs to be part of the thinking. Self-care skills are as important for the academic as for the student. It is important to identify student needs from the student perspective and to incorporate recognition of the reciprocal stress dynamic at play rather than simply engaging in normative support provision targeted at students alone. Proactive rather than reactive support provision is warranted. Providing resources and facilities, on their own, is not enough [59]. Educators need to

be mindful of their potential to add to student and to their own distress and should carefully examine their curricular demands, especially the potential for academic overload of students [93] and of themselves. While this may be new territory for many, pastoral care does not cease at the gates of the university and it is not only student focused. The potential to institute the stressed perspective early in the professional formation of young people clearly warrants further discourse and intervention. Stronger recognition is required that excessive managerialism is counterproductive and is damaging the health and well-being of academic staff in the sector.

6. Conclusion

The challenge here is to reshape the higher education environment and to develop structures that enable both educators and students to flourish in educatively supportive cultures. Huyton [94] argues that failure to recognize the importance of emotional labour can have a detrimental effect on educators and the pastoral support service they provide to students. We argue that recognition of care for academics themselves and not just their capacity to provide emotional support for others is essential. While some argue that workload allocations must include 'emotion work' [45], it is difficult to see in the current climate of performativity how this could actually gain traction. However, turning a blind eye to it is not the answer either. Higher education institutions need to become more supportive, empowering and healthy places where both students and staff can develop personally, socially and intellectually. Given the once traditional academic freedom of the academic (albeit clearly currently under siege), who if not academics will stand as the final bulwark against the insidious and pervasive problem of neo-liberalism and new managerialism in education and in particular the clearly stressful and adverse consequences it is having on the educational experience of all.

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Middle East North Africa (MENA)

A Community of Practice Around Online Labs in Iraq: Towards Effective Support for Academics and Higher Educational Systems in the MENA Region

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Pedro Guerreiro

Additional information is available at the end of the chapter

Abstract

The growing interest of society in science and engineering disciplines has lead to a quality improvement in curricula; a more careful definition of the educational outcomes; and; an increased concern with the continuous improvement of student learning and the quality of teacher training programmes. Hands-on experiments with innovative instructional technologies (e.g. online labs) built confidence and skills of academics and students by helping them to better understand, especially in those disciplines. A community of practice is a group of people informally bound together by shared expertise or an area of interest in a topic. It focuses on sharing best practices and creating new knowledge to advance a domain of professional practice. In addition, it shares the appropriate activities and instructional technologies that support the higher educational systems. This study aims to examine how teachers and students are interested in using online labs to support hands-on labs for completing their educational tasks and illustrates the potential benefit of a community of practice around online labs. Consequently, in order to facilitate the formation of a new community of practice around instructional technologies in the Middle East and North Africa, several presentations about online labs have been made in different universities in Iraq

Keywords: higher educational systems, Middle East and North Africa region, community of practice, online labs, engineering and science disciplines

1. Introduction

Simply put, an educational system is a set of schools and universities in a given country. Educational systems are crucial because, in the end, they are what empower societies to empower the individual to develop culture, civilization, personality, socio-economic status, informal and formal educational experiences, and a creative mindset [1].

Educational systems are complex entities, and reforming them poses difficult, multifaceted challenges. They may require changes in government policy, adjustments in labor negotiation, and modifications of academic routine [2].

Active learning is an instructional method that strives to engage students in the learning process by encouraging them to perform meaningful learning activities, while always questioning the relevance of what is being achieved. Active learning also creates opportunities for students to collaborate with one another and with teachers, working in small groups toward a common goal [3, 4]. Quoting from the report Active Learning: Creating Excitement in the Classroom [5]:

> *"Students must do more than just listen: They must read, write, discuss, or be engaged in solving problems. Most important, to be actively involved, students must engage in such higher order thinking tasks as analysis, synthesis, and evaluation. Within this context, it is proposed that strategies promoting active learning be defined as instructional activities involving students in doing things and thinking about what they are doing." (pp.5)*

This stronger emphasis on the individual work of the student, as opposed to merely attending classes [6–8], is one key aspect of the Bologna process,[1] a remarkable reform that took place in the last decade, in the countries of the European Union. Although the main goal of the Bologna process was to ensure comparability among higher education qualifications, in terms of standards and quality measures, it also included a reform of the teaching and learning process.

In Latin America, some countries (namely Brazil, Chile, and El Salvador) have also reformed their higher educational systems. In 2012, the first bi-regional University Association Conference in Brazil discussed the innovative strategies for higher educational systems among Latin American and European universities. Among those are collaborative research, research partnerships, and two-way exchanges among universities [6].

An obvious means to enhance educational productivity is using resources more effectively. Another is relying more on technology. A third is to increase the number of courses where the student demand is high, although this one must be considered carefully in those areas where jobs are scarce [9].

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[1] "In 1999, Europe started the Bologna Process, named after the university where it was proposed. The aim of this process was, and still is, to create a European Higher Education Area (EHEA) based on international cooperation and academic exchange that is attractive to students and staff from all over the world. It facilitates mobility of students, graduates and higher education staff." (http://www.mastersportal.eu/articles/451/the-european-higher-education-system-the-bologna-process.html)

Countries in the Middle East and North Africa (MENA) region face a number of common challenges in their higher educational systems. In fact, many of those countries have attempted to improve higher education and mobilized part of their wealth for that. Still, those efforts were not enough to overcome all the challenges that need to be addressed [10, 11].

As a result, higher educational systems in the MENA region are in the low-level scale, when compared to other world regions. We quote from [12]:

> *"Higher education systems in the MENA region have not developed more, so far, because they have failed to focus on 21st century skills. In other terms, the education systems need to change the way they operate, moving from their traditional approach to a more modern one." (pp. 241).*

This is also the opinion expressed in a World Bank report [10]:

> *"Since education is the main source of knowledge creation, the task is clear: the education systems must be changed to deliver the new skills and expertise necessary to excel in a more competitive environment." (pp.84)*

One of the roads for development of higher education is increasing collaboration among researchers, nationally and internationally. In a recent study, which focuses on the area of online labs, we have shown that there are very few connections among MENA researchers in this area [13].

Online labs are an instructional technology which have great potential to enhance higher educational systems in MENA, especially in engineering and science disciplines. One way to foster their adoption is to create a community of practice, gathering researchers and practitioners that share an interest in online labs in a wider area [13–15].

In this context, our research questions are the following:

1. Are academics in MENA interested in using online labs for increasing the collaborative work among researchers?

2. Do academics in MENA believe that a community of practice around online labs can serve teachers, students, and universities?

The argument is that the lack of funding for the MENA researchers is not the only factor impairing more developments but rather it is the lack of cooperation among the researchers. Overall, collaborative and cooperative work is widely recognized as a good way to share resources in the several developed countries. This may be considered a possible direction for the MENA countries to face a lack of resources. Therefore, this chapter addresses the development of a community of practice around online labs in the MENA region and their value. It also discusses the possibility of building a regional and national community network in this region [16]. In addition, it highlights the results of successful collaboration among three universities from Iraq that led to developing specific online experiments for them.

The rest of the chapter is organized as follows. Section 2 introduces the concept of a community of practice. Section 3 presents the methodology and techniques used to collect data that can help to build a community of practice around online labs in the MENA region. Section 4

analyzes data that is collected from the techniques. Section 5 details the results. Section 6 presents some additional remarks. Finally, Section 7 reflects on the conclusions and discusses future work on this subject.

2. A community of practice

The expression "community of practice" has been used to describe a group of people that interact around a topic. More specifically and quoting Etienne Wenger, the educational theorist who invented the concept (together with McDermott and Snyder) [17]:

> *"Communities of practice are groups of people who share a concern or a passion for something they do and learn how to do it better as they interact regularly."*

A more elaborate definition, but essentially equivalent, is the following[2]:

> *"(Communities of practice are) Groups of people who come together to share and learn from one another – either face-to-face or virtually are held together by a common interest in a body of knowledge and are driven by a desire and need to share problems, experiences, insights, templates, tools, and best practices."*

Another interesting definition by John Sharp in 1997 is quoted in [18]:

> *"A Community of Practice (CoP) is a special type of informal network that emerges from a desire to work more effectively or to understand work more deeply among members of a particular specialty or work group."(p. 140)*

Hence, the community of practice concept is focused on enhancing people's skills through interaction around problems, solutions, and insights and building a common store of knowledge [19, 20]. The concept has a number of practical applications in business, organizational design, education, and civic life [19].

On the other hand, Wenger himself has a broader, more philosophical view [21]:

> *"In our communities of practice, we come together not only to engage in pursuing some enterprise but also to figure out how our engagement fits in the broader scheme of things" (p. 162).*

In general, a community of practice is described along three important dimensions [22]: domain, community, and practice. See **Figure 1**.

1. *Domain*: It is the definition of the area of enquiry. It aims to organize the members so that they can use and share the knowledge that gives them a sense of joint enterprise, brings them together, and follows a common interest.

2. *Community:* It is a group of people who interact and learn together for building relationships. The relationships among members are a sense of belonging, interact regularly, and engage in joint activities.

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[2]http://www.csuchico.edu/swrk/mh/communityofpractice.shtml

3. *Practice*: It is sharing the common resources (i.e. documents, cases, and tools) that can build the capability of the community.

Based on Refs. [23, 24], a topology of 21 structuring characteristics has been identified on which a community of practice may be compared. One of them is the geographic dispersion of the participants. Clearly, a community of practice has more chances to succeed if all members are nearby. On the other hand, use of modern technology may greatly diminish the overhead caused by distance.

In fact, the major factor to the success of a community of practice is the use of information and communication technologies or, more broadly, of the Internet. The Internet enables us to create online communities that are characterized by strong social relationships among participants, even if the members are physically far apart. It can even foster stronger commitment to the community goals in spite of the distance [25]. Several conversational technologies, such as discussion forums, weblogs, and wikis, can be used to support communities as well [26]. These are the characteristics and the ingredients of instructional technologies. Hence, instructional technologies are certainly a topic around which successful communities of practice can be created. When doing so, the first task should be deciding the kinds of activities that can be important for such a community.

Our ultimate goal is to create a community of practice around online labs in the MENA region. A precondition for this is the existence of a regional network capable of providing the necessary resources to teachers and students and capable of supporting collaborative work.

Building a community of practice can contribute significantly to the success of any educational system and emphasize social and economic aspects as well. Some software in the Internet might be the first step for supporting a community of practice (i.e., chatting). Several new instructional technologies have been at the inception of several communities of practices, like those around online labs [25].

Figure 1. Dimensions of a community of practice.

Creating a network can bring benefits, especially in higher educational sectors; this is what has been proved in the past and today. Furthermore, Internet technology has been expanding the range of networks widely, as mentioned in [16]:

To create a community of practice around online labs in the MENA region, a regional and national community network must be built for providing the resources to teachers and students. Moreover, this community network can increase the collaborative work among researchers.

3. Methodology

In general, this section identifies the factors that can help build a community of practice around online labs in the MENA region by using the 4 Ws idea [27]: "where, why, which, and what", as illustrated in **Figure 2**. The answer to each specific question allows a better understanding of the general aspects associated with such a community. In particular, and for addressing the "what" dimension, a mixed methodology targeting both qualitative and quantitative data was used, allowing for a better observation of the beliefs and expectations of MENA researchers.

3.1. Where do we want to create a community of practice?

MENA countries have taken great steps in developing education: almost complete gender parity has been achieved, the average level of schooling has quadrupled, and since 1980, illiteracy
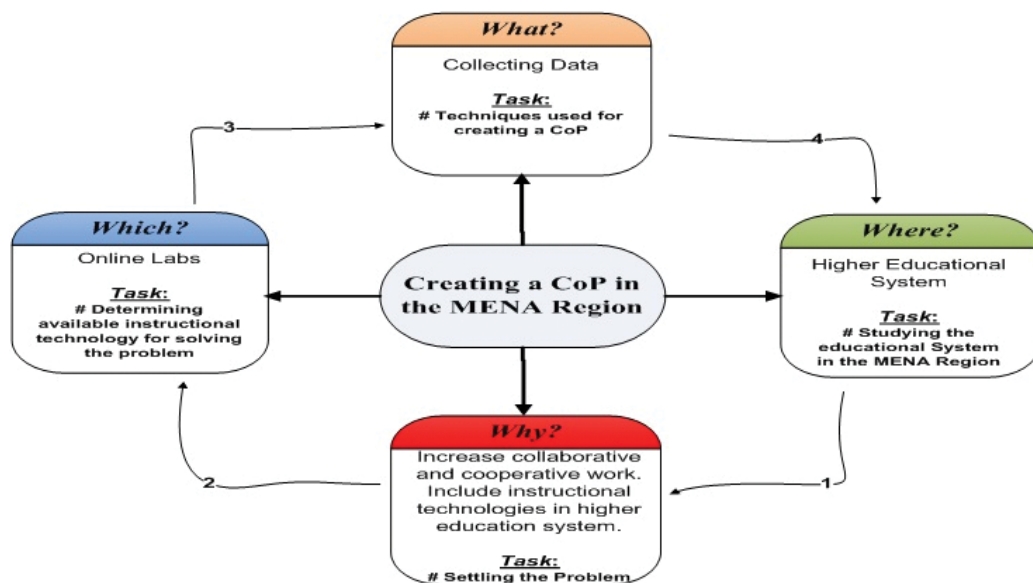
Figure 2. Methodology for creating a community of practice.

has been halved, and so on [28]. However, MENA countries still face many challenges in their higher educational systems. In particular, these countries need to enhance their higher educational systems, which are of "low quality"; to use the qualification used in the World Bank Group report [28]:

> *"Evidence demonstrates that school systems in MENA are generally of low quality. Basic skills are not being learnt, a fact most clearly captured by international standardized tests, whose results reveal that the Region is still below the level expected given MENA countries' per capita income".*

3.2. Why is it important to create a community of practice?

A community of practice will help increase the collaborative and cooperative work among the MENA researchers and will help improve the higher educational systems by promoting instructional technologies in this region. There is a potential interest in instructional technologies that could be help build a community of practice around online labs in this region [14]:

3.3. Which available instructional technology can be used to facilitate a community of practice?

We focus on online labs technology. This shall also be the instructional technology around which we will create a community of practice.

Depending on the topology of the online community, a community of practice can be based on different Internet platforms.

To build a new community of practice, one should consider the paradigm related to the emergence of new instructional technologies. Online labs are characterized by strong social relationships between participants. They support the participants by providing a permanent line of communication and a common online meeting space. This creates an environment where long-lasting relationships between researchers can flourish.

Furthermore, online labs are a special type of online learning community. Hence, the same kind of strong relationships can also be created between teachers and students and among students themselves [25].

Nevertheless, one must not forget that technology alone does not create a community. It may greatly assist, of course, but what is important is the social architecture of the community [29].

3.4. What are the techniques used to analyze the community predisposition toward a community of practice?

Questionnaires, interviews, and online meeting techniques have been used to assist building a community of practice around online labs.

For collecting quantitative and qualitative data, we used three techniques [30, 31]: questionnaires, interviews, and online meetings; see **Figure 3**. The questionnaire technique was applied
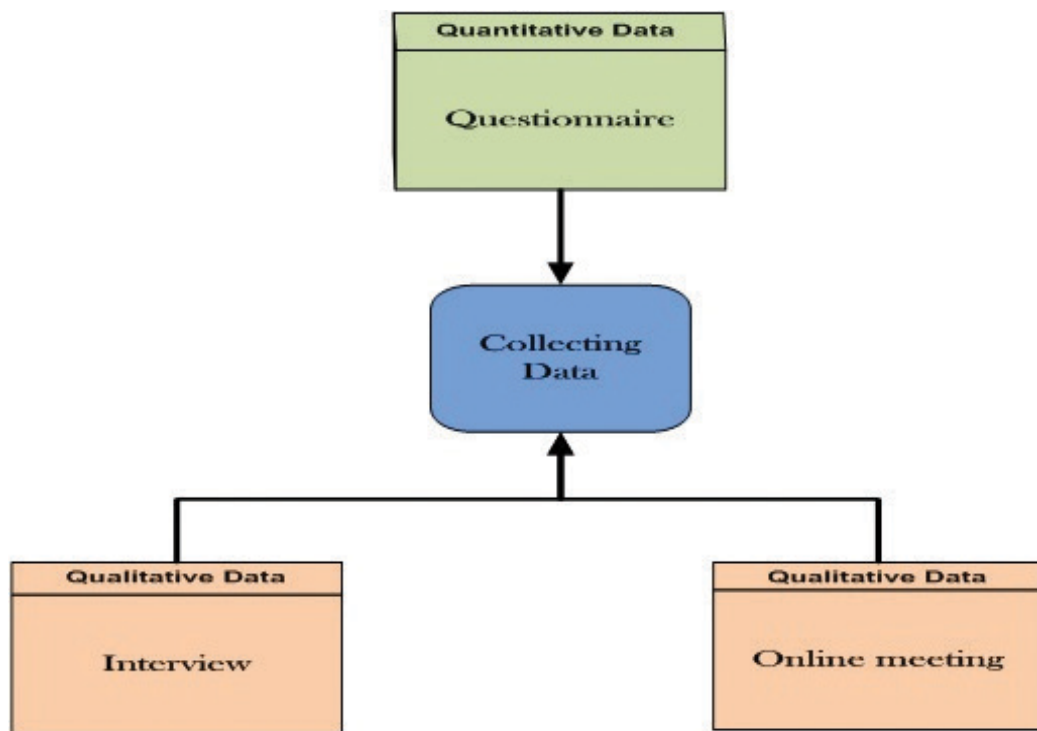
Figure 3. Techniques used for collecting quantitative and qualitative data.

during seminars that we presented in three institutions in the Kurdistan region of Iraq: the University of Duhok, the University of Zakho, and Duhok Polytechnic University. After those seminars, we interviewed some of the participants, who were academics from those universities. Finally, we conducted an online meeting between a selected group of academics from the Kurdistan region of Iraq and an outside expert, using video conference.

3.4.1. Quantitative data

Quantitative data were collected via the questionnaire. A series of presentations were made in three universities in the Kurdistan region, Iraq, according to the following schedule:

1. December 14, 2015, the University of Zakho, Faculty of Engineering and Science.

2. December 23, 2015, the University of Duhok, Faculty of Engineering.

3. January 6, 2016, the University of Duhok, Faculty of Science.

4. January 12, 2016, Duhok Polytechnic University, Faculty of Engineering and Science.

After each presentation, the questionnaire forms, which were validated through peer review, were handed out to the participants. Most of the participants agreed to respond.

3.4.2. Qualitative data

Qualitative data were collected in the interviews and in the online meetings. The interviewees were academics from the three universities, with an interest in instructional technologies and who have more than 15 years of work experience at the university. The interview included a set of open-ended questions [31] that were used to draw new insights from the interviewees and discover new ideas [32].

The online meeting used the Skype conference tool.[3] During the meeting, participants in the Kurdistan region of Iraq met with Professor Gustavo R. Alves (who is one of the authors of the present study). Professor Alves[4] has vast experience using online labs and is one of the most active researchers in the area [33]. During the meeting, details of the operation of online labs were discussed and how online labs can be the focus of a new community of practice in the MENA countries.

4. Data analysis

This section analyzes the quantitative and qualitative data collected from the questionnaires, interviews, and the online meetings. Quantitative data provides a great value to study by providing meaningful results from a large data set [34]. Qualitative data focused on meanings rather than on quantifiable phenomena. It includes rich descriptions of the data rather than measurements of specific variables [35]. Furthermore, it involves the identification, examination, and interpretation of patterns and themes in textual data and determines how these patterns and themes help to answer the research questions [34].

4.1. Questionnaire

The questionnaire aimed to evaluate how online labs can assist teachers and students and highlights how a community of practice around online labs can increase collaborative and cooperative work among researchers,[5] especially in engineering and science disciplines. In general, the data are classified into two kinds: nominal data and interval data [34].

4.1.1. Characterizing the sample

In order to understand the demographical background of participants (i.e. occupation, gender, language, age, program taken, Internet use experience, and internet use frequency), a descriptive analysis of the data was performed, as shown in **Figure 4**. From this analysis, the sample can be characterized as being primarily teaching staff (from electronics and computer engineering to physics), male, Kurdish, above 30 years old, and regarding the Internet usage, 89% have used it for more than 3 years on a regular basis.

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[3]http://uoz.edu.krd/news.php?NID=ODY=4DXtDr2x
[4]https://scholar.google.com/citations?user=vAonlVMAAAAJ&hl=en
[5]https://drive.google.com/file/d/0BykHovfSV4CCSk9peGw5X0ZOWDQ/view
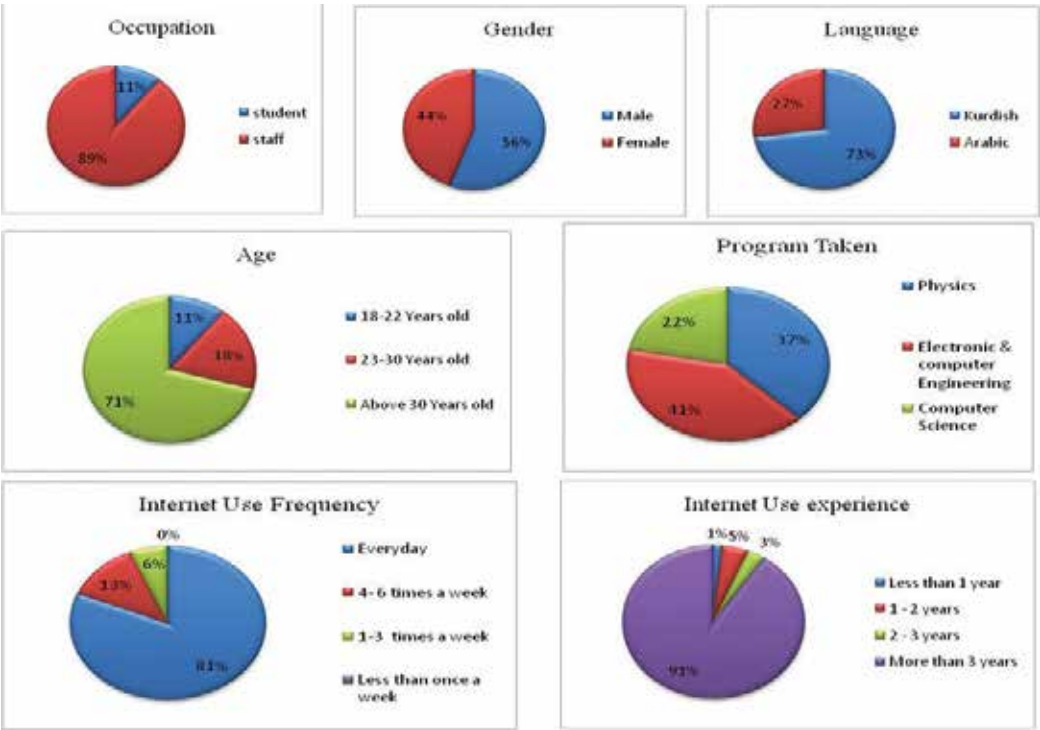
Figure 4. Analyzing the nominal data.

4.1.2. Analyzing interval data

To classify the continuous data, the questionnaire showed standardized differences between values. We transferred the questionnaires into a spreadsheet by putting each question number as a column heading and one row for each person's answers, as shown in **Table 1**. The scale was strongly agree (4), agree (3), disagree (2), and strong disagree (1) [36, 37]. This four-point scale (i.e. an even scale) forces people to choose a side, without a middle point [36, 38]. It gives a certain tendency of answer, hence increasing the reliability [39]. In addition, within using four points, the result can reasonably perceive the tendency [40].

