Mediating Open Distance e-Learning in the Advent of Global Crises

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Contents

List of Abbreviations

Abbreviation	Meaning
3IR	Third Industrial Revolution
4IR	Fourth Industrial Revolution
ABET	adult basic education and training
AfL	assessment for learning
AI	artificial intelligence
CA	continuous assessment
CDT	critical disability theory
CEDU	College of Education
CoI	community of inquiry
DBE	Department of Basic Education
DE	distance education
DeafSA	Deaf Federation of South Africa
DHET	Department of Higher Education and Training
DOL	distance online learning
EAQ	equity, access and quality
ERT	emergency remote teaching
FET	further education and training
FRAME	Framework for the Rational Analysis of Mobile Education
GL/s	group leader/s
HE	higher education
HEI/s	higher education institution/s
HRM	School of Human Resource Management
ICT/s	information and communications technology/ies
IPET	initial professional education and training
LCs	learning centre/s
LMS/s	learning management system/s
NOUN	National Open University of Nigeria
NSFAS	National Student Financial Aid Scheme
ODeL	open distance e-learning
ODL	open distance learning
ODLRU	Open Distance Learning Research Unit
OFDL	open, flexible and distance learning
RSA	Republic of South Africa
SASL	South African Sign Language
Sabinet	South African Bibliographic and Information Network
SDG/s	Sustainable Development Goal/s
SDHH	students who are deaf and hard of hearing
SMP/s	social media platform/s

SSS	student support services
T&L	teaching and learning
TAM	technology acceptance model
TDT	transactional distance theory
TMMR	transformative mixed methods research
TP	teaching practice
UDL	universal design for learning
UG	University of Ghana
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations Children's Fund
Unisa	University of South Africa
UK	United Kingdom
US	United States
UTAUT	unified theory of acceptance and use of technology

About the Editors

Moeketsi Letseka is professor extraordinaire; professor of Philosophy of Education; holder of the endowed United Nations Educational, Scientific and Cultural Organization (UNESCO) Chair on Open Distance Learning (ODL) at the University of South Africa (Unisa), and former Editor-in-Chief of *Africa Education Review*. He is a C2 National Research Foundation (NRF) rated researcher and winner of the 2022 Unisa Chancellor's Award for Excellence in Research. In June 2023, he was appointed by His Majesty King Letsie III of Lesotho to serve as a member of 15th Council of the National University of Lesotho (NUL). In May 2022, he was appointed by the Chief Executive Officer (CEO) of the South African Council on Higher Education (CHE) to serve as a member of the Peer Advisory Group on the Reconceptualising Learning and Teaching (Relate) Project. In April 2021, he was appointed by the South African Minister of Basic Education, Mrs Angie Motshekga, to serve as a member of the 7th National Commission for UNESCO. In March 2020, he was appointed by the Deputy Director General of the Department of Higher Education and Training (DHET) to serve as a member of the National Coordination Committee for the National Framework for Enhancing Academics as University Teachers. In May 2020, he was appointed as Chairperson of the Task Force on Distance Education in the World Council of Comparative Education Societies (WCCES).

The following are Letseka's selected publications in philosophy of education and ODL: Higgs, P. and M. Letseka. 2022. *Philosophy of Education: An Introduction*. 3rd ed. Cape Town: Juta; Letseka, M. (ed). 2016. *Open Distance Learning (ODL) through the Philosophy of Ubuntu*. New York: Nova; Aluko, R., M. Letseka, and V. Pitsoe (eds). 2016. *Assuring Institutional Quality in Open Distance Learning (ODL) in the Developing Contexts*. New York: Nova; Letseka, M. (ed). 2015. *Open Distance Learning (ODL) in South Africa*. New York: Nova.

Jennifer Roberts is an associate professor in the Institute for Open Distance Learning (IODL) in the College of Education (CEDU) at Unisa. A truly interdisciplinary scholar, she has undergraduate studies in Statistics and Sociology; postgraduate degrees in Tourism Development and Management; and a PhD in Distance Teaching and Curriculum Design. She is widely published in distance education, discipline in education, metacognition, research trends and staff development, and has presented academic papers around the world. Jenny was the first South African to be elected to the executive committee of the Open and Distance Learning Association of Australia (ODLAA), where she was vice president and publications officer, and has also twice guest edited the *Distance Education Journal*. She is the leader of the Unisa research thrust "Technology and the Changing Role of Academics in Distance Education", as well as a team member, together with colleagues from other South African universities, on an

NRF project on self-directed learning in an online context. In 2021, she was acknowledged by the AD Scientific Index as a member of the top 10 000 influential scientists on the African continent and occupied the number three position in Africa for distance education research. In addition, she is a founding member of the international Centre for Open Educational Research (COER), a group that is funded by the German government to disseminate research on the curation of open educational resources in higher education (HE).