4.2. Interview

Regarding the academics' questions, these had already been discussed and had been replied to in their office about online labs. Interestingly, the academics agreed that online labs can be useful to science, technology, engineering, and mathematics (STEM) fields for supporting hands-on labs. In their comments, they indicated online labs technology can be very interesting to use in higher educational and curricula. In addition, they pointed out that online labs should become available resources for engineering and science disciplines. The academics answers are shown in the results section.

Question number	Scaling				Total questionnaires	Percentage (%)			
	(4)	(3)	(2)	(1)		(4)	(3)	(2)	(1)
Q1	6	40	12	5	63	10	63	19	8
Q2	14	42	6	1	63	22	67	10	2
Q3	14	37	10	2	63	22	59	16	3
Q4	20	32	11	0	63	32	51	17	0
Q5	11	46	6	0	63	17	73	10	0
Q6	19	37	6	1	63	30	59	10	2
Q7	19	38	6	0	63	30	60	10	0
Q8	17	37	6	3	63	27	59	10	5
Q9	15	39	7	2	63	24	62	11	3
Q10	20	33	10	0	63	32	52	16	0
Q11	27	28	8	0	63	43	44	13	0
Q12	13	39	11	0	63	21	62	17	0
Q13	6	34	22	1	63	10	54	35	2
Q14	3	18	28	14	63	5	29	44	22
Q15	10	45	6	2	63	16	71	10	3

Table 1. Analyzing the interval data.

4.3. Online meeting discussion

During the presentation, the participants wrote questions related to online labs technology and a community of practice to the respondent. Several questions were passed and answered by Professor Alves. These questions were related to online labs, collaborative, and cooperative work among researchers, a community of practice, cost of online labs use, and so on. These questions and answers are also shown in the results section.

5. Results

In this section, we describe the results collected from both quantitative and qualitative data analysis. Afterward, we highlight some important points.

5.1. Quantitative data results

To examine the questionnaire data, we used the terms of a p value, under a null hypothesis, for quantifying the strength of the evidence against the null hypothesis and measuring the

size of an effect or the importance of a result [41]. Therefore, for moderating the evidence as statistically significant, a p value ≤ 0.05 [42] is commonly used in research [41–44]. It is used as a confidence for analyzing the data to find if there are independencies and correlations in the nominal and interval data.

5.1.1. Correlations among nominal and interval data

Regarding the quantitative data, several correlations were detected inside nominal and interval data and between nominal and interval data, as illustrated in **Figure 5**. These correlations are described below.

Using a confidence level of 95%, several statistical significant correlations were found between different items in analysis as shown in **Table 2**.

Occupation: The number of respondents was 63 with 88.9% responding as teachers and 11.1% responding as masters students. Regarding occupation, we found a correlation (p ≤ 0.05) with nominal (i.e. age, program taken, Internet use experience, and internet use frequency) and interval (i.e. Q2, Q7, and Q8) data; see **Figure 6**.

Gender: Regarding gender, there was 63.5% male and 36.5% female. During the analysis, we found a correlation of gender with two nominal data: age and scientific area of program taken, as illustrated in **Figure 7**.

Age: In age, the percentage was 28.7% in the 23–30-years-old age group and 71.3% were above 30 years old. We found that age has a correlation with Internet use experience nominal data, as illustrated in **Figure 8**.

Program taken: Program taken is correlated with Q14 interval data, as illustrated in **Figure 9**.

Internet use experience: Long use time of the Internet is correlated with Internet use frequency nominal data and Q2, and Q7 interval data, as illustrated in **Figure 10**.
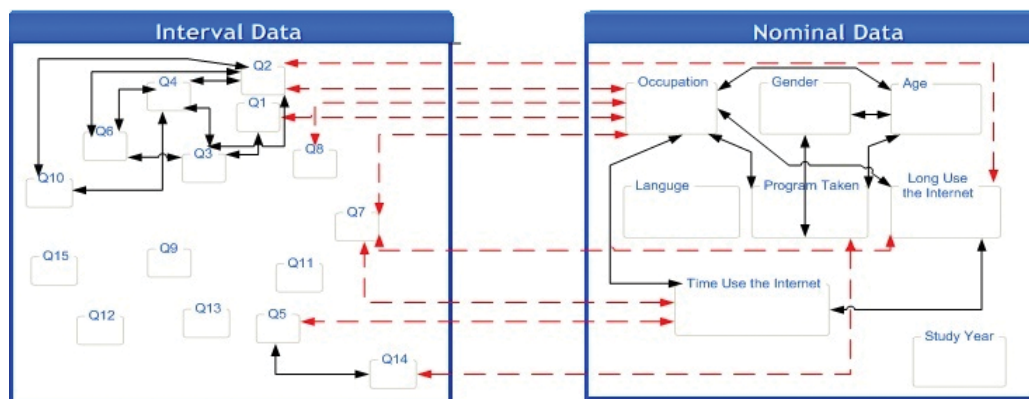
Figure 5. Correlations inside nominal and interval data and between nominal and interval data.

Correlations	Occupation	Gender	Age	Program taken	Internet use experience	Internet use frequency	Q1	Q2	Q5	Q7	Q8	Q14
Occupation			p-Value <0.001	p-Value =0.002	p-Value <0.001	p-Value =0.003	p-Value =0.057	p-Value =0.005		p-Value =0.001	p-Value <0.001	
Gender			p-Value =0.047	p-Value =0.047								
Age	p-Value <0.001	p-Value =0.047			p-Value =0.028							
Program taken	p-Value =0.002	p-Value =0.047										p-Value =0.043
Internet use experience	p-Value <0.001		p-Value =0.028			p-Value =0.015		p-Value =0.034		p-Value =0.001		
Internet use frequency	p-Value =0.003				p-Value =0.015				p-Value <0.001	p-Value =0.002		
Q1	p-Value =0.057											
Q2	p-Value =0.005				p-Value =0.034							
Q5						p-Value <0.001						
Q7	p-Value =0.001				p-Value =0.001	p-Value =0.002						
Q8	p-Value <0.001											
Q14				p-Value =0.043								

Table 2. Significant correlations between items.

Figure 6. Occupation correlation with age, program taken, Internet use experience, Internet use frequency of the use of the internet, Q2, Q7, and Q8.
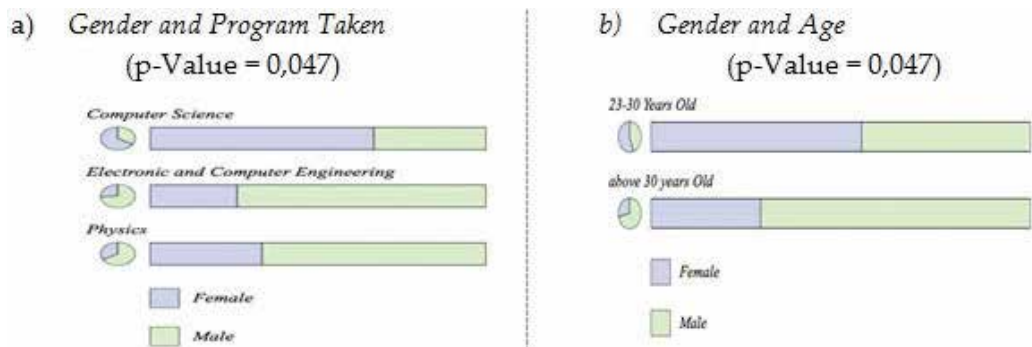
Figure 7. Gender correlation with age and program taken.

Internet Use Frequency: Finally, Internet use frequency is correlated with Q5 and Q7, as illustrated in **Figure 11**.

5.1.2. Correlation among interval data (Q1–Q15)

While analyzing the interval data from the questionnaire, several variable relations have been detected among questions. In general, these variable relations, namely correlation and two-way ANOVA, show a mutual relation of two or more pairs of variables and how strongly they are

Figure 8. Age correlation with internet use experience.
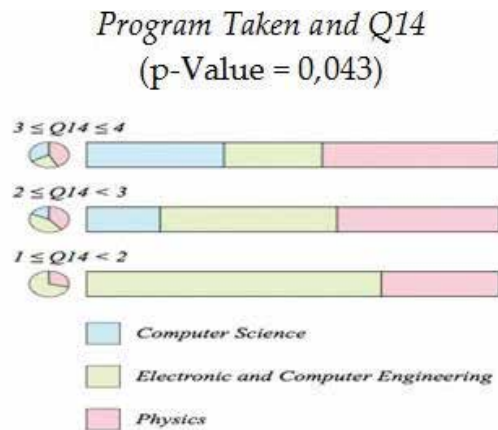
Figure 9. Program taken correlation with Q14.
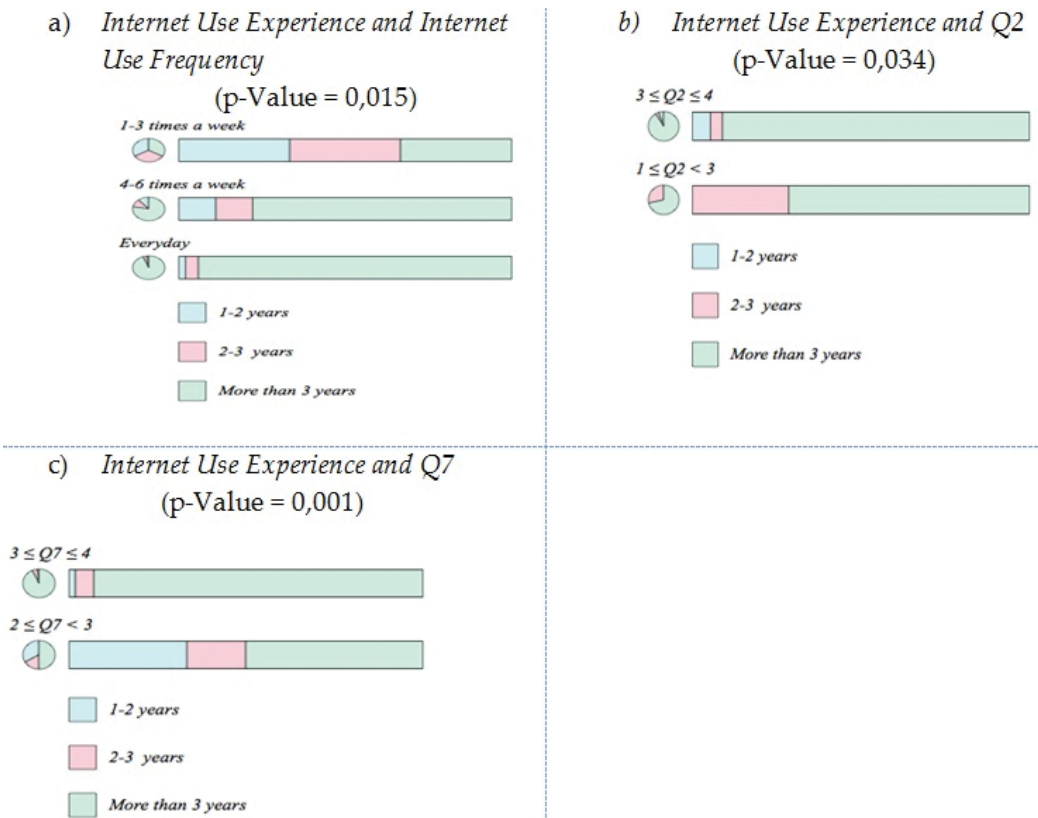
Figure 10. Internet use experience correlation with Internet use frequency, Q2, and Q7.
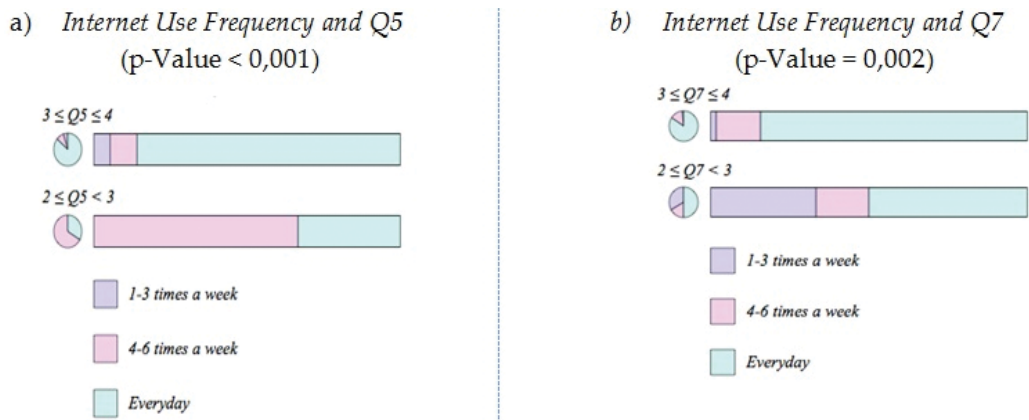
Figure 11. Internet use frequency correlation with Q5 and Q7.

related [45, 46]. As shown in **Table 3** and **Figure 12**, these categories are used to form groupings of observations.

5.2. Qualitative data results

Qualitative data results were collected from using interviews and online meeting techniques, as shown below.

5.2.1. Interview results

Table 4 shows some of the researchers' answers collected from the interviews, which included six questions:

Group	Questions	Detected	Variable relation	p value
Usefulness	2, 4, and 6	Interaction	Two-way ANOVA	0.033
Sustainability	5 and 14	Positive	Correlation	0.013
Learnability	1 and 3	Positive	Correlation	<0.001
	2 and 3	Positive	Correlation	0.008
	2 and 4	Positive	Correlation	0.002
	2 and 10	Positive	Correlation	0.012
	3, 4, and 6	Interaction	Two-way ANOVA	0.012
	4 and 10	Positive	Correlation	<0.001

Table 3. Correlations among interval data.
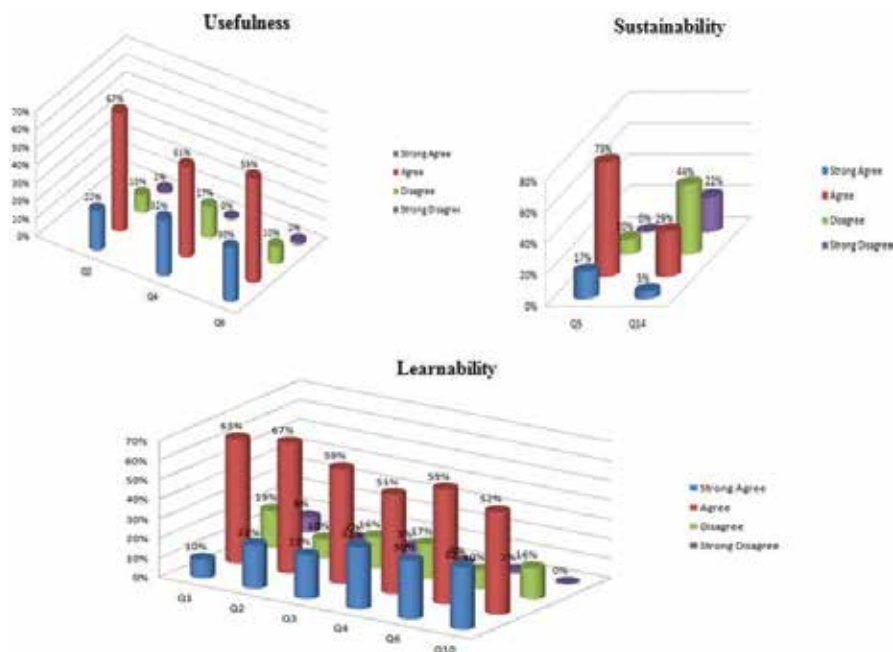
Figure 12. Interval data results (usefulness, sustainability, and learnability).

5.2.2. Online meeting results

Here are the main questions and answers that were collected from the online meeting.

Q1: Why are most online labs free?

Answer: *The purpose of online labs is educational. They are used for assisting and supporting hands-on labs, not for replacing them.*

Q2: How can online labs increase the collaboration and cooperation work among researchers?

Answer: *Online labs have the ability to increase collaboration and cooperation works by sharing the resources, experiments, and so on, among universities and researchers.*

Q3: Do online labs have facilities to serve a community of practice?

Answer: *Yes; today, there are communities around online labs, for example, virtual instrument systems in reality (VISIR). This community is called a special interesting group (SIG)[6] and includes many researchers from different countries.*

Q4: Is it possible to consider that online labs can be one useful option, in higher educational government, in the case of unavailability of equipment or the high cost of instruments?

Answer: *In general, it can be said that online labs save time and money. Therefore, yes, online labs can be used, in case of unavailability of equipment or costly equipment, for assisting hands-on labs. Additionally, it can help develop the students' technical skills and contribute to the quality of higher education and so on.*

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[6]http://www.online-engineering.org/SIG_visir.php

Q1	**Can online labs technology provide useful information for teachers and students of higher education?**
Answers	*It is very useful because it would provide experiments that cannot be available at the university using modern techniques (vice president, the University of Zakho).*
	It could if we consider that teachers can have an overview into the already existed and ready experiments in its subject at the online lab system. For students, sure it would provide experiment information and can work on it from anytime and from anywhere (teacher in the Electrical and Computer Engineering Department, the University of Duhok).
	Yes both of them can get benefit from it. The teacher by using the new methods to develop his teaching and the students by connecting what is he going to study with the technology (teacher in the Physics Department, the University of Duhok).
Q2	**Do you think online labs technology can assist and support the work of the teachers in the hands-on lab and, at the same time, offer students an easier way to complete their tasks?**
Answers	*I can feel the sense to which level the teachers and students can improve their skills and knowledge (vice president, the University of Zakho).*
	Yes of course because some time you need more perceptible tools to understand the difficulties in the lectures (teacher in the Physics Department, the University of Duhok).
	Yes, if the relevant teachers and/or instructors received some basic training on the use of the system. The system will need good documentation (with regular updates) for users and some model experiments to encourage potential users enrolling it within their courses (the Head of Refrigeration And Air Conditioning Department, the Duhok Polytechnic University).
Q3	**Do you think students can benefit from online labs technology applications, especially in STEM fields?**
Answers	*It can be benefitted, especially for physics department. Because, in same case, Our Hands-on labs cannot include all components for students, which are required to complete the experiments (the Head of the Physics Department, the University of Duhok).*
	Yes, especially now where our province is in a financial crises (teacher in the Electrical and Computer Engineering Department, the University of Duhok).
	Yes. It can do so by sharing experiments from worldwide universities and this would undoubtedly improve the quality and improve the curriculum in some cases (teacher in the Electrical and Computer Engineering Department, the University of Duhok).
Q4	**Do you think online labs technology can improve the curriculum in higher educational system?**
Answers	*Sure, because higher education system required several equipment and tools that might not be available. Therefore, such a technology will compensate such lack of availability (vice president, the University of Zakho).*
	It depends what facilities are available? Can we use this technology to conduct our laboratories keeping in mind that number of students is high? (teacher in the Electrical and Computer Engineering Department, the University of Duhok).
	Yes I believe so if the service provider of the On-Line laboratories support a large domain of theories and implementations (the Head of Refrigeration and Air Conditioning Department, Duhok Polytechnic University).
Q5	**Do you think online labs technology can increase collaboration and cooperation works among researchers?**

Q1	Can online labs technology provide useful information for teachers and students of higher education?
Answers	*Yes sure. The systems would let researchers and people from the academia share their knowledge and experience so this would be a great opportunity to collaborate and share information and work together (teacher in the Electrical and Computer Engineering Department, the University of Duhok).*
	It will help to increase the collaboration and cooperation work by using online labs. This technology can help to create a bridge for researchers to share information and knowledge (the Head of the Physics Department, the University of Duhok).
	I don't think that On-Line labs will have big impact on the research side, because research usually needs specialized equipment that may not necessarily be shared with other researchers. Moreover, if there isn't wide domain of users for certain experiments set of equipment then it won't be economically viable for the service provider of On-Line Labs people (or company) themselves. The economical issue here will prevail in this case (the Head of Refrigeration and Air Conditioning Department, Duhok Polytechnic University).
Q6	Finally, do you have special advice about use online labs technology in STEM fields?
Answers	*Online labs can provide good alternative for some educational establishments (probably in third world countries). From my own experience, the issue of labs is quite complicated. In most cases labs and their equipment needs logistic support. By this I mean a range of things, starts with fund for the initial cost, right personnel to run and maintain the equipment, suitable premises and last but not least (the legitimate use of these lab equipment (in some cases). These could be burdensome responsibilities for some educational establishments. In the On-Line labs case most of these issues are resolved. As a computer laboratory can play a dual functionality in these cases, besides being a computer lab it could be used as Electrical Technology (for instance) using On-Line labs via internet connection (the Head of Refrigeration and Air Conditioning Department, Duhok Polytechnic University).*
	It needs encouragement and motivation to get knows this technology and gets closed to this technology (vice president, the University of Zakho).
	I suggest the following to use the online lab. First step is to encourage the staff members and postgraduate students to use this technology. It is very essential to introduce them to the facilities and devices available. Second step is to use this technology to implement final year projects. Third step is to encourage all undergraduate students to use this technology (teacher in the Electrical and Computer Engineering Department, the University of Duhok).

Table 4. Interview results.

6. Remarks

In general, it is important to remark the results collected from the quantitative and qualitative data analysis. These remarks are:

1. **Providing resources:** Quantitative and qualitative data results show that online labs can assist the higher educational systems by sharing materials and online experiments among teachers and students. As shown in **Table 1**, Q2, Q7, and Q11 have the highest scale of "agree" and "strong agree". Likewise, the academics' answers, during interviews, indicated that online labs can provide a new method of teaching, that is, online experiments, for both teachers and students.

2. **Assisting and supporting work:** The results of quantitative data, presented by Q3, Q5, Q7, Q9, and Q11, show online labs can help teachers and students complete their task

24/7. As shown in **Table 1**, Q14 has the highest scale of "disagree" and "strong disagree" and that means most respondents also agree that online labs are aimed to support hands-on labs, not replace them, by offering online experiments to students and teachers. Likewise, most academics' answers collected from the interviews mentioned that online labs can provide more tools, and they encouraged their use to improve their students' skills.

3. **Benefiting from online labs:** Students can benefit from online labs, especially in fields that face the limitation of equipment and components. This point appeared in some academics' answers to Q2, Q4, Q6, Q9, Q10, and Q11 of the questionnaire.

4. **Improving curricula:** In general, academics agreed the curriculum can be improved by including instructional technologies, particularly online labs. These technologies can support a large domain of theories and implementations. This is shown in the Q2, Q3, Q6, and Q7 results, as well.

5. **Increasing the collaboration and cooperation among researchers:** Most researchers agreed that online labs can help increase collaborative and cooperative work among them by sharing knowledge and experience. In addition, one of the two main questions received from the respondents during the online meeting was "*how can online labs increase the collaborative and cooperative work among researchers and how can online labs have the ability to create a community of practice, especially around the VISIR Open Lab Platform*". From the quantitative data result, it can be noticed that Q4, Q5, and Q15, which are related to collaborative and cooperative work and to a community of practice, evidenced to a high level of agreement.

6. **Advising: several advices have been gathered in this study**. For example:

a. Online labs can be a good alternative, for some countries, which is related to the increase of student numbers, financial crises, and quality of educational systems.

b. Online labs need encouragement and motivation for people who have never used technologies in education.

c. Online labs can be implemented as final projects for students in the last year of their study.

7. **Outcomes and impact:** Two things can be highlighted:

a. *First work done (VISIR)*: After completing the series of presentations, the University of Duhok and the University of Zakho are using VISIR system by including several online experiments (e.g. Ohm's and Kirchhoff's laws) for the 2016–2017 academic year.

b. *Second work done (REXNet Project[7])*: Researchers from the University of Duhok, the University of Zakho, and Duhok Polytechnic University have collaborated in creating a group of researchers and afterward they submitted a proposal to the IREX organization,[8] named *Building a Remote Experimentation Network for serving higher education teachers and students*

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[7]https://tinyurl.com/jtf96m3 (Use Internet Explorer or Mozilla browsers to open the REXNet project)
[8]https://www.irex.org/

in Iraq (REXNet) project. The project idea is to create a remote experimentation network to use online experiments, which are developed and located in the United States universities for serving teachers and students in the Kurdistan region of Iraq. In conclusion, it has been accepted for implementation in collaboration with Oklahoma State University (OSU). In general, REXNet project aims to develop a virtual lab, which is based on virtual environment "virtual reality (VR)", for serving engineering and science students from the University of Duhok, the University of Zakho, and Duhok Polytechnic University. It introduces fundamentals of robotics to students by including several experiment modules that allow students to run experiments via the Internet.

7. Conclusion and future direction

This chapter outlines some indicators related to the higher educational systems in the MENA region, such as the support given by instructional technologies to academics working in this region. The research instrument consisted of a series of questions for collecting data from the respondents by using three techniques: questionnaires, online meetings, and interviews.

Overall, the major goals of this chapter are:

1. Providing materials and instructional technologies (i.e. online labs) to researchers, teachers, and students in the MENA region.

2. Building a community of practice around online labs in the MENA region.

3. Increasing collaborative and cooperative work among the MENA researchers by sharing resources and online experiments.

A community of practice can be task and goal oriented to satisfy the need for cooperative achievements of goals and provide support for online learning [47].

This research provides a feasible idea for more achievements in higher educational sectors in the MENA region by including instructional technologies that facilitate the students' skills acquisition and assist higher educational systems.

It is also hoped that by setting the online labs indicator, this chapter may be useful to guide the development of higher educational systems in other regions. Similarly, it may find other indicators or activities related to learning that can develop and assist the higher educational systems in the MENA region and increase collaborative and cooperative work among their researchers.

Hopefully, for the middle/long term, involving other universities, in Iraq and other MENA countries in general, to become a part of this online labs community, either using the VISIR system or through the REXNet project, for sharing resources and knowledge among them and increasing collaborative and cooperative work among their researchers.

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New Zealand

Integrating Research and Knowledge Exchange in the Science Undergraduate Curriculum: Embedding Employability Through Research-Involved Teaching

Christopher Harvey, Emilia Bertolo and Lee Byrne

Additional information is available at the end of the chapter

Abstract

The aim of this chapter is to give an overview of how engaging undergraduate students with research and research-related activities can be used to enrich their learning experience and enhance their employability prospects. There are two specific challenges in producing industry-ready science graduates: providing students with relevant subject specific and transferable skills and knowledge, and to provide them with appropriate industry engagement. The science undergraduate curriculum at Canterbury Christ Church University (CCCU) includes research activities that are designed to move students from being recipients of knowledge to becoming collaborators in its production. This approach to "research-involved teaching" (RIT) provides students with opportunities to gain practical research experience through course-based undergraduate research experiences (CUREs) and individual undergraduate research experiences (UREs). Students on the CCCU science programmes are diverse, many coming from low-participation neighborhoods and/or with nontraditional entry qualifications who have taken up study via the Foundation Year in Science (pre Higher Education level) that can be taken as part of each of the science programmes. Such students in particular can benefit from RIT. This chapter briefly summarizes the development of undergraduate research in higher education and then presents examples of specific pedagogic interventions, CUREs and UREs used across the CCCU science programmes.

Keywords: employability, undergraduate research experience, research-involved teaching, enquiry-based learning

1. Introduction

1.1. The "research-teaching nexus": are research and teaching two sides of the same coin?

Until the nineteenth century, teaching was considered to be the primary function of universities [1]. In the West, the view that research should become part of the purpose of universities was first articulated and implemented in Europe, specifically in German universities:

"… universities should treat learning as not yet wholly solved problems and hence always in research mode." Wilhelm von Humboldt on the future University of Berlin (1810), cited in Ref. [2, p. 110].

The ideal of universities as institutions of learning, teaching *and* research spread to the US and elsewhere in the late nineteenth and early twentieth century [3]. Academics in higher education began spending increasing proportions of their time researching. Henceforth, it was commonly assumed that teaching and research were mutually supportive activities and that the expertise and insight gained during research improved learning and teaching quality for students [4]. A number of putative relationships between teaching and research were consequently proposed and described using various terms and definitions [5]. A useful and inclusive term that describes a range of modes by which students interface with research in their learning and development is that of the "research-teaching nexus" [6, 7]. According to Haslett [8]:

"The positioning of teaching within the nexus is determined by the role students play (i.e., students as research participants, or as an audience for research) in relation to the research emphasis (i.e., emphasis on research content or on research processes and problems). The nexus has proved useful to institutions and academics in helping them strategically consider the links between research and teaching in their own curricula and teaching." [8, p. 1].

Initially, the mutualism between teaching and research in the "research-teaching nexus" seemed self-evident: academic researchers bring their critical and reflective approach to their discipline and their hands-on experience of research methods and professional communities into the classroom, acting as a prism through which students are exposed to research in all of its many facets. Moreover, there was an assumption that research active staff aware of the current developments in their field would be able to enhance their student's learning experience. However, several authors have since challenged this relationship as one that remains unsubstantiated by research and scholarly evidence [9–11]. Indeed, comprehensive analyses of available data show that the quality and/or quantity of research output of a lecturer does not correlate strongly with undergraduate students' perception of teaching quality [9–12]. Undergraduate students do report, however, that being taught by active researchers can enhance their engagement and experience at university [13]. This indicates that teaching quality and student learning are not *necessarily* improved by the research activity of the teachers themselves via a passive mechanisms of osmosis, but rather that students must be actively involved in research to create learning experiences that go beyond those typically understood to be part of the "research-teaching nexus" to create what we will here refer to as "research-involved teaching" (RIT). Directly involving students in research-related activities—if done effectively—can result in a number of reported benefits to their development of scientific skills and knowledge as well as their confidence in carrying out research [14, 15].

1.2. Teaching in higher education and the role of undergraduate research: one goal, many approaches

Undergraduate research and inquiry can be defined as "student engagement from induction to graduation, individually and in groups, in research and inquiry into disciplinary, professional and community-based problems and issues, including involvement in knowledge exchange activities" [16, p. 16]. In this context, Linn et al. [17] distinguish between more individualized and bespoke "Undergraduate Research Experiences" (UREs) and "Course-Based Undergraduate Research Experiences" (CUREs; see also Ref. [15]):

"UREs feature individual students in faculty research laboratories and provide the opportunity for one-on-one mentoring. Typically, students spend one or more semesters in labs, although the type of activity and form of mentoring varies substantially […]. In contrast, CUREs have a curriculum and are open to most students. CUREs put high demands on mentors to guide many students." [17, p. 2].

Typically, UREs (e.g., research internships, work placements, etc.) are bespoke and individualized research experiences that affect only a few students and that can be highly competitive because of the limited availability of URE opportunities at any given time. The time invested by students in this type of experience is often high and, because of the resources and time required for delivering UREs, in many cases falls outside their regular taught curriculum (e.g., summer term breaks). The comparatively large amounts of staff, space, and material resources required for the delivery of individualized UREs (especially in applied scientific disciplines) that often require one-to-one research supervision make large-scale provision of URE's impractical at even the most research-intensive institutions [17, 18]. In contrast, CUREs are embedded in the regular curriculum and therefore open to all students of a module/programme, while at the same time being much less individualized, less resource intensive and therefore typically easier to deploy [17].

Though assessing the impacts of direct research experiences on student outcomes is challenging and has not been a regular feature of deploying interventions to facilitate UREs and CUREs [17], the available evidence suggests that engaging undergraduate students in research activities improves student engagement and retention and can attract students into postgraduate research careers [15, 18–23]. These benefits have led to calls for expanding RIT in various forms in undergraduate teaching both in North America and Europe [24, 25].

Women and minority undergraduate students seem to particularly benefit from research experiences [26, 27]. This is encouraging in light of student populations in the UK and worldwide tending to become more diverse in both social background and academic ability as higher education becomes more inclusive [28, 29]. The data also suggest, however, that the students who mostly benefit from undergraduate research opportunities are those who already have a high level of engagement and interest in postgraduate research [15, 22]. We therefore argue that a central aim of involving students in research (and of teaching in general) should be to provide opportunities precisely for those students who are not already enthused and determined to embark on research careers.

Thus, for RIT strategies to ultimately deliver benefits for all students, they must be integrated fully into university teaching programmes and curricula with forethought to maximize their impact [15, 23]. This is particularly important considering the potential cost of investing in RIT strategies at a time of increased marketization and cuts to funding in higher education [30]. Innovative models have been developed for feasibly delivering and assessing the impacts of CUREs and UREs on a large scale in high-subscribing higher education programmes [15, 31–33]. For example, Rowland et al. [34], in recognition of the importance of student choice and the diversity among participants in higher education, created a two-stream undergraduate chemistry module. One stream provided a traditional learning experience in laboratory techniques and methods and the other offered students with a desire to carry out research the opportunity to do so by carrying out a scaffolded undergraduate research project in the laboratory instead [34]. Though they identified challenges to staff and resourcing in providing and supervising a large number of undergraduate research projects, the authors found streaming the teaching better supports students with diverse needs [34]. Desai et al. [18] approached the issue of limited resources differently: they devised a tiered supervision system based on the concept of a "research-intensive community" (p. 137) at Texas A&M University. The system allowed efficient small group supervision of the research activity of undergraduate students.

CUREs can be used to provide research-involved experiences for most or all students [17]; where provision of UREs is limited, all students should be given an equal opportunity to compete for these opportunities and benefit from them even if they are not directly involved. While models for involving undergraduate students in research continue to be developed for individual learning experiences, curriculum elements, and modules, the greater challenge is to develop undergraduate research opportunities across entire undergraduate curricula and programmes that are interlinked and build on each other throughout the student journey. Moreover, involving undergraduate students in knowledge exchange and collaboration with researchers in industry and elsewhere outside of the university in the context of research has not received as much attention as involving students in institutional academic research. All of these aspects of student development are essential, however, for developing research-ready graduates that have the skills required by employers who hire graduates [35].

1.3. Undergraduate research improves undergraduate employability

Employability encompasses what graduates know, what they can do, their job specific skills, their transferable skills, and their attitude and behavior [36]. The required skills are often specific to an employer or specific sector of the economy [37]. Graduates, especially from biological science programmes, therefore enter into a highly competitive job market where research skills are often critical to prospective employers. A recent consultation undertaken by the Association of the British Pharmaceutical Industry [38] identified that graduates often lack the required skills or knowledge important for employment within the life science industry and that newly employed graduates routinely need extensive graduate training, which can represent a major commitment from the employer [39]. This skills gap can be significantly reduced, however, where there is suitable employer engagement within the degree programme. For example, the involvement of Siemens with the University of Lincoln engineering degree has allowed Siemens to reduce the length of

their graduate training programme by 9 months [40]. A key element of higher education engage-ment with industry is in shaping graduate behavior and attitude such that the graduates under-stand their choices and employer expectations, and are positioned to meet those expectations. Two specific challenges need to be addressed to produce industry-ready graduates: to impart relevant job specific and appropriate transferable skills, including research-specific skills, and to provide the appropriate industry engagement and an understanding of the responsibilities and practice of those working in the respective industry. Involving undergraduate students in research and knowledge exchange can help meet the first of these challenges through the general benefits it provides to the cognitive development and skills development of students [41]. More importantly, however, participation in undergraduate research can break down student misconceptions about scientific research, careers in science and the day-to-day activities of research scientists [42].

2. The research-involved student journey at Canterbury Christ Church University

2.1. An outline of undergraduate science programmes at Canterbury Christ Church University

The Section of Life Sciences at Canterbury Christ Church University (CCCU) in Kent, UK, currently delivers eight undergraduate programmes (3-year BSc programmes Honours in Bioscience, Biomolecular Science, Animal Science, Plant Science, Ecology and Conservation, Environmental Science, Environmental Biology and Integrated Science) that can also be taken as joint-Honours programmes with other disciplines, such as Sport Science or Forensic Investigation. In addition, all eight programmes can be taken as 4-year programmes with an additional Foundation Year (which is shared among the programmes) that is designed to maximize inclusivity of all programmes and therefore has no entry requirements. The Foundation Year traditionally recruits students from highly diverse backgrounds, including mature students, students who have taken alternative routes into higher education and stu-dents who are from areas with low participation in higher education. Currently there are 500 students enrolled in the undergraduate science programmes at CCCU. Full-time undergradu-ate students in the biological sciences at CCCU are more likely to be from underrepresented groups in terms of gender (44% male students at CCCU versus 35% nationally), nonwhite ethnic groups (26% versus 19%) and reported disabilities (18% versus 10%) [43].

The teaching staff in the Section of Life Sciences currently includes 20 academic staff, 7 university instructors (part time PhD students with teaching responsibilities), 2 postdoctoral teaching fellows, and 8 technical support staff. All of the academic staff, university instructors and postdoctoral teaching fellows are active researchers. The staff is also highly multidisciplinary in composition, with 12 biomolecular scientists, 6 ecologists, 4 physicists, 3 chemists, 2 bioinformaticians, and 2 plant scientists. The learning and teaching in the Section of Life Sciences at CCCU is informed by the University's Strategic Framework 2015–2020, which calls for "the integration of excellent teach-ing, research and knowledge exchange" as one of its core values [44, p. [2]. The teaching staff share a vision of a curriculum with a strong focus on involving students in research and knowledge

exchange to enhance their critical thinking abilities, subject specific skills, and employability prospects. The programmes the Section delivers are therefore designed around RIT and high-impact pedagogies to support the development of "student researchers" and provide students with a range of research opportunities and research-like experiences through CUREs and UREs.

2.2. General aims and features of the undergraduate science curricula at CCCU

All undergraduate science programmes at CCCU feature a high proportion of practical content (approximately 50% of contact hours) in which students engage in laboratory- or field-based experiments linked to lecture and seminar content. Research-like experiences feature from very early on in their student journey as part of the taught curriculum and there are both CUREs and UREs that provide opportunities for students to participate in research throughout their studies (**Figure 1**). Most importantly, however, these research experiences
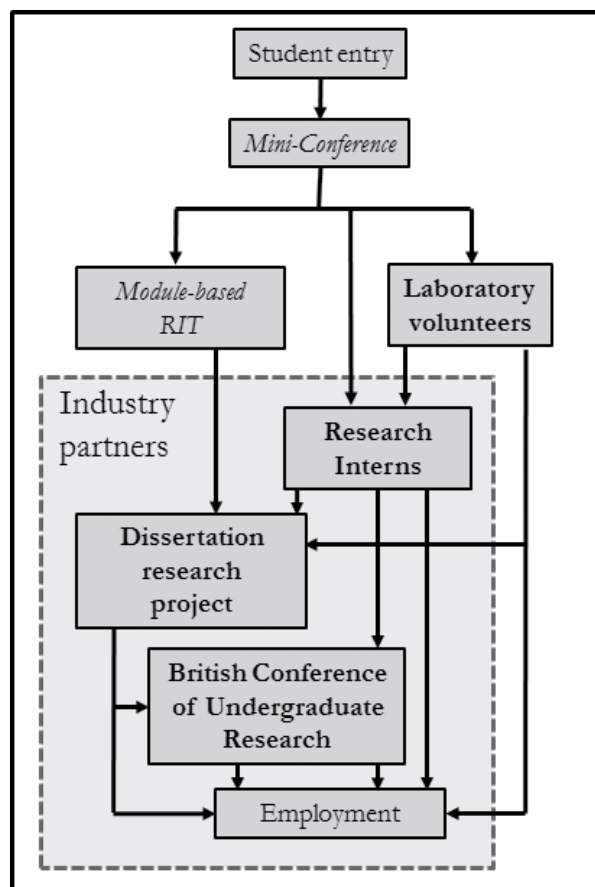
Figure 1. A diagram representing the various opportunities for students to engage with undergraduate research experiences (UREs; bold) and course-based undergraduate research experiences (CUREs; italicized) during their student journey through the undergraduate science programmes at Canterbury Christ Church University. The box with a dashed line circumscribes UREs in which industry partners can be involved in RIT.

are coordinated across the years of study to build upon each other and provide continuity in student research engagement. First year students are introduced to the concept of undergraduate research and opportunities for becoming volunteer researchers in the first month of their studies via the "Mini-Conference" (see Section 3.1). A research internship programme open to students in any year of study is also available (see Section 3.2). Finally, students complete their studies with a research project (see Section 3.3). Significant investment into offsite laboratory facilities has greatly expanded and strengthened the delivery of CUREs and industry-linked UREs (see Section 3.4). Research-relevant experiences are also embedded into modules through assessments, for example (see Section 3.5). A student experience summarizes the impact an integrated approach to RIT can have on the development of graduate skills and employability (see Section 3.6). It is not uncommon for undergraduate science students at CCCU to co-author publications, posters and conference presentations with academic staff in peer-reviewed journals. An annual competition is held to send one or more undergraduate students to the British Conference of Undergraduate Research to present the results of their individual UREs to an audience of their peers (**Figure 1**).

3. Examples of research-involved teaching activities, UREs and CUREs integrated into the CCCU science programmes

3.1. The Life Sciences Mini-Conference and laboratory volunteers: an introduction to research for undergraduates

The Life Sciences Mini-Conference is part of the required curriculum for all science prorammes and runs in the first week of the term in the first year (**Figure 1**). As such, it is inclusive of all students, regardless of their motivation and academic background at the time. The conference features a full day of presentations by academic staff and PhD students about their ongoing research. It is designed to immerse students in the atmosphere of a research conference: students receive a book of abstracts for the presentations and are encouraged to ask questions during and after presentations, just as they would at any other research conference. The diversity of the teaching team in the Life Sciences is reflected in the conference programme: presentations typically cover active research from ecological, molecular and physical sciences. This means students are exposed to a range of research activities and topics that they may not have previously been aware of, thereby helping them to develop interests that will inform their further choice of studies and, ultimately, their career path [41, 45]. The conference also helps students at the very beginning of their studies to associate lecturers with their research activities. Students commented on their experience of the Mini-Conference in 2015:

> *"The Mini-Conference made science look exciting and helped me to pick areas of interest for the future of my degree."*

> *"The Mini-Conference gave me a first glance of the opportunities for gaining experience in science."*

Emphasizing the research of their lecturers so early on draws a clear distinction between the learning environment students would have typically experienced at school and how it

differs from the academic environment at University. By encouraging students to mingle and converse with the presenters during coffee and lunch breaks, barriers between students and academic staff are broken down early on in the student journey, directly contributing to the "professional socialization" of undergraduates in science [45–47] and familiarizing students with the responsibilities and professional life of researchers [42].

In creating opportunities for unexpected learning and explorative discussions, the Mini-Conference is a key element in the RIT strategy. Shortly after it has taken place, all first year undergraduates are invited to attend a research opportunity briefing where lecturers share accounts of the research experiences and positive contributions made by past undergraduate researchers in the Section. The briefing is used to advertise ways in which students can get involved in authentic research on an occasional or regular basis via bespoke UREs: opportunities to work with academic staff are discussed, either on a volunteer basis or as a paid intern (through the CCCU internship scheme) (**Figure 1**). Typically, more than a dozen motivated students each year take up one or more of these opportunities, significantly contributing to their personal and professional development and employability. In its compact nature and being part of the undergraduate curriculum, the Mini-Conference is not very resource-intensive and therefore represents a very powerful CURE that links directly to recruitment of students for bespoke UREs positioned throughout the programme.

3.2. Student research internships as flexible and bespoke UREs beyond the curriculum

The student research internship programme offers the opportunity to further build student/staff partnerships in a scheme that co-produces knowledge via student research. Research internships are developed by academics in partnership with industry (see Section 3.4; **Figure 1**) or with student input. Available projects (typically 5–10 each year) are advertised to all students.[1] The internship programme is also an opportunity for students who are volunteering in research labs to concretize their research and build on the research experience already gained (**Figure 1**). Typically, internships last 10 weeks on a half time work schedule and are carried out in the summer months outside of the regular curriculum. Each student receives a bursary and is supervised by one or more researchers within the Section as well as any industry collaborators. This is feedback from student interns in 2015:

> *"It was a really good learning experience. Doing something where the outcome really matters is brilliant because you're making a difference and making a real impact on conservation research."*

> *"I really enjoyed my time working on this project. Not only did I help contribute towards the ongoing research at CCCU, but I also gained some valuable skills to add to my C.V."*

Our partners, both in academia and in industry, are also very positive about these partnerships. Some of them (especially academic ones) may initially feel slightly reluctant about the prospect of working with undergraduate students in "real" research, which many associate

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[1]See http://www.canterbury.ac.uk/social-and-applied-sciences/human-and-life-sciences/life-sciences/internships/internships.aspx for details of some of last year's internships [Accessed January 31, 2017].

exclusively with postgraduate students. However, their feedback after projects are completed is very positive, resulting in long-lasting research partnerships involving undergraduate student researchers. Two partners who have collaborated on student research projects at CCCU stated:

> *"I was really impressed with the work ethic showed by [the] students involved in the research we did together. I don't know of many institutions in which academics collaborate in research projects with undergraduate students, who then end up as co-authors on their papers. The previous project yielded two papers, and I am hopeful the current one will result in another paper in the near future." (Academic partner)*

> *"[We] have been very impressed with the whole process of finding and running a student internship with Canterbury Christ Church University. As an industrial partner it was imperative that the best student was selected and that the project met the company aims. This was a very successful project due to the skills and dedication of all involved and we fully expect the results to influence tarantula taxonomy when published." (Industrial partner)*

The internships also have additional benefits related to RIT. They position students as key mediators in the flow of knowledge exchange between academic researchers and industry partners during the project [48]. If the students work with an industry partner, they also get the opportunity to experience a typical work environment, work roles and responsibilities in that industry [49, p. 82].

3.3. Adding value to undergraduate dissertation research projects through individuality and flexibility

A final year dissertation research project as a conclusion to studies is a standard feature in UK Bachelor of Science programmes at the Honours level [25]. At CCCU, the "Individual Study" module in the third year of study represents the dissertation project. The module is designed and structured to act as a bespoke URE for students completing their programmes of study and a number of research skills are assessed throughout the module. Students are very flexible in their choice of projects—in principle they have the ability to choose any academic supervisor and any topic for their research project, as long as it meets ethical requirements, health and safety requirements and can be supported by the resources and equipment available. This means students are not presented with a "cookie cutter" project, but are encouraged to creatively develop and design their own research ideas in collaboration with an academic supervisor and external partners where appropriate. Students who have already volunteered in research laboratories or who have completed research internships can use this opportunity to build on their prior research and take full ownership of it for their dissertation project (**Figure 1**). Students also have to organize and go through all relevant ethical approval and health and safety assessment procedures before they can begin their study. Students then work independently in the laboratory or field to complete their projects and, as part of their assessment, produce a research logbook that meets the standards of a researcher in a professional laboratory. Communicating research has been identified as a graduate skill that is often neglected [50] and students are therefore also required to complete:

- a research paper written in the style and format required by a relevant peer-reviewed journal of the student's choice

- a 20-min oral presentation of the work

To facilitate student engagement with supervisors in a mode similar to that common in postgraduate research supervision, students are also assessed on their engagement with the project and how regularly they meet with their supervisor. They also hand in their logbook at the midpoint of the module to receive formative feedback on their progress. This module design is resource-intensive and requires individualized supervision of diverse projects that have to be flexible and extensively resourced with materials and laboratory space. The investment has benefits, however: students who design their own project are typically more motivated [51] and they can use their project to gain practical research skills as well as presentation and writing skills that are directly relevant to careers they are interested in. Consequently, some students who complete their project in partnership with an external partner are subsequently either employed directly by that partner on the strength of their project work or they can use their experience to improve their prospects for graduate employment in general.

3.4. The Life Sciences Industry Liaison Lab as a space for RIT informed and supported by industry

In 2015, the Section of Life Sciences at CCCU established the Life Sciences Industry Liaison Lab, based at Discovery Park in Sandwich, UK. The laboratory has allowed the Section to extend RIT activities by establishing collaborative ventures with companies based on the Discovery Park site. This facility provides students with the experience of industry-standard laboratories, delivering student research experiences and networking opportunities through industry-based teaching, internships and placements [48]. As a result, students based at the Industry Liaison Laboratory work within a professional industrial setting, answering industry-generated questions using research-quality equipment and technology, and receiving enhanced opportunities for networking and collaboration. In addition, industry professionals and potential employers are invited to teach their specialism and act as joint supervisors on final year research projects. Some of the RIT opportunities provided by the laboratory are embedded in the taught curriculum as CUREs, others present themselves as bespoke opportunities for industry-based research projects for internships or dissertation projects (UREs) (**Figure 1**). For example, second year undergraduate students enrolled in the module "Reproduction and Development" visit the laboratory at Discovery Park to learn new laboratory techniques on the subject using the same equipment as the researchers in the laboratory. The students responded very positively to this, as reflected by this comment written by a student in the module evaluation questionnaire:

> *"It was great to have the opportunity to see the reality of a functioning research lab, based in an industrial environment. This trip was also useful for students to learn about the research being undertaken here and choose a path for their individual study in their third year."*

Through the continuity in working with industry partners in Discovery Park, there is the possibility to create bespoke PhD projects funded by industry partners where students can build on research projects they initiated at undergraduate level and for which they therefore have already acquired significant practical experience.

3.5. Embedding research into assessment

Innovative assessment practices, which have a research-relevant component are incorporated into modules across all of the science programmes at CCCU and represent one of the elements of module-based RIT (i.e., CUREs) (**Figure 1**). Examples of this assessment strategy are a laboratory practical assessment for the Foundation Year module "Lab Skills" and a case study assignment in the third year module "Introduction to Bioinformatics".

Foundation Year students at CCCU often have very few academic qualifications upon entry to the programme and/or have been out of education for several years. It is therefore important to gradually introduce them to the concept of working independently and allow them to develop confidence in their practical skills [14]. To this end, in one of the Foundation Year "Lab Skills" sessions, students are given a simple protocol to prepare experimental solutions under the supervision and with the support of the lecturer and practical instructors. Students obtain formative feedback on their experimental calculations and techniques during and after this session. Students are then asked to repeat the protocol the following week, this time without direct supervision or support, as if they were preparing solutions for an experiment in a research laboratory. The students submit their prepared solutions for a final summative mark based on the quality of the solutions prepared. Students are involved as partners in learning as they are also involved in deciding how the marking scheme is applied during assessment. Student feedback suggests that this assignment helps them gain confidence in their lab skills and reflect on their progress. The following are two student responses to the question "What were the best parts of the course in your view?" on the module evaluation questionnaire:

> *"Assessed practical was fun and allowed us to better understand balancing equations, moles and molarity."*

> *"Doing the final assessment at the end of the year using what I learnt and to show myself how much I had progressed."*

A different example of RIT integrated into assessment is a case study assignment for the third year module "Introduction to Bioinformatics". Bioinformatics data (accessible from several international databases) can be searched, processed, transformed and analyzed using freely available programmes. CUREs in bioinformatics are typically not resource intensive, as a thorough research investigation can be completed within a realistic time frame on a standard computer. In addition, large amounts of biological data are constantly being generated without being fully analyzed or investigated. Thus, with careful design, students can perform novel and potentially publishable research even in the context of a single CURE assignment. The aim of the Bioinformatics Case Study assignment is for students to choose a target gene and/or taxon to study and, using sequence data available from public databases, design and carry out a piece of research to investigate a particular aspect of this gene or taxon. The vast amount of data and the enormous range of computational analyzes available means that each study can be unique. This offers great appeal to students, as they can choose a topic that they are highly interested in, such as a particular disease, organism, phenotype etc. Because of this freedom, students tend to immerse themselves more fully in their case study, developing essential skills in a range of research-relevant areas, such as study design, literature review and computational analysis. In addition, the unique and novel nature of their case study and

the subsequent interpretation of the results with the relevant literature help to develop creative and critical analysis skills [52, 53].

Assessment occurs in two parts and reflects the direct research relevance of the case study. Due to the uniqueness and depth of their investigation, students become specialists in their chosen subject, but need to demonstrate that they can communicate their research to others clearly and succinctly. Firstly, the study is written up as a short scientific paper according to the instructions to authors for the journal *Nature Communications*. The paper details how the case study was carried out, the analyses performed, the results obtained and a discussion of the results with appropriate literature. Secondly, students prepare a poster of their study to present to the rest of the class as if presenting at a research conference. Both of these elements of the assessment are designed to develop high level, research-relevant communication skills. Student module evaluations show that students perceive the case study as challenging, but rewarding in terms of the research-relevant skills obtained. This is an example quote from a student:

> *"The case study was good, difficult and challenging, but enjoyable!"*

3.6. The student's perspective of undergraduate research

A 2015 CCCU graduate who participated in a number of the RIT activities outlined above summarized their experience of undergraduate research and the benefits it had for their career as such:

> *"I am a graduate of the BSc Biosciences programme with a Foundation Year at Canterbury Christ Church University. I started university with no scientific qualifications above GCSE level, and graduated as a confident scientist. I was encouraged at various points in my degree to gain extra lab experience, and I was given the opportunity to work in a university research lab in both voluntary and paid roles during the summer months through internships. During this time, I was taught all the basic skills I needed to use in research. My supervisor dedicated a great deal of time to making sure I understood all the experiments and why I was doing them, and made sure my contributions were acknowledged on conference posters – a great thing for my CV! Having worked in the lab during the summers I decided to pursue the same area of research for my dissertation. Learning research techniques as well as experimental design led to me being offered a job in a commercial research lab when I graduated. I hadn't realized how valuable my set of skills was, and I was given a lot of responsibilities in the lab because I was able to demonstrate a good understanding of how research labs work. I was well equipped to start working independently early on and was introduced to a range of research methods, most of which I have been required to use since graduating."*

This and other students' experiences highlights the importance of providing continuity and linkage of UREs and CUREs throughout a curriculum or programme to provide students with experience of the transferrable skills that are best learned by participating in research.

4. Conclusion—the way forward for undergraduate research in higher education

Higher education provision in the UK and across the world is facing a number of challenges to which involvement of undergraduates in research may provide solutions [54]. Enhancing

student learning through research and providing undergraduates with research experiences prepares them for increasingly complex careers requiring research experience or transferrable generic skills best acquired through research [55]. It is apparent, however, that more resource-intensive individualized research experiences delivered via UREs give a better and more complete representation of research activities [15]. At the same time, universities in most countries are facing public funding cuts and an increasingly competitive and inclusive higher education environment, resulting in a trend toward economizing teaching by delivering less resource intensive education to larger numbers of students (for example via online course delivery). This presents a significant challenge: how can impactful and meaningful RIT be developed and incorporated in curricula for larger numbers of more diverse students without significantly increasing the required resources?

The RIT strategies at CCCU described in this chapter are obviously not exhaustive and there are numerous examples of other CURE and URE models (e.g., Refs. [18, 33, 34]). In addition, a separate issue not addressed here is that of measuring the concrete benefits to students engaging in RIT and how to use that information to optimize its delivery [17]. However, the examples provided here give an impression of how low-cost CUREs like the Mini-Conference and research-relevant assessment can be linked to UREs within programmes and curricula to provide a pathway for students to engage with research throughout their degrees, making RIT a core component of the curriculum rather than a fractured or "tagged-on" experience not integrated in the rest of the curriculum. To ensure that RIT becomes a more common and integrated feature of higher education programmes, it is essential that innovative models for CUREs, UREs are developed and—more importantly—that these models are linked together in coordinated strategies within programmes of study to maximize their power and impact in transforming student learning.

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Professional Development of Adult Learners through Open and Distance Learning

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Additional information is available at the end of the chapter

Abstract

The concept of human knowledge is a human construct, and therefore, researching experience from the point of view of those who are living it following a social constructivist paradigm will likely reveal valuable information. Topics covered in this review suggest that the topic "professional development of adult learners" might focus on (a) the choice of learning, in other words, why adults opt for open and distance learning, (b) professional development, (c) learning as adult learners, (d) professional practice, (e) quality assurance, (f) performance in distance education programs, and (g) challenges facing adult students. Approaches that deal with flexible learning are referred to as online or distance learning (ODL). Other examples of flexible learning options available to adult ODL learners are learning from work and employer engagement, part-time study, web-based or blended learning, time driven programs at students' pace, contact sessions, workshops and seminars.

Keywords: open and distance learning, professional development, adult learner, professional practice, quality assurance, distance education programs

1. Introduction

Through open distance learning (ODL), adult learners can increase access to learning opportunities irrespective of geographical challenges because the flexibility of time, pace and place of study is assured; teaching and learning are individualised; they are free to select their own learning environment, and they can take responsibility for their own learning at their own pace. Adult learners have a duty to take greater responsibility for ensuring that their own skills or needs are met, and they often share in the costs of investment [24, 48].

Open and distance learning (ODL) is relatively new in the field of education. It gained eminence only in the past 25 years [27]. Open learning is a philosophy, and distance learning is a methodology in education. Openness and remaining learner-centric is a basic philosophy of ODL.

Quality assurance in ODL ought to be decentralised from central administration to citizens, employers, and communities in order for them to play a leading role in determining services that will meet their needs competently [24].

Adults learn better in a non-threatening environment, and their individual learning style needs are met [47]. These positive experiences occur when: (1) previous experience is valued and utilized, (2) there are opportunities to have control over the learning process, (3) adequate time is allocated for integration of new knowledge to take place, (4) there is enough opportunity to practice and apply what has been learned, (5) there is a clear focus on relevant challenges and practical applications of key concepts, and (6) there is feedback to assess progress towards their goals. Skills play an important role in creating a fairer society by promoting social inclusion and mobility [24].

2. Methods

The literature review included here promotes an understanding of the subject area and the criticisms that have been made on the topic [26].

3. The choice of learning opting for open and distance learning

In this research paper, age is not taken into consideration for adult learners who choose open and distance learning. Adult learners list reasons such as personal enrichment, improving pay for their current job, a desire to change careers, preparing for a new job within their field, earning a required credential, interacting with other students and networking, returning to complete a degree, the availability of tuition assistance, and renewing a certification [17]. The labeling of adults learners chronologically and categorizing them according to age is no longer relevant in the ODL environment because of the high demand for higher education worldwide [1]. Young people are pursuing their studies through ODL for various reasons such as the shortage of space at contact universities and availability of technology [36].

The word "practice" itself has multiple meanings depending on the context. People develop skills through practice, though repetition alone is not sufficient as learning requires varied practice in different settings and with increasing complexity [58]. Modules that ODL institutions provide must enable students to use theory and apply it to practical situations.

There are seven attributes of blended learning environments that support self-regulation. The attributes are important because students choose ODL because they are able to monitor and control their own learning by looking at the attributes. These attributes are as follows:

(1) Authenticity, which refers to the contextual situation in which support is provided;

(2) Personalisation, which indicates the relatedness of the support to the learners' individual preference, to make learning more identifiable as belonging to them as learners;

(3) Learner control, which refers to the amount of control learners have over the support provided;

(4) Scaffolding, which describes the temporal structure provided to help learners complete the tasks;

(5) Interaction, which indicates the amount of social interaction evoked by the support;

(6) Reflection cues, which trigger thought or consideration on the learner's part about his or her own approach to the task; and finally,

(7) Calibration cues, which help the learners form a sensible and practical idea of what can be achieved; calibration issues occur as the result of an instructional design model that makes it possible to describe learning environments on course levels) [59].

3.1. Professional development

Transformative learning theory offers clarification of adult learners' experiences of fundamental change in their perspective or frame of reference that can occur as the result of being involved in educational or academic work [32]. "Learning can be seen as an experience of critical questioning of beliefs and assumptions, as the adult learner examines the frame from which he or she has been viewing the world. Adult learners have developed a comprehensible body of knowledge such as associations, concepts, values, feelings, and conditioned responses in their frame of reference that defines their life world" [64]. The theory of transformative learning, because of its support of constructivist philosophy of learning, can assist adult learners to build from their experiences and construct knowledge and meaning [64]. Theory of transformative learning is a useful tool through which to understand the ODL experiences of adult learners [32].

There is a tendency for professional development activities to focus on technology and not on pedagogy. *Pedagogy* can be defined as the "essential dialogue" between the activities of teaching and learning and "how we think and talk about, plan and structure those activities. Pedagogy involves a way of knowing as well as a way of doing" [8]. Adult learners bring to their environment a wealth of experiences, and it is the responsibility of the professional development provider to "build upon these experiences for positive transfer of learning… [this being said, these]…experiences can also be a barrier, because many of them have had poor and ineffectual learning experiences" as well [19].

Adult learning theorists are of the view that "good practices for teaching adults need not reflect those for teaching children because of different prior experiences and motivations. Seminal ideas of andragogy (the method and practice of teaching adult learners) serve as a shared foundation for the variety of adult learning theories in education. Adult learning ought to involve learners from the planning stages; to incorporate the life experiences that learners bring; to put more emphasis on subjects that are relevant for learners' professional or

personal life; and to adopt a problem oriented method that will enable adult learners to use new concepts immediately" [4, 9]. Providing quality services to adult learners implies that the adult education programs ought to have the capacity to do so [50].

Learners in various professional education settings are not only expected to act professionally but are also expected to become professionals. In addition to acquiring on-the-job knowledge, skills, and abilities relevant to the discipline, learners in advanced professional training need also adopt the professional values and behaviors that society associates with being a professional. Rather than being explicitly taught, however, much of what is learned is often acquired tacitly through observation of role models and enculturation in professional practice settings, often termed the "hidden curriculum" [37].

3.2. Learning as adult learners

Theories are there to provide people with a description to make sense of complex practices and phenomena and can provide a viewpoint that reduces intricacies while enabling generalisability. Currently, a single theory exclusive to the field of ODL is unavailable [15]. Reflection is very important in transformative learning. We know that people's beliefs, perceptions, and assumptions—personal frames of reference—mediate their educational experiences when they are learning as an adult student or as a teacher [38]. The popularity of ODL stems from its flexibility and openness in entry and admission requirements, program structure, and flexible learner support (when, where and how to study) [27].

There are six basic principles and eight design elements of andragogy. In order to teach adult learners successfully, the focus of learning has to be learner-centred. These principles comprise self-directed learning, previous experience, willingness to learn, orientation to learning, purpose for learning, and intrinsic motivation to learn. There are eight design elements of andragogy that occur before, during, and after the learning experience, namely "preparing the learners, setting the climate, mutual planning, diagnosis of learning needs, formulation of learning objectives, learning plan design, learning plan execution, and evaluation" [49].

Philosophies of constructivism for instructional design that focus on knowledge construction for ODL mode can be facilitated by: (a) creating learning environments that offer several illustrations of reality, (b) focusing on knowledge construction and not reproduction, (c) providing real world case-based learning environments, (d) fostering reflective practice, (e) enabling context and content dependent knowledge construction, and (f) supporting collaborative construction of knowledge through shared intervention. Social presence is a potentially significant factor in improving instructional effectiveness in both traditional and communication technology mediated distance classes [18, 25].

3.3. Professional practice

In practice, educators and practitioners working with adult learners could use the principles of adult learning to integrate andragogical design elements into their curriculum to improve learning outcomes. Adult learners need advance information about a training or learning experience in order to evaluate its relevance; they learn best when they have the opportunity to control or have input into the goals and purposes of a learning experience; they prefer a

problem-solving approach and they learn best when new learning is couched in real-life context [49]. Dewey thought that a worthwhile educational experience should be grounded in a process of reflective inquiry [23].

Adult learners face numerous situational hurdles, including finances, family life, health, work conflict, and transportation [45]. They enroll voluntarily in educational programs and are usually part-time students who have to balance education with other life tasks like work and family, which means that they are often more at risk of dropping out from education and training [52]. Gaining independence and confidence can help to develop self-directedness in learning [34]. "Mezirow (1991) distinguished between three types of reflection on experience, only one of which, premise reflection, can lead to transformative learning [38]. Content reflection is thinking about the actual experience itself; process reflection is thinking how to deal with the experience; and premise reflection involves examining long held, socially constructed assumptions, beliefs, and values about the experience or challenges. Premise reflection, or critical reflection on assumptions, can be about assumptions ODL learners hold about the self (narrative), the cultural systems in which they live (systemic), their workplace (organisational), their ethical decision making (moral-ethical), or feelings and dispositions" [38].

However, "when frames of reference are shaken by new, sometimes unexpected incidents, a myriad of emotions can lead to critical assessment of those personal assumptions and understandings. Critical reflection on assumptions, or premise reflection, is not just thinking about an experience or about how to manage the experience; instead, it necessitates that adult learners ought to reflect on long-held, socially constructed assumptions, beliefs, and values about their experience and challenges in ODL" [5, 14].

When developing adult learners in an ODL environment, learning should rest on the following pillars of knowledge:

• **Learning to know** (acquiring the tools of understanding)

Learning to know depends on the power of concentration, memory and thought. Acquiring knowledge is a never-ending process and can be interwoven with the experience of work [29].

• **Learning to do** (to be able to react creatively to one's environment)

Learning must change and can no longer be regarded as the simple transmission of knowledge for routine practice. Adult learners must be able to communicate, work with others, and manage and resolve conflicts in their own life environment [29].

• **Learning to live together** (to participate and cooperate with other people in all human activities)

In ODL, adult learners must know the diversity of the human race and be aware of the similarities between, and the interdependence of all humans. Dialogue and debate are one of the tools that must be encouraged in ODL [29].

• **Learning to be independent**

Adult learners should be able to solve their own problems, make their own decisions and shoulder their own responsibilities [29].

3.4. Quality assurance

Quality assurance is that part of a quality management system providing assurance that quality requirements will be met. It includes those entire planned or systematic activities essential to provide enough evidence that the service will meet the required needs [2]. Quality assurance tools should not be constructed and handled by staff who are far removed from core activities which implies that, in ODL, teachers and other workers who have not been engaged and involved in the construction of these tools cannot easily relate to or implement them [16]. "A quality culture is nothing if it isn't owned by the people who live it" [30].

Quality ought to be emphasised and accomplished for good quality education to be achieved. Quality assurance is the most important tool to enable a cycle of equal opportunity, fair competition and just rewards in ODL. For quality programs to take place in ODL, quality assurance must concentrate on the mechanisms, procedures and processes in place to ensure that the anticipated quality is delivered [40]. In making judgements, where there is substantial ambiguity and uncertainty, different outcomes will be achieved by adult learners because they tend to be more reliant on the information provided to them by ODL institutions [3]. "Efficacy and outcome expectations are assumed to be the influence of development both of interests and of goals, although contextual influences might also play part in ODL [55]. Goals are often an implicit element of the career choice and decision-making process, with plans, decisions, aspirations, and behavioural choices all involving goal mechanisms" [7].

There are various reasons to do quality assurance in ODL. Quality assurance in ODL can assist students' mobility from one institution to another and can help maintain accountability for public resources [33]. Quality assurance can advance the quality of higher education provided through ODL. It can also be used to support the transfer of authority between the state and institutions. ODL institutions can rely on quality assurance to inform their funding choices and to update students and employers. In grading institutions, quality assurance can encourage competition within and between organizations. Quality assurance can assist with international comparisons and with a quality check on new (and sometimes private) institutions. For example, in European countries, including the United States, any formal decisions that are taken must be based on external quality assurance activity which is determined by explicit published criteria that can be used consistently [20].

3.5. Open and distance learning environment

Content planning and delivery should more holistically include student needs, interests, and perspectives. There should be an emphasis on adult learners sharing the responsibility for their own learning [66]. Adult learners rely on quality assurance to make decisions about their learning. They are expected to take financial decisions, reorganise their home and/or occupational life, negotiate with family members, and limit their social activities [12].

There are dimensions of cross-cultural values involved in ODL, for example: (a) "the power distance" (the extent to which power, prestige, and wealth are unequally distributed in a culture); (b) the uncertainty avoidance (the value placed on risk and ambiguity in a culture); (c) the individualism-collectivism (the individualistic cultures stress the individual's goals while the

collectivist cultures emphasise group goals); and (d) the masculinity/femininity (the masculine traits include strength, assertiveness, and competitiveness while the feminine traits include affection, compassion, and emotionality)" [28]. Adult development ideas give a better under-standing of how adult learners learn differently from younger learners, by offering insight into the professional development of adult learners in ways that will serve their career needs [63].

3.6. Why adult learners do not continue with open and distance learning

It is well established that adult learners come into higher education with many at risk factors, such as age, working at full or part-time jobs, dependents, and academic unpreparedness, to name a few. These characteristics have proven to be barriers to success for some adult learners [21]. There is a clear consensus in literature that dropping out, especially in ODL, is a puzzling phenomenon. The dropout phenomenon is similar to automobile accidents, in that it has a single symptom, but many possible causes [35]. It is essential for ODL institutions to be able to identify reasons for students dropping out, for example, late application to the institution, finding it difficult to make friends, finding it difficult to settle in at the beginning of their course, not satisfied with the quality of teaching, not satisfied with their course timetable, and lastly difficult financial or family circumstances, as well as programme/course related reasons –"workload" and "difficulty" [61, 65].

Some of these problems have an impact on the students' behaviour, attitudes, confidence, learning styles and motivation.

There are also epistemological challenges with some brought about by the perception that the content is difficult [56]. Throughout the process of developing study material, it should be taken into consideration that adult learners often feel exposed because of the powerless position they occupy in the educational discourse. When adult learners are thrown into distance learning environments, they may feel lonely, insecure and isolated from the education system. Most of these adult learners enroll in ODL institutions with expectations from past schooling. In ODL, adult learners view their role as directed by the teacher [51].

There are different challenges experienced by ODL learners, namely institutional, situational, and student support challenges.

3.6.1. Institutional challenges

These are difficulties that students may experience with the institution, such as admission requirements, course pacing, and inadequate support services. Some of the institutional chal-lenges include: (a) quality assurance plans are often too general and not favourable to ODL environments; (b) academics tend to have a "passive resistance" to getting involved; (c) some teaching staff that facilitates ODL programmes has not been given sufficient special training on the delivery of open and distance learning practices; (d) time constraints for academics seem to be a challenge that must be overcome along with the development of a common institutional approach to ODL; (e) shortage of tools and technologies that enable scalability; (f) lack of financial sustainability models; (g) lack of committed and qualified cadre of quality assurors and experts with the relevant ODL qualification. It is commonly known that full-time

staff often has been trained in the conventional education system; (h) limited appreciation of principles of ODL; (i) shortage of infrastructure and human capital in ODL institutions; and (j) lack of transformation of ODL policies and procedures to accommodate the growing number of learners. The growing number of learners at ODL institutions has placed more pressure on ODL institutions to provide more services, especially learner support [19, 39, 44, 46].

3.6.2. Situational challenges

Adult learners' main challenge lies in situational factors that are beyond their control, such as obtaining employment, caring for a child, health crises, financial difficulties, legal dilemmas, personal or family interferences, and transport problems. Furthermore, adult learners are expected to deal with institutional challenges such as the level of difficulty of content that is being taught, situation, class attendance, and even re-admission policies.

These adult learners are also expected to deal with dispositional barriers, including educational attitudes, self-efficacy, resilience, and attribution of failure [11, 43]. These arise from each adult learner's particular life circumstances, such as an altered employment situation, a change in marital status, or the arrival of a baby. Traumatic factors and chronic intermittent events such as on-going financial problems, or acute stress due to sudden conflict with family members may affect ODL students in ODL mode. Additionally, self-confidence was found to be a vital requirement for persistence in ODL: if an adult learner is motivated to study but lacks self-confidence, he or she may fail [12].

3.6.3. Student-support challenges

The cost and lack of student support and services, alienation and isolation, and lack of experience in ODL and training all influence adult ODL learners [22, 42]. Work and domestic obligations are expected to hamper ODL learners' achievements far more than would be the case in contact settings, mainly so amid challenging socio-economic circumstances [54]. Their achievement is shaped by a complex, layered, and dynamic set of events. It is the outcome of interaction between personal, institutional, and broader contextual factors. Some of the challenges affecting adult learners in ODL environments include "faceless" teaching, fear of the imminent replacement of face-to face learning by computers, diffusion of value usually placed on attaining a qualification, faculty culture, lack of independent learning skills and local library resources, lack of formalised agreements to sustain program commitment through difficulties and problems, and high cost of materials [18, 41].

Adult students are expected to make a substantial effort when they start studying. These learners are expected to make financial decisions, reorganise their home and/or occupational life, negotiate with family members, and limit their social life [12]. For adult learners to succeed, more time is required for preparation of assignments and activities. The more technologically advanced the learning systems become, the more they go wrong. Non-educational considerations take precedence over educational priorities. Adult learners are also challenged by their resistance to change and the lack of technological assistance [6].

3.6.4. Reasons why some adult learners embrace open and distance learning

Generally, adult learners are motivated to learn. Unlike their younger peers in residential campus programs, adult learners are often self-motivated, and thrive on intrinsic, rather than extrinsic rewards. Course material must be relevant to the position adult learners see themselves in several years in the future [13]. People become more ready to learn something new when they experience a need to learn and they are able to manage real-life responsibilities and challenges. ODL institutions have an obligation to create conducive conditions by providing tools and procedures for helping adult learners discover their needs to know [62]. In organizing learning programs, ODL institutions should focus on life application categories and sequence them according to the adult learners' readiness to study [57].

Students are able to study at their own pace and receive immediate feedback. Computers can make this type of learning far more interactive and dynamic than studying from books and notes. Open and distance learning allows adult learners to study whenever they have time, which makes it an especially good fit for those learners with work and family obligations [53]. ODL adult learners are presented with the opportunity to think about and decide whether they are ready to commit to distance learning [10].

ODL provides widespread access to training and education resources. It strengthens ties between people, takes the fear out of differences and encourages tolerance [31]. It increases the availability of information resources [60]. Generally, it reduces the cost of traditional training and education while still meeting students' training and education needs.

4. Conclusion

ODL institutions should respect adult learners' multitasking abilities but may initially need to follow a structured, traditional approach to learning. Some ODL adult learners have to focus on obtaining skills required to stay relevant in the job market, and therefore, ODL institutions should ensure that this learner population continues to grow.

Adult learners' orientation to knowledge depends on methods of knowing, such as "What is in it for me?," "What do you think I must know?," "What do I want and need to know and learn?," and "What is of importance for me to know to keep on learning and growing?" If adult learners succeed in open and distance learning, learning can be an effective vehicle for continuous growth and development. In ODL, adult learner success is influenced by personal factors such as intrinsic capacities, as well as issues extraneous to the institution. Adult learners are expected to proceed with their studies according to due dates for the submission of assignments and examination dates. They should be able to act independently and be self-directed.

Adult students need guidance in more interactive classroom settings, and ODL institutions need more formalised training in effective teaching strategies for adult students. In order for

ODL institutions and their programs to be responsive to adult learners, the adult learner's context should be taken into consideration. Adult learners are motivated by both intrinsic and extrinsic factors. In developing adult learners, ODL institutions should provide education and programs to expedite workforce training. For ODL to succeed, a structured process for designing programs, which includes quality assurance, is required. In doing needs analysis with involving stakeholders, ODL staff should try to involve people with appropriate skills and should bear in mind the organisation's constraints.

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Turkey

Factors Influencing Access to Higher Education in Turkey

Tuncer Bülbül

Additional information is available at the end of the chapter

Abstract

Participation in higher education provides long-term opportunities, and thus, it is considered a vital process. Additionally, higher education has an important role in the distribution of equality and social justice in a society. Even people who do not have higher education benefit from it, as higher education contributes to social justice. Hence, higher education needs to be considered with a broader perspective and should not be reduced to the questioning of individual success. Considering the significance of higher education, this review aims to examine the factors that influence access to higher education in Turkey. In alignment with its purpose, the review uses a documentary survey method and examines relevant records, documents, and statistics. Finally, the review presents data in accordance with the research purpose.

Keywords: higher education, higher education access, social equality, sociocultural factors

1. Introduction

From the last quarter of the twentieth century, the process of transition to a knowledge society has begun in the developed countries, and a new global economic structure called knowledge economy has been formed. In this new structure, the economic power, knowledge, and learning levels of the individuals and the competitiveness of the countries are often measured by the human and social capital [1]. This process has increased expectations from the universities responsible for the production and sharing of knowledge and has become a focus of attention for higher education societies in almost all countries. Hence, the demand for higher education has increased rapidly all over the world. According to the reports of international organizations such as the World Bank, United Nations Educational, Scientific

and Cultural Organization (UNESCO), and the Organisation for Economic Co-operation and Development (OECD), the number of students receiving higher education in the world is increasing rapidly. In the last 20–25 years, the expansion and promotion of higher education have become political goals in both developed and developing countries. Numerical data also indicate that efforts to reach these goals have resulted in considerable success. Worldwide, the number of higher education students, which was 13 million in 1960 (0.43% of the world population), reached 82 million in 1995 (1.43% of the world population), and 137 million in 2005 (2.11% of the world population). This number exceeded 152.5 million in 2007 (2.27% of the world population). The number of students in higher education is doubling every 15 years on a global basis. It is predicted that this number will reach 200 million students in 2020 [1, 2].

Increased demand and enrolment rates in the higher education system do not indicate that all segments of society are equally able to benefit from higher education. In many countries, there is a huge difference between higher education participation rates of different social and cultural groups. Despite various projects and policies of governments, institutions and other political entities, there is still inequality in access to higher education in many countries [3–5]. The studies on higher education have revealed the existence of material and cultural inequalities and hierarchies. Researchers have explored the role of education in the production of dominant cultures and classes and its role in maintaining social and economic inequalities [6–11]. The inequality that exists in the beginning and continuing stages of higher education has been examined by many researchers starting from the 1960 s until today [3, 5, 12–21]. These studies mainly aim to reveal the effects of social stratification on higher education. The research results show that socioeconomic and sociocultural factors, especially the factors such as the income status, education level of the parents, and the living area, are determinants of the higher education attendance and continuation for young adults in many countries. The research results show that the difference between the entrance rates of individuals coming from different social classes is increasing gradually, and the problems arising from these social differences are getting deeper. Higher classes are even more represented in higher education than they have been in the past [22–24].

As in many countries, higher education access and the following processes are experienced similarly in Turkey. In this article, the problem of access, which is still faced in Turkey despite the rapid expansion of the system of higher education in recent years, is evaluated on the basis of social equality. In this respect, the problem of social inequality experienced during the process of access to higher education is described with a deeper viewpoint. With the theoretical framework of social justice, the study focuses primarily on the general structure of the higher education system in Turkey and the current point reached by the expansion of higher education. The goal of this study is to show the effect of the determinants of higher education access. However, when access to higher education is considered, it is not be correct to regard the problem as only coming from the university. Because the right to have access to higher education requires a discussion beyond the problems arising from the supply-demand imbalance, the benefiters of higher education and the effects of socioeconomic background characteristics on this process are examined.

2. History and general structure of higher education system in Turkey

With the proclamation of the Turkish Republic in 1923, there has been rapid development in the field of higher education as in every other area such as economy, agriculture, human rights, politics, etc. [25]. The first radical changes to the higher education system in the Republic era were made with the 1933 university reform. Later, attempts were made to reform with the laws of 1946 and 1973. The last radical change in Turkey's higher education system has come with the Law No. 2547 issued in 1981. The last radical change in the higher education system in Turkey has been put into practice with the Law Number 2547 issued in 1981 [26, 27]. In line with these reforms, the developments experienced in the field of higher education in Turkey have been summarized in four periods below.

First Period – 1933 Reform: Before the foundation of the Turkish Republic, Darülfünun was the institution that was accepted as a university in the Ottoman Empire period. Shortly after the proclamation of the Republic, in 1924, this institution bearing the name of Darülfünun-u Osmani was named Istanbul Darülfünun with the Law Number 493. The Faculties of Medicine, Law, Theology and Science affiliated to Istanbul Darülfünun were founded, and the university was transformed into a "Supplementary Budget" administration. As a result, practitioners took an important step toward the goal of making universities independent organizations [26]. However, Istanbul Darülfünun, which was taken over from the Ottoman Empire and considered as the main higher education institution of the country, was not able to show the development expected by the Turkish society, as the society expected to witness innovations in educational practices. As a result, the necessity of a comprehensive reform toward the university began to be discussed despite the interest shown between 1923 and 1932 [28, 29].

In this direction, the 1930s were the years when major breakthroughs began in higher education in Turkey. During this process, the most important of these developments in higher education was the 1933 university reform [28]. In 1933, Professor Albert Malche, who was invited from Switzerland to renovate Darülfünun, prepared a report about the university. The report contained statements on Darülfünun's structure and functioning. The report stated that Darülfünun did not play a sufficient role in the settlement of the Turkish Revolution, opposed or resisted reforms, did not have a supervisory unit, did not conduct scientific studies, and worked in isolation from society. Based on these reasons, in the same year, Darülfünun was closed with the Law Number 2252 and reopened with the name of "Istanbul University" in November 1933 [26]. The laws and regulations envisaging fundamental changes in the administration of Istanbul University, the first university of the Republic of Turkey, have entered into force since this date, and the "university" statement in Turkish legislation was mentioned in the law 2252 for the first time [28].

Second Period – 1946 University Reform: The year 1946 was a turning point for Turkey in terms of higher education. In 1946, the elections were held in Turkey through a multiparty system from a one-party system, and the university reform was also carried out with the new law, number 4936 [30]. In 1946, universities were given a new and advanced status by linking universities

and affiliated units, and linking institutions and their functioning with legal regulations in line with the aims determined by the university reform, which was established with the law number 4936. With this law, universities were organized in a structural unity. A new institution named "Inter-University Council" was formed for the managerial dimension of this unity [26]. With this law, the definition of universities was revised. The revised version pointed out that universities should have science and management autonomy. At the same time, attention was paid to the process of scientific processes such as research and examination [31]. Universities gained autonomy in financial, scientific, and managerial terms in this period.

With the change of government in 1950, the structure of the Turkish universities adopting the Continental European model underwent a significant change. The new government, which attached greater importance to the free market economy, believed that an American University model would meet the human power need of a growing economy. Hence, the government focused on spreading the university system across the country [29]. In this direction, after 1950 s, there have been significant developments in higher education in accordance with the social demand. The most important of these developments has been the dissemination of colleges and universities to regional centers [32].

Third Period – 1973 Reform: In 1973, the issue of reform in education came to the agenda again and the universities law numbered 1750 was put into practice [33]. A new and positive provision brought by the law number 1750 was the establishment of a "Higher Education Council" that was developed in order to conduct necessary investigations, researches and evaluations in order to direct higher education and to provide coordination among higher education institutions [28]. Apart from this, the academic, administrative, and financial structure introduced by law number 4936 in 1946 was preserved by this law [29].

Fourth Period – 1982 University Reform: Significant developments were witnessed in higher education institutions in Turkey between 1946 and 1981. However, lack of coordination and cooperation among higher education institutions and problems in planning and supervision during this period caused the development in higher education institutions to fall behind the expectations of the society from universities. In addition, the political, social and economic problems that emerged between 1960 and 1980 further increased the deterioration in higher education. As a result, higher education institutions faced management and financial resource problems. For this reason, a radical reform at the end of the seventies became inevitable, and at the end of this process, the Higher Education Law Number 2547 was adopted on November 6, 1981, in order to plan, coordinate and supervise higher education in Turkey. Some of the articles of Higher Education Law No. 2547 were amended after a short time (20 April 1982), and the authority of the Council of Higher Education (YÖK) established in accordance with this law was expanded. YÖK was redefined as a constitutional institution in order to direct the important activities of higher education institutions such as regulation, supervision, teaching, and research [29].

In the years prior to the 1981 university reform, the Turkish higher education system consisted of five types of institutions: universities, academies affiliated with the Ministry of National Education, two-year vocational colleges and conservatories mostly affiliated with the Ministry of National Education, Annual education institutes, and Common Institution

of Higher Education (YAYKUR). With this law, all the higher education institutions in the country have been united under the Higher Education Council (YÖK). Academies have been transformed into universities, educational institutes to education faculties, and conservatories and vocational colleges have been linked to universities. Also, non-profit foundations that aim to establish higher education institutions have been permitted.

3. The current structure and management of higher education in Turkey

The current structure and management of the higher education system in Turkey were established based on the Higher Education Law No. 2547 issued in 1981. Various changes have been made to the law in time. According to this law, higher education within the National Education System of Turkey consists of secondary education-based associate degree (at least 2 years), undergraduate (at least 4 years) and graduate (master's degree, doctoral degree, expertise in arts and proficiency in arts) degrees. The superior boards of higher education in Turkey are the "Higher Education Council," "Higher Education Supervision Board," and "Inter-university Council." Universities and high technology institutes and their faculties, institutes, colleges, vocational schools, conservatories, research and application centers are considered as Higher Education Institutions (Law Number 2547, Article 3). The financing of higher education, which is considered as a public service in Turkey, is carried out by two basic methods. Constitutionally, public finance has been used in state universities, and special financing system has been used in foundation universities. State universities are financed by the budget of public financing. The second largest income source of the universities is the circulating capital [2]. Although the administration of higher education, under the Law Number 2547 on higher education, is based on the Anglo-Saxon model [34], its funding sources and budget still operate according to Continental European Model principles [34]. This can be called a mixed model application.

4. Expansion of higher education in Turkey

Higher education in Turkey is regarded as necessary to gain access to certain occupational fields, possess social status, and acquire the ability to realize oneself individually [35]. For this reason, in parallel with the developments around the world, the expansion of higher education in Turkey has gained momentum since the 1980 s, and the number of students and institutions in higher education has increased every year [2, 36, 37].

Table 1 shows the student numbers in higher education in Turkey from 1985 to 2015.

The number of total higher education students, which was 2914 in 1923 (Turkey's population was approximately 13 million people), the date of the foundation of the Republic of Turkey, increased to 346,476 in 1977–1978 (Turkey's population was 41.02 million people). In the following years, this number decreased steadily to 237,369 in 1980–1981 (Turkey's population was 44.73 million people) [29]. As seen in **Table 1**, from this date onwards, the total number

Year	Associate degree	Undergraduate	Graduate	Formal education total[*]	Open education and distance education total[**]	Total number of registered students
1984–1985	45.642	287.087	19.156	351.885	65.456	417.341
1989–1990	62.671	353.869	40.665	457.205	228.295	685.500
1994–1995	127.922	502.083	66.979	696.984	477.315	1.174.299
1999–2000	218.099	713.259	84.054	1.015.452	488.569	1.503.981
2004–2005	402.404	871.091	137.265	1.410.760	695.591	2.106.351
2009–2010	613.077	1.152.265	206.775	1.972.117	1.557.217	3.529334
2014–2015	896.031	1.897.692	406.817	3.200.540	2.862.346	6.062.886

[*]Associate and undergraduate students are included in the number of secondary education students. Graduate students include postgraduate, doctoral and medical specialist students.

[**]Total number of students in distance and open education; these programs consist of associate, undergraduate and graduate students.

Source: Gürüz [29] and ÖSYM [43].

Table 1. Number of students in higher education in Turkey (1985–2015).

of students continuously increased to 1,503,981 in 1999–2000 (Turkey's population was 67.80 million people), 1,557,217 in 2009–2010 (Turkey's population was 72.56 million people), and 6,062,886 in 2015 (Turkey's population was 78.74 million people). The total number of students for the year 2015 is 6,062,886. Of these students, 5,615,293 are in state universities and 447,593 are in foundation universities. Of the students, 3,366,658 are male and 2,786,228 are females. According to 2015 data, 3,200,540 students are studying in structured programs. The total number of students in open education is 2,803,064, and the number of students studying in distance education programs is 59,282.

In line with the increasing number of students in Turkey, the number of institutions in higher education has also increased, especially since 1992. There are currently 23 state and two high-tech institutes, established during the period of 1992–1994 and 41 state and 21 foundation universities, established during the period of 2006–2009; these increases also accelerated the increase in the number of students. In addition to state universities, the number of foundation universities has also started to increase rapidly since 1996, and with the 50 universities established in 1996–2010 period, the total number of foundation universities has reached 54. As of 2008, universities were established in all major cities. In 2015, the number of institutions in higher education reached 193, of which 109 were state, 76 were foundation universities, and 8 were foundation vocational high schools [2, 38].

5. Supply inadequacy in higher education

The rate of formal higher education enrollment in Turkey increased from 5.6% in 1980 to 9.4% in 1990, to 17.9% in 2000 and to 35.6% in 2010 and to 39.5% in 2015 [2, 38, 39]. The most important indicator of the inability of the schooling rate to reach the desired level in higher

education is the number of students who have applied and placed in the university for years. **Table 2** lists the number of students who applied for and entered the university during the period between 1980 and 2015.

The numbers in **Table 2** show that 32.5% of those who applied to universities in 1985, 30.4% in 1995, 37.3% in 2005, and 46.2% in 2015 have gained access to these universities. Turkey, experiencing a rapid population growth from 1960 to 1990 s, has experienced a moderate rate of population growth since the beginning of 2000. According to TUIK data, the annual rate of population growth declined to 13 in a thousand in 2010. It is estimated that the rate of population growth will fall to 7.7 in a thousand by 2025. In Turkey, where the young population is higher compared to other countries in Europe, the school-age population (5–24 years of age) is expected to show a slight change toward 2025 by decreasing from 34.5 to 29.5% of the total population [40]. The age population in higher education is expected to be 5.064 million in 2020 and 5.077 million in 2025.

According to Tanrıkulu [36], if the historically continuing tendencies regarding the financing, the number of students, and teaching staff in higher education continue and if there is no policy intervention, the demand for higher education of young people in Turkey will not be met in 2025. Tanrıkulu's research predicted that the rate of organized schooling, which is the most important indicator of access to higher education [36], would reach 53.7% in 2025, and Turkey will continue to lag behind developed countries. It is estimated that the rate of settlement of formal education, which shows the demand level of higher education supply, will reach only 38.7% in 2025. These indicators show that the demand for higher education, which cannot be met in Turkey today, will continue to exist in 2025 as well.

Moving from statistics for higher education, it will be correct to say that there is still an important supply-demand imbalance regarding the level of higher education in Turkey. The demand for higher education tends to continue due to the following factors [41]:

- Transition rates from primary education to secondary education continue to rise.

- Schooling rates and number of graduates in secondary education continue to increase.

Year	The number of applicants	Success	Success rate (%)
1980	466,963	41,574	8.9
1985	480,633	156,065	32.5
1990	892,975	196,253	22.0
1995	1,265,103	383,974	30.4
2000	1,407,920	439,061	31.2
2005	1,844,891	688,840	37.3
2010	1,587,866	874,306	55.1
2015	2,126,684	983,090	46.2

Source: ÖSYM [43].

Table 2. The number of students who applied to university entrance exam in Turkey and succeeded (1980–2015).

- Adult demands for higher education are increasing, and the age range is expanding.

- The social demand for higher education (the learning society) is continuing.

- The individual benefits of higher education remain important. In this context, employment participation, relative earnings, and individual outcomes tend to rise.

- The participation of females is growing faster than the participation of males.

6. Higher education placement system and central examinations in Turkey

While the demand for higher education and the number of high school graduates has been continuously increasing, the total capacity of higher education institutions in Turkey has not increased in parallel with these numbers [42]. The increasing demand for higher education has forced universities to seek student selection and placement methods. Hence, a central examination system has been used in order to solve the problem of accumulation experienced during the process of accessing higher education in Turkey [42]. Although the structure of the central examinations has changed frequently, the existence of these exams has not yet come to an end. In 1974, a decision was made for launching a center that would administer the university entrance exam. As a result, the Inter-university Student Selection and Placement Center was established. Under the name of the Student Selection and Placement Center (OSYM), this center has been preparing central exams for secondary school graduates who wish to enter higher education institutions since 1981 [2].

In Turkey, the university entrance system has been implemented in a two-stage, 6-exam structure since 2010. The first stage is the Higher Education Transition Examination (YGS), and the second is the Undergraduate Placement Examination (LYS), which consists of five separate examinations. In 2015, a total of 2,126,670 candidates applied for ÖSYS in order to enter higher education. Of these candidates, 1,987,484 have entered YGS. There were 1,779,850 candidates who entered the exam and passed the 140 point limit. There were 1,369,147 participants who have passed the 180-point limit. According to the numbers revealed by OSYM [43], in 2015, 983,090 students were placed in universities (417,714 undergraduate students, 195,791 associate students, 171,445 associate students without examination and 198,140 open education students).

The university placement exam aims to choose the ones who are appropriate for the quotas among many candidates [2]. A centralized exam, based on multiple-choice questions, has been conducted in order to eliminate the possibility of student mistrust. However, the existing student placement exam takes only the score superiority among those who apply to a program into account. The candidate may ignore his/her own interests and abilities and can often turn to a profession that he will not be interested in the future. In addition, students who graduate from some public schools and private high schools in Turkey can be placed in one of their first choices according to the exam results. The share of these students in the total number of students in secondary education is below 10%. The other majority either tries to

keep up with a program that they are not interested in, or tries to change their program by taking the exam multiple times in the following years. The centralized examinations objectively measure the competence and knowledge of students [2]. Obviously, it is not realistic to expect a centralized exam to solve the social and economic inequalities experienced in entering the university. However, this should not be the reason for ignoring the fact that exam results play a decisive role in the placement of students in higher education institutions and contribute to the maintenance of this disparity [2].

The supply-demand imbalance in higher education creates adverse effects especially on the functioning of secondary education and increases the demand for after-school support; the imbalance puts the families under a financial burden and most importantly creates adverse effects on the psychology of young people and their families [40]. The inability to establish a proper balance between supply and demand also contributes to the formation of competition in the field of higher education. The imbalance between supply and demand has led to competition in some programs. The fact that the competition is so comprehensive makes it inevitable that there are winners and losers [1].

The negative effect of the examination system is felt in the whole education process, starting from the elementary school level. Families whose social and economic conditions are appropriate usually make long-term educational plans for their children. As a consequence, they look for ways to increase the chances of their children in this tough long-lasting race [35]. For this reason, the existing examination system is effective in changing the nature of the relationship established with knowledge. Acquisition of knowledge to succeed in exams leads to its instrumentalization and therefore externalization to its subject [44]. This process that accelerates the commodification of knowledge is influential in the transformation of all relations in the educational process. Educational achievements are measured by exams and tests, and the reduction of achievement to success in the central exams creates a competitive environment among the students and the teachers [45] and makes learning associated with drudgery.

The reduction of the examination system to a technical level by ignoring the economic and social influences of the entrance system makes the attempts for improving the system inefficient. For this reason, access to the university should be considered in a comprehensive way, taking into account social, economic and political consequences [46]. Otherwise, the education system supported at every stage by "student selection" processes will reproduce the differences and inequalities that the capitalist system has created and deepened in the society [47]. Rare examples, such as the placement of students from different socioeconomic classes in higher education programs that demand high scores, are the most basic arguments for advocating centralized exams. However, studies conducted in Turkey reveal that there is a relationship between exam achievement and the socioeconomic origin of students, the type of school they finish, their parents' educational status, and the geographical region where they come from. Although inequalities in education are accepted by almost all segments of the society, the opportunity given by the exam is appealing to people from all segments of life [45].

7. Determinants of higher education access in Turkey

Educational indicators and research in Turkey demonstrate that not all individuals benefit equally from educational services. In Turkey, there are inequalities based on socioeconomic status, gender and living area of the student in terms of education access and quality [48]. These inequalities continue to become more apparent in the higher education phase. Due to the difference between regions and school types, children of families with good income can be better prepared for higher education. There is also a difference between higher education access for females and males. This difference has not shown any significant decline in the past few years. All these points show that there are inequalities in access to higher education [49].

Research in Turkey reveals that socioeconomic factors such as parents' educational level [1, 45, 50–52] and income level [51–53] are the most important determinants of benefiting from university and test achievement. Additionally, factors such as the type of school attended before higher education, and the quality of the education received [54–56], residence type [51, 55–58], after-school support and attendance of private courses [37, 52, 59–61] are listed as other factors affecting university access.

8. Basic determinants of socioeconomic status

One of the indicators that show how effective socioeconomic factors are in benefiting from the right to higher education in Turkey is the education expenditure of households. Expenditures made by the household to benefit from the education service are considered as special costs of education [62]. The share and the amount of total education expenditures in Turkey vary greatly among different income groups. **Table 3** shows education expenditures in Turkey according to 20% income groups.

According to the income in 2014, the share of the first 20% group with the lowest income in total education services expenditures is 2.2%, while the share of the fifth 20% group is 64.7%. As shown in **Table 3**, the education expenditures of the families with the highest income group are 25.9 in 2004, 17.2 in 2008, 29.0 in 2012 and 29.4 in 2014, all much higher than the families with the lowest incomes. These ratios show that education expenditures increase as income increases in Turkey, and therefore, the families in the highest income group provide better education opportunities for their children than the families with lower incomes.

The growing tendency for parents to participate in the private cost of education makes the social mobility of education inaccessible for the low-income families [63]. Despite the large increase in student numbers in the last two decades, the university student profile is usually composed of higher income segments. This situation is even more evident at state universities that require high scores. It is striking that even a very large part of the most successful foundation universities consist of students who score lower on the university entrance examination. This gives the students who may not pass the entrance exam the chance to enter a university due to the financial power of their families. Consequently, by creating a new privileged group, the role of education in balancing the differences in different segments of society is restricted [64].

Income group	2004		2008		2012		2014	
	Share of total educational expenditures (%)	Amount of educational expenditures (1. %20 = 1)	Share of total educational expenditures (%)	Amount of educational expenditures (1. %20 = 1)	Share of total educational expenditures (%)	Amount of educational expenditures (1. %20 = 1)	Share in total educational expenditures (%)	Amount of educational expenditures (1. %20 = 1)
1. % 20	2.3	1	3.3	1	2.3	1	2.2	1
2. % 20	5.4	2.3	6.5	2.0	5.6	2.4	5.6	2.5
3. % 20	10.2	4.4	14.0	4.2	9.0	3.9	10.6	4.8
4. % 20	22.5	9.8	19.6	5.9	16.3	7.1	16.9	7.7
5. % 20	59.6	25.9	56.6	17.2	66.8	29.0	64.7	29.4

Source: TUIK 2004, 2008, 2012, 2014 Household budget survey.

Table 3. Education expenditures in Turkey according to 20% income groups (2004–2014).

9. Important part of expenses used for central exam preparation

The most important part of the education expenditure of the household in Turkey includes the expenditures made for central exam preparations. The increasing selectivity of central examinations in Turkey has led to efforts to obtain this opportunity in large sections of society who plan their future based on having access to higher education. Thus, parents have been making every sacrifice for their children to make them benefit from higher education. This situation has led to the formation of the "test preparation" sector that has been constantly extending [37]. Individuals wishing to achieve in this competitive environment have turned to institutions and practices that may be alternatives to schools in order to increase their success in university exams [65]. The most important institutions that emerged as an alternative to schools were after-school support centers that underwent structural change in 2015. In addition, practices under different names such as private courses, extra study sections, student coaching have become alternatives for families who were willing to spend their incomes for the sake of making their children successful in the university placement exam [42].

In 2005, the Turkish Education Association (TED) conducted a comprehensive survey to determine the size of the expenditure for after-school support institutions. According to the survey, the expenditure made by the students who entered ÖSS in 2004 to enter the university was 8.4 billion dollars and 9.2 billion dollars in 2005. The average expenditure per person in the preparation process for the university on the side of the families was $ 4708 in 2004 and $ 5322 in 2005. In 2004, the share of budget per student in higher education was $ 1990 [37]. The results of another study carried out by the Turkish Education Association in 2010 also show that the test preparation sector has brought about a serious financial burden on families. Expenditures made by the families for the preparatory work each year are about 16 billion TL (about 5 billion dollars). The distribution of the preparatory expenditures made by the families in one year area is as follows: After-school support center: 5,707,811,064 TL (1.7 billion dollars), expenses for test preparation, book magazines and similar materials: 2,160,968,761 TL (635 million dollars), tuition and course payments for the preparation of the test: 1,267,398,136 TL ($ 372 million), expenses for transportation, meals and other expenses 5,198,178,895 TL (1.5 billion dollars), tuition fee payments: 2,374,954,883 TL ($ 698 million).

Bakış et al. [66] state that after-school support, expenditures do not create benefits for students. According to the authors, this process creates a system based on reinforcement and competition rather than qualification and creating benefits based on it. The lack of a "diploma" which is the basic feature of the educational benefit is also another reason for the ineffectiveness after-school support process. The authors state that one of the world's most irrational educational systems emerges in terms of economic acceptance, given the size of the expenditure that individuals make to participate in a race that only 15–20% will succeed.

10. The influence of the quality of education received prior to higher education on access to higher education

One of the factors affecting the higher education goals and decisions of the individuals in Turkey is the quality of the education they have received before the higher education.

The quality of education that individuals receive before the higher education, especially at the level of secondary education, can directly affect the higher education goals. The level of secondary education not only affects individuals' access to higher education, but also their preferences of universities and departments in higher education.

The most important reason why the level of secondary education in Turkey is so effective in higher education access and higher education decision is the difference in qualifications between school types in secondary education. For many years, certain types of schools in secondary education have provided qualified education opportunities, so their graduates are more successful in achieving higher education. Higher education access statistics in accordance with school types support this situation [42].

Table 4 lists the number of candidates who applied to higher education according to various school types in 2015.

The results on **Table 4** show that the school types that had higher university entrance rates in 2015 are the Science and Anatolian High Schools, as it was in the past. Again, as in past years, the number of students who are placed in undergraduate programs from vocational-technical high schools is still very low.

One of the most important evidences of the qualitative differences among school types in secondary education in Turkey is the placement rate into the university. On the other hand, there are also other national and international exams, which aim to evaluate the school types in terms of academic achievement. If the types of schools in secondary education are examined in terms of academic performance in these exams, the secondary education programs that have lower achievement rates are noticed [67]. For example, the results of all the PISA exams between 2003 and 2012 display that the schools with the best performance in all fields in Turkey are Science, Anatolian and Teacher high schools. Conversely, the average of the high schools with the lowest average scores is multi-programmed high schools, vocational schools, and general high schools [48].

In mathematics literacy, which is one of the main fields in PISA 2003, Turkey ranks first among OECD countries in terms of inter-school inequality. This situation was not the case in PISA 2006 results. Turkey is 11th among 30 OECD countries and 19th among 57 countries in terms of school inequality in the main field of science literacy. In intra-school success, inequality among students is below OECD average. In other words, the inequality between schools in Turkey is deep, and the inequality within the schools is relatively low. When the average mathematics achievement scores of PISA 2012 for different schools in Turkey are examined, it is obvious that serious differences between the schools still persist. When we examine how much of the variance (change) in PISA 2012 mathematics scores is caused by the difference between schools, it is seen that Turkey is one of the countries with the highest rate of differences in schools among the OECD countries. In Turkey, 62% of the difference in PISA 2012 mathematics scores is the result of differences between school types [68]. Studies conducted using PISA data in Turkey show that student achievement is related to school type [69–74].

In the study conducted by Berberoğlu [69], it was found that general high school, vocational high school, and Anatolian vocational high schools showed low performance levels among the schools participating in PISA 2003. Berberoğlu found that general high schools and primary schools were well below international averages, and that the Anatolian High Schools

School type	ÖSYS applicants	Placed in undergraduate programs		Placed in associate degree*		Open education		Total number of student placement	
		Candidate number	Placement ratio (%)	Candidate number	Placement ratio (%)	Candidate Number	Placement ratio (%)	Candidate number	Placement ratio (%)
General high school	816.179	126.084	15.4	114.059	14.0	86.072	10.6	326.215	40.0
Private high school	8.228	2.286	27.8	971	11.8	491	5.9	3.748	45.5
Anatolian high school	294.672	147.391	50.0	19.017	6.5	6.183	2.1	172.591	58.6
Science high school	16.241	9.602	59.1	146	0.9	87	0.5	9.835	60.6
Private science high school	5.471	3.547	64.8	69	1.3	50	0.9	3.576	65.4
Social sciences high school	2.706	1.548	57.2	22	0.8	8	0.3	1.578	58.3
Fine arts high school	6.276	187	2.3	397	6.3	178	2.8	762	12.1
Teacher high school	43.684	25.929	59.4	967	2.2	708	1.6	27.604	63.2
Religious Vocational School	149.727	25.511	17.0	14.429	9.6	29.527	19.7	69.467	46.4
Commercial vocational school	123.442	9.474	7.7	42.240	34.2	14.609	11.8	66.323	53.7
Technical high school	81.976	11.291	13.8	28.665	35.0	4.517	5.5	44.473	54.3
Industrial Vocational School	211.390	5.937	2.8	61.253	29.0	14.774	7.0	81.694	38.6

School type	ÖSYS applicants	Placed in undergraduate programs		Placed in associate degree[*]		Open education		Total number of student placement	
		Candidate number	Placement ratio (%)	Candidate number	Placement ratio (%)	Candidate Number	Placement ratio (%)	Candidate number	Placement ratio (%)
Vocational school for girls	158.879	13.485	8.5	42.785	26.9	17.761	11.2	74.031	46.6
Vocational school of health	53.717	2.761	5.1	15.405	28.7	8.151	15.2	26.317	49.0
Tourism vocational high school	15.320	1.741	11.3	5.443	35.5	1.328	8.7	8.512	55.6

[*]Vocational-technical high school students who are enrolled in associate degree programs are also students who pass without examination.
Source: ÖSYM [43].

Table 4. The number of higher education applicants and placed candidates by school types in Turkey (2015).

reached high achievement levels. Using PISA 2003 data, Çifçi [71] found that school type, school district, gender, and geographical region influenced students' achievement rates in Turkey. Yılmaz [75] investigated the variables related to the science literacy of Turkish students using PISA 2006 data and found that most of the students' variation in science literacy scores originated from the differences between schools. Using PISA 2006 data, Dinçer and Uysal Kolasin [73] found that a student studying in Anatolian High School received 66–79 points higher than a student in general high school. However, a student who is studying in general high school had 22–27 points higher than a student who is studying in vocational high school. In a study that used student questionnaires and cognitive skill tests obtained from PISA 2003, 2006, and 2009 PISA tests, Yalçın [74] exposed the ongoing qualitative difference between high schools. Science schools were the most successful school type in these three PISA exams. The Anatolian High Schools were one of the most effective schools in the 2009 and 2006 PISA exams. They also had a successful score in the 2003 PISA exam, although it was not as high as 2009 and 2006 results.

In Turkey, individuals who graduate from the same level of education can develop themselves at different levels after entering higher education as a result of the differentiation of the quality of their education [76]. For these reasons, demand for "elite" high schools is high. Because graduates of these schools are more successful at university entrance exams, students find themselves in high-quality, "respected" universities with high demands [61]. Higher education statistics and surveys reveal that access to these schools in Turkey is more dependent on socioeconomic factors. For example, 51% of the students in Science High School in 2013 and 42% of the students in Anatolian High School come from families with the highest socioeconomic level. On the other hand, 23% of the students in the vocational high school and 30% of the students in the other secondary education institutions have the lowest socioeconomic rate of 20% [7].

Children of socioeconomically better families are more likely to have access to selective schools, as well as to receive more qualified training when they have access to these more sophisticated school types. Ultimately, their academic achievements are at a higher level than their peers [77].

Aedo et al. [78] argue that the stratification of schools in secondary education in Turkey and the central examination system applied to secondary education in transition to secondary education make large differences between the achievements of students attending these schools. Likewise, the ERG [65] report emphasizes that the reasons for schools being so separated according to socioeconomic status in Turkey are the division of schools into types in secondary education, the differences in quality among schools, and the central examination system. As pupils are placed in schools in accordance with the competitive examination systems, student achievement and quality differences between school types and schools are intensified. As the qualitative differences become more intense, the competition in examinations increases, and thus, the differences created by socioeconomic background increase as well. Over the years, these processes have become interconnected, and at school level, there has been a breakdown according to socioeconomic roots.

Objective and subjective evaluations of the quality of secondary education show that this teaching process has serious problems in terms of quality and does not provide sufficient

basis for higher education to students. There is consensus on the drawbacks of choosing university students based on only a single university entrance exam. The university exam takes only the final scores into consideration and places students in higher education institutions regardless of their competence. The exam ignores the shortcomings of the students who achieve to pass it. Consequently, higher education has to deal with the inadequacy of secondary education [2].

11. Conclusion

Higher education participation is important because of opportunities for the individual's life. Higher education has an important role in terms of collective distribution of equality and social justice within a society. Higher education also contributes to social justice for the majority of people not directly involved. Such a view takes higher education beyond the limits of individual achievement to a broader contribution it makes to the society [4].

The increase in the number of students and institutions in Turkey suggests that higher education is in a trend of massification [42]. However, the massification of higher education and democratization is not synonymous concepts. The massification of higher education is a necessary but inadequate condition for democratization. For the democratization of higher education, it is necessary that the benefit of higher education does not depend on the individual's socioeconomic background and that the university student profile reflects the general population structure of the society in a proportional manner [57]. Access to higher education is concerned with ensuring that those who wish to benefit from it can pursue education without constraints other than their personal efforts and abilities. Expansion and participation in higher education are also expected to serve this purpose [1, 79].

The main determinant of access to higher education in Turkey is socioeconomic status. Socioeconomic status characteristics affect not only the educational opportunities provided, but also the ways in which students perceive themselves and their education. In this sense, the students do not decide how much they meet the requirements of the application field with their higher education decisions and at the same time decide how suitable these choices are in terms of socioeconomic characteristics [1]. In other words, students' social and economic backgrounds determine their educational preferences [80].

The socioeconomic characteristics of the students' families still have a conclusive influence in benefiting from higher education, as the current education system is inadequate to remove the disadvantages created by the socioeconomic status of the family on student achievement and orientation. For this reason, in order to limit the effect of socioeconomic characteristics on access to higher education and to enable competence-based student selection, establishing the distribution of similar opportunities before higher education should be one of the priorities of the educational policies [1]. Socioeconomic status features are so pivotal in education that components such as learning and teaching processes cannot diminish the role of socioeconomic status in education. Hence, social inequalities are not eliminated through education; they are even produced by it. However, education is an important tool of social mobilization.

Education should be used at the highest level of potential to reduce social inequalities. This is also an important requirement of a democratic and pluralistic society order [65].

Higher education is an educational right and a milestone. Every secondary school graduate should benefit from it in accordance with his/her abilities and interest. In a social order that is built upon democratic, egalitarian and fair decisions, the conditions to benefit from higher education should be constructed [35]. The only condition for eliminating the problems encountered during transition to higher education is to prevent the education from creating social injustices. Thus, education can play a part in removing social inequalities and stop the reproduction of these inequalities [45]. It is not possible for the necessary remedies to be limited solely to those mentioned here. For this reason, in order for all individuals and community members to benefit from equal rights to higher education, it is necessary to inform and direct the individuals about higher education and to remove obstacles in front of them starting from primary education [17]. In particular, for Turkey, it is still important to focus on and investigate the inequalities experienced in the education levels experienced before higher education.

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United States

Collaborative Contagion: A Case Study in Curriculum Development, Distribution, and Adoption

Ryan M. Yonk, James Harrigan and Neal Mason

Additional information is available at the end of the chapter

Abstract

The collaborative contagion model is the culmination of a three-year project designed first to develop a curriculum in business ethics and entrepreneurship (BE&E), then to increase the adoption of that curriculum by leveraging professional educators' established networks. The development of a new curriculum, the collaborative portion of the program, was accomplished through a series of four-day, in-person disruptive innovation workshops (DIWs), after which educators continued their working relationships in a specially developed online community. To distribute this curriculum, we developed the contagion portion of the model, through which we encouraged and incentivized not only adoption of the curriculum on the part of the participants themselves, but also on the part of people in their broader networks. After our first year of workshops, 18 K-12 and 21 higher education participants helped formulate 10 modules and 60 grade-specific K-12 lesson plans. We have established pilot programs at 13 separate institutions, and built partnerships with seven organizations. These early results indicate that the collaborative contagion model is a viable, and potentially strong method by which curricular materials can be developed, and then disseminated to a broad audience.

Keywords: collaborative curriculum design, professional development, disruptive innovation workshops, curriculum distribution, networking

1. Introduction

Since 2013, we have been working to develop a curriculum that will challenge the status quo in the design and delivery of business ethics and entrepreneurship (BE&E) education on both the K-12 and collegiate levels. Building previous work, which assessed innovative models for

gathering input from academic networks using targeted colloquia and workshops, we have begun implementing a new model for curriculum development and distribution we call the collaborative contagion model.

The collaborative contagion model was conceived both to yield a curriculum designed utilizing collaborative curriculum design (CCD), teacher design teams (TDTs), and course design intensives (CDIs) and to foster the adoption of that curriculum by leveraging the established professional and educational networks of the educators who worked to create the curricular materials in the first instance.

To begin the process, we hosted a series of four-day disruptive innovation workshops (DIWs) with participants from across the United States. K-12 teachers and administrators, education professionals, college professors, and university administrators all took part in the proceedings. We then developed an online forum for generating, hosting, revising, and rapidly distributing modules for BE&E curricular content for both the K-12 and college constituencies. This chapter summarizes the literature behind the collaborative contagion model, tracks its early implementation, and explores the model's potential for broader deployment.

2. Understanding the contagion approach

We divide the literature that undergirds our application of the contagion model into four distinct approaches. We begin with an exploration of the benefits of CCD in instructors' professional development, and in promoting a collaborative culture among faculty and staff. We then explore the potential obstacles between curriculum development and implementation, and how the likelihood of implementation might be increased. Third we explore the logic behind the collaborative contagion model. Finally, we compare the literature surrounding CDIs with an integral part of the contagion model: the disruptive innovation workshop (DIW).

2.1. Benefits of CCD for teachers and educational faculty

Multiple studies show how collaborative curriculum design aids in the professional development and learning of instructors [1–4]. Common to these studies is the conclusion that instructors who assist with curriculum development show "increased self-confidence, increased pedagogical content knowledge, a deeper understanding of subject matter content, refined ideas of curriculum development in their personal practice, and perceptions of good teaching and being a good teacher" [2]. The collaborative process is also an opportunity for instructors to interact with peers and experts in an environment that both broadens teaching perspectives and builds the leadership skills required for curriculum implementation [3, 4].

Beyond the professional development of individual teachers, the educational climate at an institution also benefits from CCD approaches to curriculum design and review [5]. Robert Rothieaux, the facilitator of a new, collaboratively-built MBA curriculum at Hamline University in St. Paul, Minnesota, has found indications that collaboration on innovative

curriculum can prompt longer-term institutional change and develop a culture of collaboration more generally [6]. To this end, Rothieaux encourages bringing faculty, staff, and administrators, including those who would not typically participate in collaborative curriculum development, into the collaborative process [6]. Collaboration in this sense becomes a catalyst for greater knowledge sharing and interaction among faculty. In short, a wide variety of studies focused on the process of curriculum development has found that CCD approaches benefit individual instructors specifically, and educational institutions more generally.

2.2. Bridging the gap between curriculum development and adoption

One of the primary challenges for curriculum designers has been bridging the gap between curriculum development and its adoption. Ideally, the professional development benefits from CCD would translate into improved classroom practice, and potentially, enhanced student outcomes. The reality is somewhat less clear. Professional development of any sort often falls short of substantive change to classroom practice. During a workshop, instructors have to navigate an unfamiliar design process, and reflect on new pedagogical methods and novel subject matter, which often supports the development of a host of new skills and knowledge [3, 7]. Unfortunately, instructors often return to classroom environments where responses to innovation are blunted, support of new skills is limited, and which are generally unresponsive to innovation [4, 8]. Without adequate support during and after the curriculum design process, it is unlikely instructors will experience anything more than short-term teaching changes [1].

In response to these concerns, Clark and Hollingsworth developed a model of Professional Development. Their Interconnected Model of Professional Growth (IMPG) highlights a set of domains in which long-term change in teaching practice might be achieved through collaborative curriculum design. We focus primarily on three of these domains as most important to our understanding of how to engage the collaborative process to substantively improve teaching practice: (a) the personal domain (in which instructors change their knowledge, beliefs and attitude); (b) the domain of practice (in which instructors change via professional experimentation); and (c) the domain of consequence (in which the collaborative process produces salient outcomes for instructors and/or students). A fourth domain in the model, known as the external domain, provides instructors with external sources of information or stimuli, but is largely outside of our approach to curriculum development. Indeed, our own experience suggests this domain is unlikely to drive long-term changes [1].

Active consideration of each of the domains by those interested in facilitating collaborative curriculum design is especially useful, as enactment and reflection in one domain may have an impact on the others [1]. Change through these domains can lead to simple, short-term teaching changes, or even long-term professional growth. The realization of the latter depends on, among other things, the level of ongoing support from colleagues and administration, resources and equipment, and the broader context in which instructors work [1, 9].

Researchers have investigated the support needs of curriculum designers required for curriculum adoption and long-term implementation of alternative teaching practices [4, 10].

In addition to limitations on time and knowledge, instructors often lack the design expertise required for curriculum development [10]. Incorporating design specialists into TDTs enables instructors to apply their knowledge, skills, and contextual understanding to content and pedagogy efficiently. Another option is to provide instructors with "existing or exemplary curriculum materials … to help [them] define the goals and design task" [4]. In any case, ongoing support and guidance by external facilitators and specialists improved instructors' overall learning during the design process [4, 10]. Voogt et al. also discuss the importance of maintaining an explicit focus on implementation during the design process, but curriculum implementation ultimately hinges on "teachers' ownership of and their knowledge about reform ideas" [10]. In other words, instructors are more likely to adopt and use, over the longer term, curricular changes in which they are involved [2, 3].

Building from these foundations, and desiring to facilitate the support needs required for curriculum adoption, we have built two follow-up workshops into our BE&E curriculum design process. We designed these conferences to provide ongoing support for instructors facing unforeseen contextual challenges and to build the network in a continuous fashion. Additional support is provided through a curriculum specialist at Utah State University, and a website that cultivates a community of curriculum adopters.

2.3. Description of the contagion model

Given the indication in the literature of the substantial value of collaboration in the curriculum design process, we were further interested in how significant adoption of collaboratively designed curriculum might be facilitated. We take our basic approach from an observation from Sorenson and colleagues and our own experience that "knowledge spreads from its source not in concentric circles, but along conduits laid by social connections". New innovations are adopted in a manner that resembles an epidemic spreading through a population, moving slowly at first but later engulfing nearly the entire population [11]. Social connections and proximity to the original source affect where new innovations in education are adopted, and the rate at which they spread [12].

Without adopting the epidemic analogy in its entirety, our expectations for the collaborative contagion model share in many aspects of Sorenson et al.'s description of knowledge spreading [11]. Curricular contagion begins at the collaborative design conferences, disruptive innovation workshops (DIWs) and relies on the efforts of workshop attendees and their own individual networks. After the workshops, which are designed in part to create a working community of conference attendees, we provide support for instructors to refine, adopt, and share developed materials with their colleagues. Deploying a curriculum through established networks enables us to reach a variety of new faculty, students, entrepreneurs, and policy makers well beyond the people who attended our events.

Our own experience suggests that the dissemination of these curricular materials, their adaptation and implementation has been far more successful in navigating the internal politics, accreditation requirements, and general inertia against innovation precisely because they are the product of ongoing collaboration between faculty members rather than simply curriculum

supplied by an outside group. At its essence, the collaborative approach provides a natural review process where every instructor using the materials is free to adapt, modify, and then share those modifications with their collaborators in the process.

2.4. Comparing and contrasting CDIs and DIWs

Our approach to facilitating collaboration is in large part rooted in the model for large-scale e-learning applications developed by Oxford Brookes University in 2003. In that model, course design intensives (CDIs) promote innovation and networking through curriculum design workshops. In a span of three to 4 days, CDIs yield tangible course materials as output [In a 2012 evaluation, Dempster and colleagues described how CDIs utilize extended teams alongside assistance from technologists, curriculum specialists, educational developers and subject librarians]. CDIs focus explicitly on cross-disciplinary networking, using "multiple program teams working in parallel…" [13].

Instead of leaving lecturers to their "usual subject-focused autonomy," CDIs encourage participants to work collaboratively at the program level, thereby engaging a wider array of stakeholders with various skills and experiences "to confront and to engage with alternative and better conceptions and practices" [13]. Dempster et al. measured CDI success using tangible deliverables, confidence in and collective ownership of developed materials, networking beyond department colleagues, and conceptual and pedagogical changes for lecturers [13].

DIWs share many foundational elements with CDIs. Both workshops aim to produce tangible output in the form of modules, with another expressed goal being broadening participants' networks. Like CDIs, DIWs use parallel sets of extended teams, equipped with experts to analyze theory, discuss technical obstacles and solutions, and draft modules. Dempster et al.'s measures for successful CDIs apply equally to our internal measures for gauging curricular contagion [14].

Unlike DWIs, CDIs "are not a tactic to initiate change or raise awareness" [14].[1] We intend our DIWs to change the delivery and design of BE&E courses through heightened awareness and outreach. The contagion effect depends on participants' willingness and ability to share resources and improve BE&E course quality.

The composition of teams also differs between CDIs and DIWs. The CDIs reviewed by Dempster et al. assembled teams from faculty and staff at a single university. Our DIWs, on the other hand, hosted educators from multiple institutions ranging in size, approach, scope, and location. It was our goal to create an environment that would address a broad range of programmatic needs heretofore inhibited by geographic and institutional siloing, thereby encouraging nationwide curriculum adoption.

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[1]While this is generally true, there are small exceptions. La Trobe University, for example, has used CDIs for curriculum renewal purposes [14].

3. The process behind the contagion model

We began the process of developing the contagion model after researching potential gaps in existing BE&E curricula. After surveying 170 BE&E course syllabi culled from colleges and universities throughout the United States, we found that new offerings in these subjects had taken on a variety of forms, transitioning from appendages of more established disciplines into discrete, stand-alone courses. Entrepreneurship courses often considered only new venture startup, without broader discussion of what it meant to be entrepreneurial or the benefits of entrepreneurship to society. Different AACSB-accredited schools offered courses under the business ethics banner that contained completely disparate content [15]. Some business ethics courses emphasized a foundation in classical philosophy, whereas others focused exclusively on a legal-positivistic approach, stressing adherence to established codes and policies. While we have always viewed educational flexibility and license in a positive light, our concern was that such disparity might leave business students ill-equipped to navigate an array of moral dilemmas faced in the workplace.

We designed the innovation workshops to utilize the dispersed knowledge of participants, and to task those participants with drafting modules that would address these and other shortcomings in existing courses, consolidating, to a degree, BE&E curricula being offered throughout the country. Our goal was to initiate a process of collaboration and refinement that would culminate in usable, standards-ready materials that could be shared and adopted at no monetary cost to instructors.

When recruiting attendees for the innovation workshops, we sought participants with little or no connection to one another. Our academic network and social media presence helped us identify individuals within business schools, philosophy departments, and K-12 institutions who would all, we hoped, make significant contributions in developing new course materials. Although participants' notoriety and roles varied, each demonstrated a shared desire to effect a positive change in the current orientation of ethics and entrepreneurship courses. Appendix 1 includes an infographic illustration of the logic of the contagion model.

Prior to the innovation workshops, we asked participants to submit readings that could provide a baseline for subject matter competence, and would facilitate conversation among participants on common difficulties in teaching BE&E. After compiling and distributing the readings, we asked that participants read all materials before coming to the workshops.

At the beginning of each day during the workshops we used design-thinking activities to encourage new ways of thinking about BB&E, and to overcome barriers to participation. Round-table discussions at the conferences helped instructors and administrators establish the current state of the courses, and navigate pedagogical and institutional obstacles they face when trying to innovate in their classrooms or utilize a new curriculum.

We encouraged ownership of developed materials by asking workshop participants to contribute activities and lesson plans from their own experience. As they did, we constructed prototypes. These prototype lesson plans were then posted online for educators to use freely, revise, and distribute to their colleagues. The website continues to provide a virtual medium

for ongoing collaboration, keeps a log of new participants in the growing network, and tracks where curricular adoption takes place.

At the end of the workshops, participants were surveyed about the knowledge they gained from the experience and their ongoing commitment to implement modules and lesson plans in their various professional positions across the United States. We provided post-workshop support for instructors in the form of pre-prepared course evaluation tools and surveys for future BE&E courses.

4. Results and indicators of success

We worked with a total of 18 K-12 and 21 higher education participants at our first two disruptive innovation workshops. Through these events, we established pilot programs at 13 separate institutions and built partnerships with seven organizations. Participants produced five general lesson ideas/activities, from which we have built 10 modules and 60 grade-specific K-12 lesson plans.

Many of the participants attending the conference had little experience with design activities and lacked the requisite vocabulary for understanding and producing novel curricular components. The discomfort was especially pronounced for K-12 educators. One K-12 teacher said "there was a bit of disconnect between the university professors and the 'ground truth' of K-12 educators." Another K-12 teacher expressed concern that "the majority of the conversations seemed about philosophy rather than pedagogy," making it difficult to participate. While professors thrived in the open-ended, early curricular discussions, several K-12 educators wanted more definitive pedagogical items to discuss.

4.1. Post-workshop activities

Shortly after this first set of curriculum design workshops, we compiled the contributions of participants into a pilot pack for teaching Business Ethics and Entrepreneurship. Given the wide array of disciplines represented among instructors helping us develop a new BE&E curriculum, the pilot pack we produced was a raw framework into which instructors could incorporate existing materials, lesson plans, learning objectives, activities, and assessments. Instructors who happened to be teaching entrepreneurship or business ethics directly could adopt the materials entirely as written. This flexibility, which was one of the primary requests of workshop participants, has broadened the audience the workshop's materials could reach.

In the first round of pilots, we distributed the pilot pack to instructors in nine states: Louisiana, Florida, Illinois, Oklahoma, California, New Jersey, Arizona, Maryland, and North Carolina. Each teacher was asked to administer pre and post surveys that assessed students' overall knowledge in Business Ethics and Entrepreneurship, and how students' perspectives of business ethics changed as a result of the course. The surveys also solicited feedback from instructors regarding the quality of the materials and the likelihood that they would adopt the virtue framework in future courses and share resources with colleagues.

Contemporaneous with our pilot courses, we initiated a content review using eight professors with content expertise and experience developing resources in Business Ethics and Entrepreneurship. Reviewers received a stipend to evaluate materials line by line and address any lingering pedagogical or curricular issues. A few reviewers expressed concern over the ambiguity of specific virtues within the virtue framework of the curriculum, noticing an incompatibility among certain virtues and their associated activities. Other reviewers suggested new readings, alternate activities, and changes to the language of the pilot pack.

We used this feedback to make alterations to the existing pilot pack, specifically the virtue framework, and tailor another round of conferences to refine the curriculum further. The second set of conferences engaged over 40 educational professionals to identify how we could address shortcomings within the initial pilot pack, and how we could accelerate distribution and adoption of the new materials. In addition to the pilot pack, a few short readings were distributed prior to the conferences to prime discussion and set the tone. Similar to the first set of conferences, we started each day with design activities intended to encourage conversation among participants and spark ideas. Unlike the first set of conferences, the second set focused exclusively on refining a set of ideas and curricular elements rather than creating an entirely new curriculum.

One of the participants at the conference suggested a partnership with his organization to enhance our distribution among K-12 teachers in the Western United States. Shortly thereafter, we partnered with his California-based entrepreneurship center that has been developing curricular materials in the K-12 space for over 20 years. Together we added more concrete layers to our pilot pack framework, which included richer content and activities, standards alignment for Texas and California, differentiation suggestions for students with special needs, uniform design, videos, and training materials for adopters. These materials were then built into our web portal for instructors to review, download, and distribute freely.

5. Conclusions and potential applications

Citing economist Kenneth Arrow, Sorenson and colleagues described how "[t]he generation of new knowledge often requires substantial investment in research and development, but the repeated application of this knowledge, once produced, entails little if any incremental cost" [11]. Our goal in developing the collaborative contagion model was to create a framework through which instructors could prototype, refine, and distribute BE&E course materials at no monetary cost. We expect the dispersed knowledge, expertise, and professional networks of professors to yield materials suited to a variety of situational demands. Ongoing refinement of modules among participants should produce multiple prototypes of lesson plans from which instructors can choose and adapt. Instructors also have a number of incentives to participate: better lesson plans, professional development hours, network building, and program development ideas. Inviting educators from different regions helps avoid knowledge sharing limitations across geographic boundaries, limits silo-ing of content, ensures essential coverage of foundational principles, and encourages wider curricular adoption.

Appendix 1. Contagion model infographic
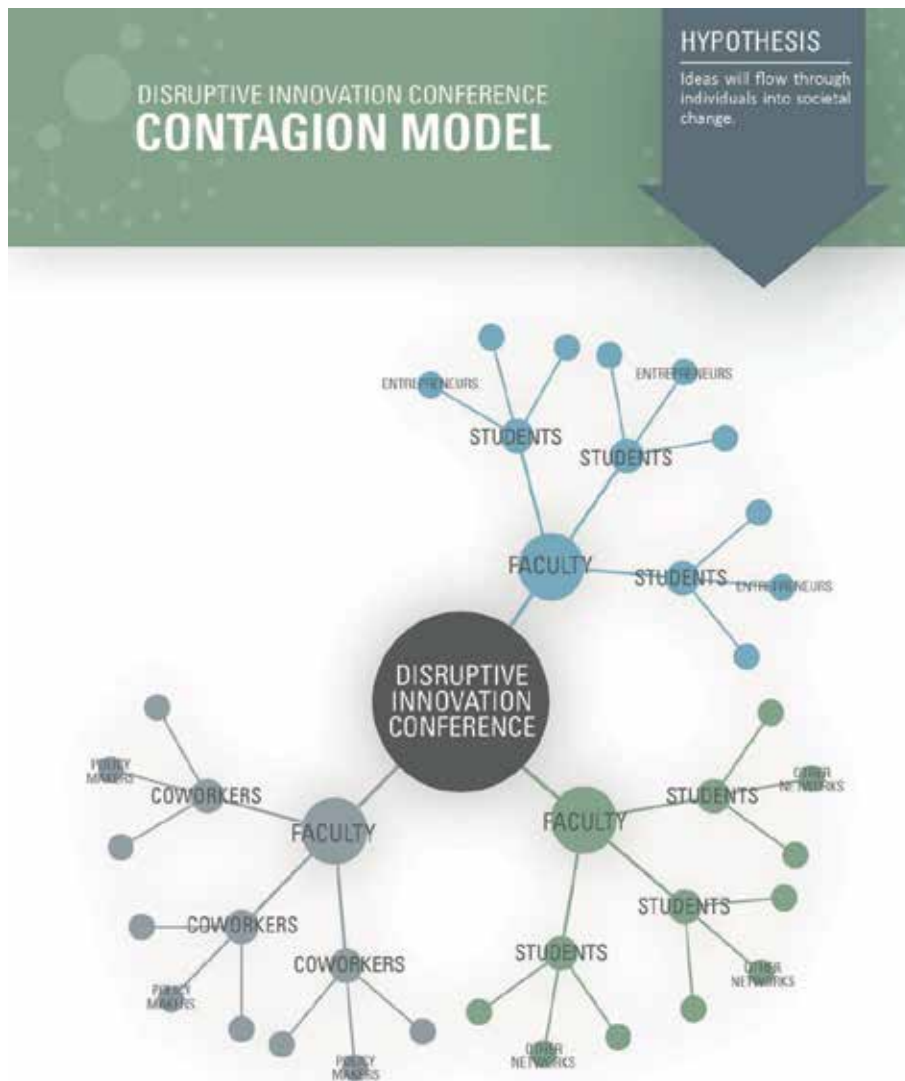
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Zimbabwe

Student Voice: Embracing Student Activism as a Quality Improvement Tool in Higher Education

Evelyn Chiyevo Garwe

Additional information is available at the end of the chapter

Abstract

This chapter illustrates how student activism, taken in the context of the student voice, can be harnessed as a way of enhancing the quality of educational provision in higher education. Agenda 2063 of the African Commission recognizes equitable access to quality higher education as critical for national development. In the face of an increase in student protests and the resultant destruction of infrastructure and human life, it becomes imperative to find ways of creating positive and innovative teaching and learning environments that take full advantage of student activism. The chapter draws on existing literature on student activism and the value of student voice to inform the development of a model for incorporating the "student voice" as a way of harnessing the positive aspects of student activism.

Keywords: student voice, quality improvement, student activism, higher education

1. Introduction

Agenda 2063, the African Union development blueprint, recognizes equitable access to quality higher education as a critical barometer for success in achieving socio-economic and technological development as well democracy and good citizenship. This is premised on the fact that higher education can contribute to social justice, socio-economic, and technological development as well democracy and good citizenship [1]. Several cases of student activism have been reported in African higher education institutions (HEIs) as well as HEIs in other countries, thereby threatening to derail the gains of higher education in terms of producing well-rounded human power ready for contributing to national development. A case in point is the one reported by Sesant, Kekana, and Nicolaides [2] describing an incident in 2015 when most of the 26 South African universities were brought to a standstill by students violently protesting against the proposed

fee increases and demanding free education, in line with the government's earlier promises. This nationwide student activism was dubbed by its twitter handle hashtag #FeesMustFall and was preceded by the #RhodesMustFall protest, which successfully resulted in the removal of the statue of Cecil John Rhodes at the University of Cape Town within 1 month of the protests that occurred there. The students at the University of Cape Town were demanding the Africanization of the faculty and curriculum as well as the "decolonization" of the institution through the removal of colonial symbols of "white supremacy", which they considered offensive and oppressive, notably the statue of Cecil John Rhodes. The protest was covered extensively in newspapers, on television, and radio and sent out through electronic and social media sites, both at national and at international levels [2].

The #FeesMustFall protests resulted in government freezing fee increases for the year 2016 and increasing fiscal support to public universities [3]. Furthermore, university leadership made various concessions in response to other localized student concerns [4]. For example, authorities at the Rhodes University (identified by Cecil John Rhodes' name) agreed to begin the process of changing the name of the university in line with the students' demands. Management at the Universities of Pretoria and Stellenbosch conceded to demands for the adoption of English as the official language, replacing Afrikaans. The South African cases of student activism were characterized by violence, notably brutal clashes between student factions and clashes with security personnel and police; there was malicious destruction of property, including statues and artwork [5], with the damage estimated to be worth over R350 million [6].

In addition to South Africa, other African countries have had their share of student activism. In Zimbabwe, Zeilig provided a detailed account of the impact of student activism in higher education [7]. In Kenya, 47 cases of violent student activism were reported between 1990 and 2000, characterized by clashes with police and wanton damage to property, serious injuries, and deaths [8]. In its 2000 report, the Kenyan Vice Chancellor's Committee depicts the nature of the student unrests as characterized by demonstrations, boycott of classes, closure of institutions, fierce clashes with police, stone throwing, closure of statehouses, commandeering vehicles, paralyzing the central business district, looting, and damaging buildings and equipment [9]. In Nigeria, there were 21 and 36 major cases of student unrest for periods between 1948 and 1979 and 1980 and 1996, respectively. In the latter case, riot police massacred 100 university students while 1000 others were imprisoned [9]. In Egypt, students from 18 HEIs protested against the uncertainty of the political system, resulting in the arrest and expulsion of 1352 students [10].

In the face of an increase in violent student protests in higher education institutions [11, 12] and the resultant destruction of infrastructure and human life, particularly in developing countries [13, 14], this chapter posits that campus environments unsupportive to student involvement and engagement can result in protests, while fostering a positive campus climate for activism can inspire students to voice their concerns without open resistance [15]. Students, when properly engaged, can play a key role in enhancing the quality of higher education [16]. This concept has been dubbed "student voice," which covers the entire spectrum of initiatives that offer students a chance to participate as partners in all aspects of their higher education experience [17]. Paying attention to the "student voice" in various forms including

surveys, student representation, complaints, grievances, protests, and social media provides a useful quality assurance tool in the detection of shortcomings in the delivery of quality higher education [18]. This chapter illustrates the importance of incorporating the student voice by embracing student activism and recommends a model for incorporating the student voice in order to successfully harness the positive aspects of student activism and improve the quality of higher education. Advances in technology facilitate student activism through the use of email, Facebook, Twitter, WhatsApp, Viber, WeChat, YouTube, and text messaging to communicate causes to stakeholders and the public and to update each other about activities of different groups [19].

2. Student activism in the context of the student voice

2.1. Literature review

Student activism is defined as the involvement of individual students in group activities aimed at defending their interests and bringing about changes in systems, policies, attitudes, knowledge, and behaviors regarding issues affecting university life or society at large [20–23]. Activism is a part of the spectrum of the student voice. Activism, for the most part, is no longer viewed as a radical challenge to educational hierarchies [24]. Students are viewed as consumers, producers, evaluators, partners, and critical HEI citizens. As such, their voice should be recognized, respected, and valued [25]. Literature on student activism covers many issues including the causes of the unrests, socio-economic background of student activists, values of the institution, and attitudes of students and leadership styles. Student activism occurs at different levels depending on the composition of the students, background of academic and non-academic staff, the inclusion of leadership and activism issues in curriculum, and the value that students place on group work [22]. However, very little research has been dedicated to studying the positive aspects of student activism; hence, this is the focus of this chapter. The chapter will address issues of nurturing positive student activism through paying attention to the student voice.

Activism is developmental in nature and enables students and HEIs to come up with useful solutions to problems [26]. Quaye [27] gives an account of how student activism addresses three critical learning outcomes: (a) the understanding of and respecting differences in opinions, cultures, orientations, and dispositions, (b) the ability of students to express their voice, and (c) the connection to the international community. In addition, students are often inspired to strive toward enhancing the quality of the educational experience for themselves and for their peers.

Although student activism represents an effective way of supporting critical thinking, collaboration, organizing, citizenship, identity consciousness, civic engagement, and leadership skills in students through a democratic process [22, 28–36], students are often excluded from influencing decision-making in HEIs [23]. This results from the fact that student activists are often viewed as troublemakers who are being manipulated by political figures [37]. For example, in Sénégal, students were referred to as the major stumbling block to educational reforms [38], noting that the recurrence of disruptive and counter-productive violent protests by students

was fueled by outside political interference and concerns regarding who was supposedly fueling the student protest? This negative perception of student activism especially in post-colonial countries in Africa is in sharp contrast with the positive and progressive view such protests have had in the past [37]. The role that student activism, however violent, plays in bringing about reforms and transformation has been acknowledged by scholars who have argued that activism is an acceptable feature of human nature [39].

Student activists are also viewed with scorn because they occasionally use unorthodox methods of bringing about change [22, 40]. Disruptive and sometimes violent tactics, including placard demonstrations, protests, rallies, vandalism, hostage taking, interruption of administrative, teaching, and learning activities, and threats of inflicting physical harm, are used [22, 41–44]. HEI authorities and state officials have labeled some student activists as "destabilizing" and "agitating" [45].

Currently, student activists predominantly employ non-violent tactics and social media platforms to organize their activities and make their voices heard. These tactics include volunteerism [19, 46–48], hunger strikes, sit-ins, parades, blockading roads and buildings, class boycotts, threats of legal action, and play-acting [43, 49, 50]. These tactics help students practice democracy and acquire citizenship skills, which are critical in today's society [51]. Furthermore, these desirable skills have been found to positively correlate to learning [52] by stimulating students' cognitive engagement including interest in learning how to make effective decisions. When students discuss issues affecting them and the society they live in, it increases their general knowledge. Students feel valued, have a sense of belonging, and are willing to give back to their institutions. Satisfied and well-adjusted students concentrate on their studies and are unlikely to engage in destructive behaviors [53, 54].

Harnessing the positive aspects of student activism has the potential to positively influence the quality of higher education by addressing issues of academic, social, political, and economic nature [23, 28, 55–57]. Embracing the student voice strengthens the quality of education students receive and has the potential to bring an end to the disruptive and violent student protests. Researchers found student protests can be a measure of the lack of responsiveness of the power bearers to the concerns and interests of students, thereby prompting confrontation by those affected [58, 59]. Students resort to attacking significant figures by protesting, demonstrating, and boycotting classes as a way of attracting attention to their concerns [60]. The contributions of students to educational reform have been acknowledged as key drivers in the improvement of the desired outcomes [22, 61, 62]. The significance of the "pedagogy of voice" in engaging students empowers students to appreciate their identity as important stakeholders in the learning process [63]. Even though the student voice is an important change agent in HEIs, studies have shown that in most cases students are not listened to; their views might be collected but is not addressed sufficiently [64, 65]. Authorities tend to concentrate on changing only those issues that are not challenging to confront.

Students who learn under optimal conditions that encourage social activism and who are given ample opportunities to make contributions that enable effective decision-making improve the learning environment during and after graduation. In addition, they are able to address pressing social concerns [66]. This arises from the fact that, collectively, students are a force

for influence and change. Students often benefit when given responsibilities and opportunities to participate in decision-making as it is preparation for their future leadership roles [60]. Involvement in the decision-making process inculcates critical thinking [36], self-direction skills, and commitment in students [29], thereby motivating them [67]. Student activism is a critical developmental aspect of the learning process [68]. Higher education managers need to understand that students become alumni the day they register at an institution and hence there is need to create conducive campus environments for them in order to cultivate a good relationship that will continue for life. Considering that many institutions rely on alumni for financial, moral, material, and other benefits, it makes sense to pay attention to student contributions, ensuring their higher education experience is enriching.

The current mechanisms used by institutions to capture the student voice involve surveys to harness the individual voice and the collective voice (through use of student representatives) [18]. The methods utilize questionnaires, focus group discussions, interviews, and other data collection instruments for obtaining feedback, including student representatives as members of HEI committees, holding consultative and discussion fora, including students in institutional strategic planning, projects, and in program reviews [17]. In some universities, students receive training to prepare them to effectively articulate their voice [69].

Although the literature supports the power of the student voice in facilitating a better approach to higher education management and practice [16, 70], most higher education leaders only pay lip service to it [71].

2.2. Theoretical framework

2.2.1. Critical mass theory

Student activism is better contextualized in the framework of the critical mass theory (CMT) [72]. CMT concerns itself with explaining how interdependent decisions by a sufficient number of people (critical mass) accumulate into collective action and contribute to public good (see **Figure 1**). The term "critical mass" derives its origins from nuclear physics, being the smallest quantity of fissile matter required to prop up a nuclear chain reaction [73]. Critical mass is loosely used in any context involving a group of people large enough to achieve the desired change.

A "critical mass" behaves differently from individual members of a group. It is possible for the critical mass to produce public good when some group members have not contributed anything (the "free-rider concept"), while sometimes, the critical mass initiates and is able to ignite widespread collective action. The CMT posits that unity and solidarity is more powerful in collective actions than organizational capacities [74]. The CMT theory professes that the magnitude of collective actions outcomes is dependent on two independent variables, namely marginal returns and heterogeneity. The marginal returns variable denotes the characteristics of the production function, which exemplify the way an individual's contribution/input produces outputs of collective good. In the diminishing marginal returns scenario, the production function assumes the S-curve wherein the efforts of the first few contributors achieve the greatest effects while subsequent inputs achieve progressively less as compared to the initial inputs
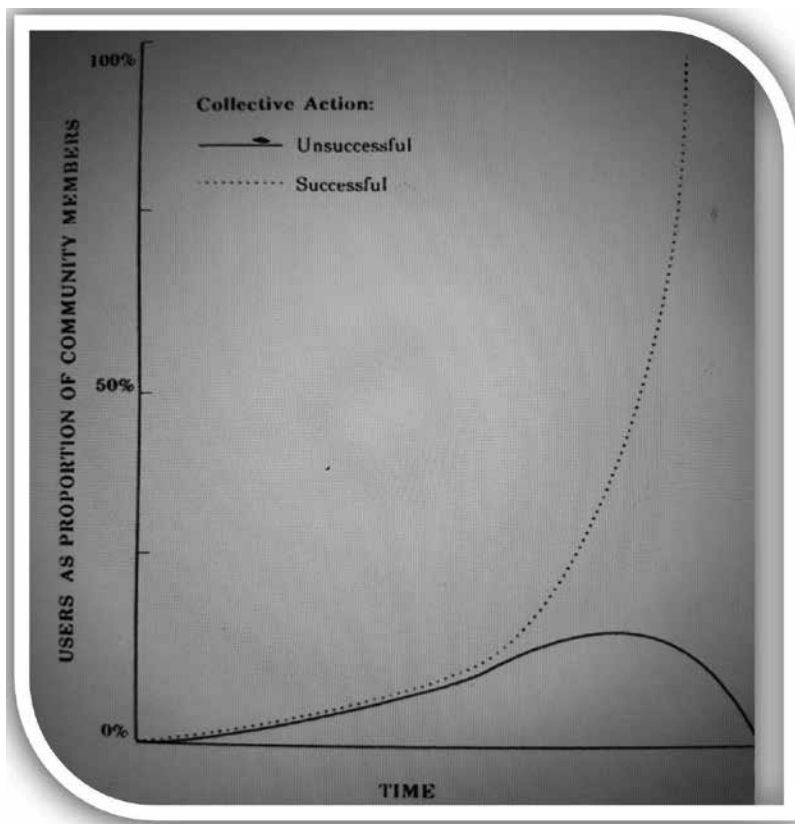
Figure 1. A graphical representation of the critical mass theory (source: [77]).

(see **Figure 1**). The accelerating marginal returns reflect a situation where successive inputs by contributors achieve more toward public good than the few initiators (see **Figure 2**). The heterogeneity variable explains how a few keen and ingenious people who contribute to the initial phase of low returns lay the platform for widespread contributions for the public good.

The fundamental notion that collective action begets public good [72] makes CMT applicable to different scenarios where collective interests occur, for example, in political activism [75] and online activism [76]. The CMT is relevant to student activism since activists engage in collective action, which results in the desired changes (public good). Activists do not have official leadership and often come together through the use of social, print, and electronic media [76].

2.2.2. Student voice model

An improved model illustrating the potential of student voice to improve research and practice in higher education was developed [78] (see **Figure 3**). In the improved model, aspects of power, identity, and context were added to the four levels already existing in literature, namely:
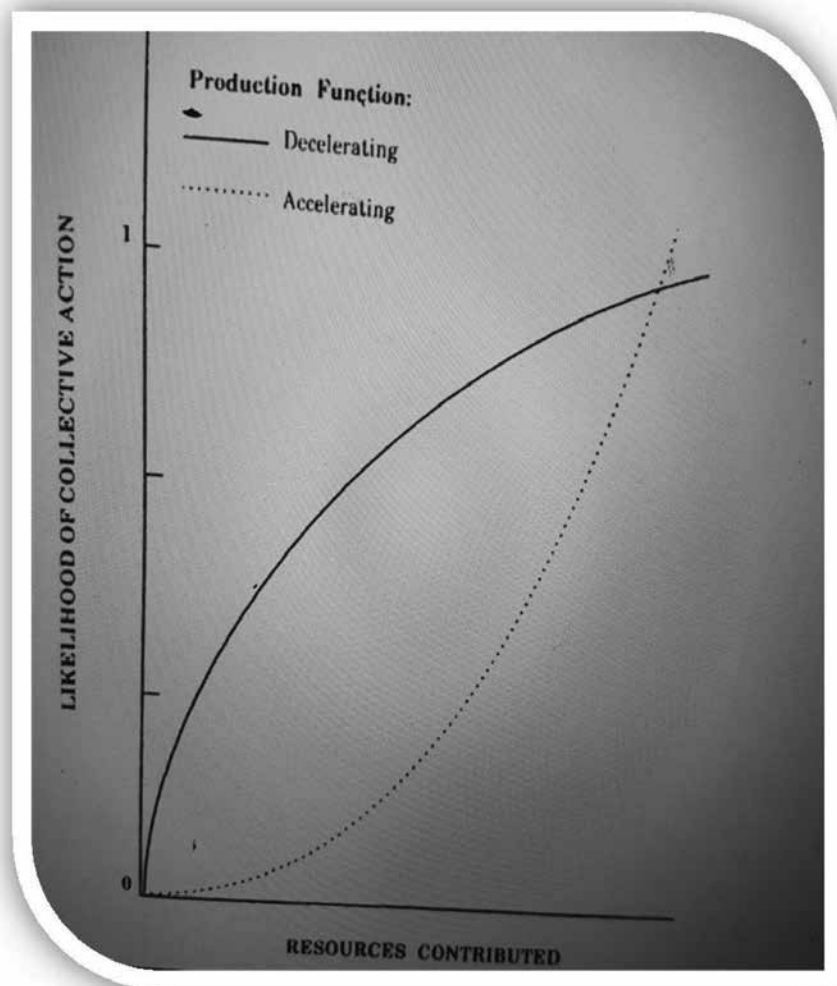
Figure 2. Production function showing decelerating and accelerating marginal returns (source: [77]).

- Students as information sources (lowest level of participation)

- Students striving to be heard

- Students as collaborators

- Students as researchers and involved in leadership (highest level of student involvement)

The revised model deliberately left room for input from new knowledge. The empirical study reported herein aimed at contributing new knowledge to the existing model by embracing aspects of student activism within the student voice context.
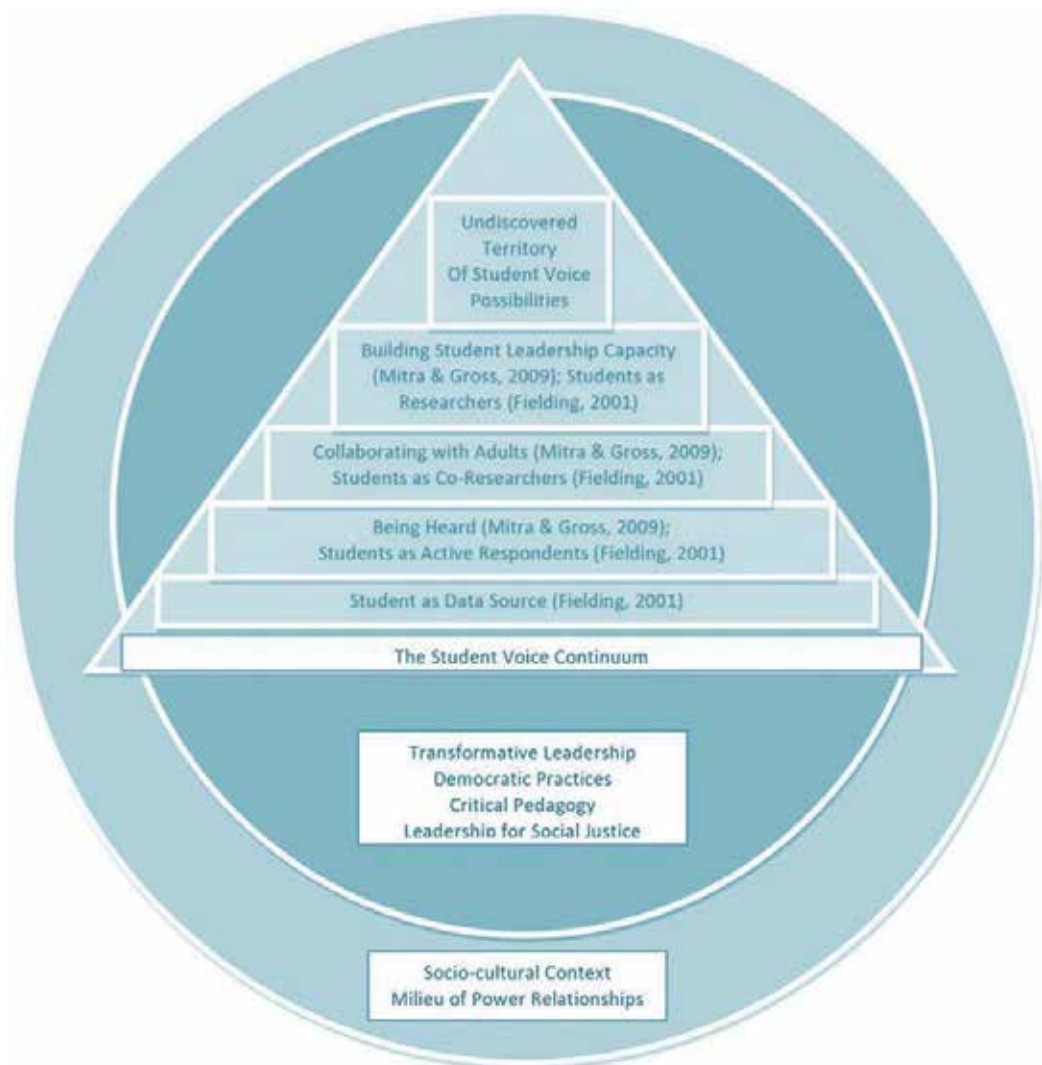
Figure 3. A model for student participation in higher education (source: [78]).

2.3. Objectives of the study

The study aimed at first establishing the issues of concern to students who are likely to participate in student activism. When these issues were brought to the attention of management, the ultimate aim was to investigate the university's response to the student voice and how this impacted student protests and quality of education.

2.4. Methodology

The study, performed as two consecutive surveys spanning over a period of 3 years, employed the qualitative approach premised on the use of primary data. The primary data collection

utilized facilitated focus group discussions as well as undertaking interviews with top management at HEIs. Primary data were based on a desk study on complaints and grievances of students as well as cases of student activism. The population of the study was made up of the 15 registered universities in Zimbabwe, nine were public and six were private. The study included 13 universities, eight of them public and five of them private. The other two registered universities, the Zimbabwe Open University (public) and the Reformed Church University (private), were excluded because their students were following the distance-learning mode and the block-release mode respectively. They were hence not available on campus for focus group discussions when the researchers were undertaking the study. During the first phase of the study (2011–2012), students from eight public and five private HEIs in Zimbabwe were interviewed on issues of concern to them emanating from various aspects of their experience and how these were being addressed. The second survey was performed in 2013 as a follow-up on issues raised during the first survey and to get recommendations on best practices regarding student activism. According to [79] surveys on student views, there are additional benefits resulting from longitudinal approaches as opposed to cross-sectional surveys that provide only a snapshot of student feedback. This view is consistent with those of other scholars [80, 81].

The stratified random samples of students were representative of gender, study discipline, year of study, and level of study (undergraduates and post-graduates). The overall population of students in the 13 universities was 69,000. The focus group discussions included 15–20 students and the number of focus groups per institution depended on institutional size. The researchers asked questions using a pilot-tested focus group discussion guide. Even though the students constituted the main target of the study, top management (pro vice chancellor, registrar, bursar, librarian, and dean of students) was interviewed in order to hear their views concerning student activism as well as to verify, seek explanations, and recommendations regarding issues raised by the students. Top management refers to people in top administrative positions responding officially on behalf of the HEIs and not on their own individual capacity. Hence, the focus here is not on the respondent per se but the power behind institutional speech acts [82], discourses that make claims about and on behalf of institutions and their members, and the factors which demonstrate the power of institutions to decide who and what gets legitimated.

A focus group is defined as a group discussion involving multiple participants and coordinated by a facilitator, performed to collect wide-ranging information on a particular subject [83]. The use of focus groups is recommended as a user-friendly way of creating an environment to discuss ideas, facts, opinions, thoughts, beliefs, and suggestions [84]. The procedure described by Gillespie et al. [85] was used to undertake focus-group discussions in this study. This involved researchers using a pilot-tested guide in order to improve the quality of information collected as well as to make sure all participants were given the opportunity to contribute to the discussions. The researchers commenced the discussions by asking general open-ended questions before delving into specific issues. As is recommended, this approach enables the collection of information that is driven by participants [85]. The facilitators would then explore deeper into the experiences of participants and probe further their perceptions. All the focus group discussions were recorded and completed within 1 h.

3. Results and discussion

The transcripts from the focus-group discussions with students and interviews with top management from HEIs were analyzed using discourse analysis wherein the issues raised were taken to be representative of the norms, experiences, reasons, and realistic practices [86]. Emerging patterns and themes were used to interpret and deduce the findings. The reasons for engaging in activism and the views about activism from students and top management were categorized and synthesized.

Focus-group discussions with students revealed that the key reasons for student protests in order of priority are lack of communication (presence) of administrators, "top administrators are invisible", the need for more opportunities to discuss their concerns with administrators, administrators who do not address the substantive problems motivating protests, and administrators that do not interact with students on a routine basis in order to build better relations and trust. The findings are similar to those obtained in Ref. [87] wherein it was reported that failure of authorities to listen to concerns of students was the major cause of protests. However, these findings differ from those of similar studies that categorize the four major causes of student protests as national politics, academic discontents, welfare issues, as well as leadership inadequacies and resource allocation [59, 88]. While students agree that their concerns stem from academic, resource, and welfare issues, their argument is that the cause of protests has more to do with the response from management (or lack of it). Students explained that they are mature enough to understand that resources are limited; however, they believe that through dialogue with administrators and academic staff, most of their concerns can be addressed. Some administrators were described as "untouchable", "pompous" while others were "fatherly" or "approachable" or had "human faces".

When asked whether students would readily engage in protests, they agreed unanimously that it was something they would do as a last resort. They were always ready to discuss their issues with colleagues and representatives who had the capacity and positions that allow them to raise the issues with responsible authorities. The students explained that their parents, guardians, or the students themselves were responsible for paying fees and for their upkeep; therefore, they were not prepared to waste their time engaging in collective action that was not "beneficial." However, students emphasized the need for management to communicate and mix with them to discuss concerns as one family.

The initial survey interviews with key administrators indicated that most of them did not tolerate student activism and would not hesitate to unleash punitive measures. When the advantages of encouraging student activism and students views about management attitudes and "unavailability" were put across to them by the researchers, they agreed to take heed of the student voice. The follow-up survey revealed that top management were taking student issues seriously. As such, there were various channels through which students were engaged. Most of them indicated that activism was actually encouraged since they went out of their way to make sure that student concerns and welfare were attended to. They attributed the embracing student activism and the student voice as the major reasons as to why cases of student unrest and violence were few ever since they started paying attention to the use of student-voice

strategies. In addition to fully resourced student affairs departments covering all possible areas of welfare needs inclusive of sports, counseling, health and well-being, accommodation, etc. some institutions had also employed dedicated student advocates whose duties were to continuously research issues of concern to students and bring them to the attention of the relevant authorities. Most HEIs built student centers offering all kinds of assistance to students. Some services were also outsourced from friendly social organizations interested in the health and welfare of students. Other researchers found that administrators in HEIs perceived activism to be incompatible with teaching and learning [89, 90]. In fact, activism is considered as a transgression [91]. While it might appear as if this position contradicts with results of this study, the viewpoints complement each other in that in both scenarios, violence is not tolerated. The new dimension brought forward by this study is that when positive forms of activism are encouraged, students are initiated into a culture of dialogue and engagement.

The major take-home message is that violent student protests point to a possible breakdown in university procedures for student engagement since they are usually a last resort when all other avenues have failed. HEIs should recognize that student protests are a legitimate form of communicating concerns and hence they should engage students in order to reach an agreed position.

The study used the findings to recommend a model for embracing student activism by incorporating the student voice (see **Figure 4**).

3.1. Dialogue with students

The use of the go-out-and-talk (GOAT) strategy, whereby staff at HEIs engage informally and often with student leaders and students in general, inculcates in students a mindset shift where they can learn to take responsibility for their actions and to understand protest-related rules as well as appreciate the negative impact of acts of civil disobedience. Through dialogue, higher education institutions can take the lead on creating true partnerships with students. The strategy of dialoguing with students includes consultation and observation as well as relationship building.

3.1.1. Consultation and observation

This includes the go-out-and-listen (GOAL) strategy whereby internal and/or external researchers carry out surveys/interviews/focus-group discussions to capture the feelings and opinions of students. This assists in building mutual trust through effective interpersonal relationships.

3.1.2. Relationship building

This involves improving understanding and trust among all the players in HEIs through the use of varying communication channels and methods. Most protests are avoidable if effective communication is practiced and there are opportunities to raise substantive concerns to administration and receive clear responses. It is important to create strong working relationships between security, students, and administrators with the goal of minimizing protests and use of force. Staff
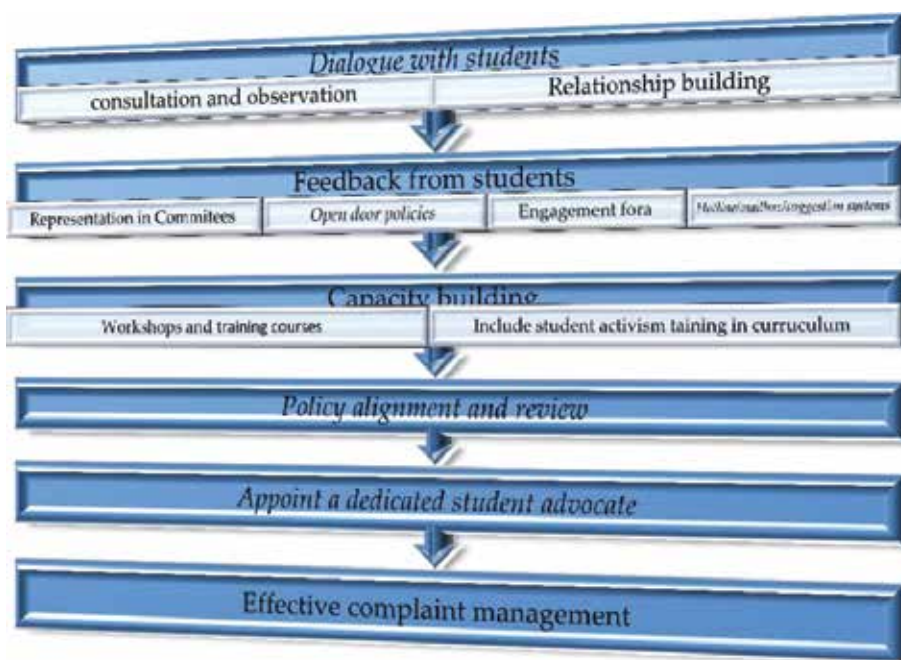
Figure 4. A model for embracing student activism by incorporating the student voice.

should shelve the "managerial/professor" persona to enable meaningful and easy interaction with students. Senior administrators ought to periodically attend students meetings and functions.

3.2. Feedback from students

HEIs need to review procedures to incorporate feedback regarding problematic issues. Using the concept of "closing the feedback loop" ensures that all the players can see and celebrate the results of engaging students. HEIs should encourage staff to accommodate the perspectives of students and ensure that students enjoy the best learning experience. The student feedback management strategy includes student representation on committees, student engagement fora, open-door policies, and use of hotlines/mailbox/suggestion systems.

3.2.1. Students' representation in committees

The institution should incorporate a critical mass of student representatives into all committees of the institution, including those responsible for bringing changes to systems/structures/ processes. Of note here is the finding that while most university councils have half representation from external and internal Councilors, only one student representative sits in council. This makes it almost impossible for the student voice to be listened to in a substantive way. In addition, the system of student representation should ensure that there is representation from all the different groups in the student body, inclusive of the often forgotten groups, for example, adult, disabled, part-time, and foreign students.

3.2.2. Student engagement fora

Students should be availed with various platforms for engagement. These include orientation sessions, debates, clubs, student-staff interactions, hotlines, and counseling. The use of technology facilitates the engagement process. It is worth noting that engagement does not mean destruction of the barrier between staff and students; the barrier is simply made more permeable by increasing the bi-directional flow of information and ideas.

3.2.3. Open-door policies

HEIs must encourage students to bring their suggestions even to top management in the university. Staff should be actively involved in students' union activities. There is a need to acknowledge and reward members of staff who would have exhibited high levels of commitment toward engaging students. HEIs must inculcate a culture of tolerance and understanding instead of compliance.

3.2.4. Hotline/mailbox/suggestion systems

Students should be empowered to embrace technology to provide an opportunity for themselves to express their views publicly or anonymously. In addition, the curriculum can be used as the key tool for transforming student engagement.

3.3. Capacity building

HEIs should introduce principles of non-violent resistance and train everyone in the institution. Students should be provided with adequate information as well as receive training formally and informally on issues of student activism and on how to effectively make their voices heard. HEIs should also encourage the use of constitutional rights of free speech to positively enact social change. They should also communicate information on the roles and shared responsibilities of campus stakeholders indicating clearly that the head of institution is ultimately accountable for institutional security and the satisfaction of all stakeholders.

3.4. Policy alignment and review

HEIs should establish and document policies and practices regarding dissent and civil disobedience. Student partnerships and engagement should be prioritized through the alignment of favorable policies and procedures. HEIs should ensure consistent messages from senior management and staff and employ the right people exhibiting student-centered mentality.

3.5. Appoint a dedicated student advocate

HEIs are encouraged to appoint a dedicated student advocate to continuously research issues of concern to students and bring them to the attention of the relevant authorities.

3.6. Complaints management

It is important for HEIs to dedicate specific time periods for allowing students access to top administrators in order to raise their views and concerns. Establishing a framework where

students can submit their petitions and administrators can respond is important. HEIs should develop a process of mediation wherein appropriately trained staff can facilitate dialogue between students and the relevant HEI staff.

In addition to heeding the student voice, university management should:

• Ensure corruption-free, transparent, and fair management of the university

• Train students on issues of civility

• Be consistent on disciplinary action

• Explain why some requests cannot be met

• Create favorable campus environments that:

  • foster a culture of communication, openness, and civility

  • accommodate and respect different points of view

  • have well-documented and implemented policies on student engagement

  • respond when protests occur and see to it that intimidation, censorship, suspensions, arrests, shut down or violence are avoided.

4. Conclusion

The findings showed that the key reasons for student protests in order of priority are lack of communication (presence) of administrators, "top administrators are invisible", the need for more opportunities to discuss their concerns with administrators, administrators who do not address the substantive problems motivating protests, and administrators who do not interact with students on a routine basis in order to build better relations and trust.

The recommended model suggests that institutions should heed the student voice through dialogue with students, consultation and observation, representation and engagement fora, dedicated student advocates, relationship building, open-door policies, feedback from students, capacity building, policy alignment and review, hotline/mailbox/suggestion systems, and complaints management. The study suggests the areas that HEIs should focus on in order to minimize violent student protests and uses the student voice to improve quality.

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