Morakinyo Akintolu holds a PhD in Education. He is currently a postdoctoral research fellow with the UNESCO Chair on Open Distance Learning in the CEDU at Unisa. His research interests include Open Distance e-Learning (ODeL), Educational Management, Adult Education, ICT Application in Education, Youth Development and Entrepreneurship Education. He has over 10 years' experience working on social impact projects. Morakinyo is passionate about raising ethical leaders to drive innovation, entrepreneurship, and development in rural and urban communities. He has presented academic papers at various national and international conferences in his area of specialisation, and published many articles in accredited journals to contribute to the body of knowledge.

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Rossano Wells is a registered Counselling Psychologist. He obtained his BA, BA Hons Psychology, MA and PhD degrees at various institutions (Unisa, UKZN and UniZUL). Rossano is the Deputy Director: Directorate for Counselling and Career Development at Unisa. His research spans areas such as disability; online counselling, supervision and mobile learning issues in higher education institutions. He is part of

the team spearheading wellness initiatives and the realisation of an online and interactive portal for staff referrals, wellness messages, etc.

Sindile Ngubane is a professor doing research, community engagement, and mentorship on digital access for students and employees with disabilities and incarcerated students in ODL contexts. She is also the acting head of the IODL at Unisa. Sindile leads cross-border collaborative research and community engagement projects aiming to create digitally inclusive approaches for the development of vulnerable communities, including people with disabilities, and incarcerated students.

Cecilia van Zyl is a senior lecturer in the Department of Economics at Unisa. She is mainly involved with module development and teaching of first-level Economics, and has an interest to ensure inclusive and open education for all learners. She is also involved with the development of quality assurance procedures to ensure high-quality teaching and learning. She holds master's degrees in Economics and Open Distance Education. Cecilia's research involves aspects related to open distance teaching and learning. She is currently busy with a PhD and the topic of her research is, "How the Use of a Continuous Assessment Framework Can Contribute to More Effective Learning in an Economics Department in a Distance Education Environment".

Willie le Roux is a lecturer in the Department of Economics at the Unisa. He teaches first-level Economics which brings him into daily contact with often ill-prepared school leavers. Willie's passion is to guide these students to become confident learners in an ODL environment. He is currently focusing on how students can be equipped to use artificial intelligence language models in their studies.

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published articles related to ODL, technology enhanced teaching and learning, on-line interactivity, and student support.

Onica Ndwambi is a lecturer at the Gauteng College of Nursing – SG Lourens Campus, Department of Health. She obtained her DLit et Phil in Health Studies at Unisa with a focus on ODL and online interactivity. Onica has had exposure in the public and private sectors. She is passionate about teaching and learning with a focus on General Nursing Science and Practice. She specialises in Critical Care Nursing. Onica has published many articles related to nursing education. She has also presented papers at national and international conferences on aspects related to ODL.

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Geesje van den Berg is a full professor in the Department of Curriculum and Instructional Studies at Unisa and a Commonwealth of Learning Chair in ODL for Teacher Education. Her research focuses on student interaction, academic capacity building, openness in education, and teachers' use of technology in ODL. She has published widely as a sole author and co-author with colleagues and students in curriculum studies and ODL. She leads a collaborative academic capacity-building project for Unisa academics in ODL between Carl von Ossietzky University of Oldenburg in Germany and Unisa. She is programme manager and lecturer in the structured master's in education (ODL) programme.

Introduction

The authors embarked on the process of compiling the manuscript of the book, *Mediating Open Distance e-Learning in the Advent of Global Crises*, with great enthusiasm and excitement. For each of us, the area of open distance e-learning (ODeL) is a passionate focus in our academic careers, particularly given the dynamic nature of ODeL, as it meanders into a technological future. Research in any academic field is necessary in order to generate debate, contribute to existing knowledge, influence policy and advance recognition for that field. As an academic field, ODeL is multifaceted and transcends many disciplines. It is the heart of all distance learning institutions. To that end, research to advance knowledge creation in this field is of critical importance.

The African continent is abuzz with the desire for education in general, and for higher education (HE) in particular. Access to HE has been made possible with the onset of institutions that offer teaching and learning "at a distance". Maile (2016, 91) writes that: "For those who could not get the right skills in the first chances, ODL provides opportunities that can be regarded as second chances". The concept of "openness" where the chains of barriers to entry are loosened and even broken, affords many students the opportunity to study, where previously this had only been a pipe dream. Drawing on the *Unisa Open Distance Learning Policy* (2008), Letseka (2021, 134) argues that openness denotes "removing barriers to access learning, flexibility of learning provision, student-centeredness, supporting students and constructing learning programmes with the expectation that students can succeed". In this regard, "ODL is distance learning that is also accessible in terms of time, pace, space and people, without barriers".

Writing in *Open Learning: The Journal of Open, Distance and eLearning*, which is the official scholarly journal of the Open University, United Kingdom (OU UK), former Vice Chancellor of the OU UK, Professor Brenda Gourley and Professor Andy Lane (2009, 57) describe openness in distance learning as a system of HE offerings where there are no barriers to entry, no entry requirements – only exit standards; where a person's background and previous advantage or disadvantage is entirely irrelevant. They argue that "open education potentially opens up not only who produces the 'content' and the 'context' in which the 'content' is learned, but also who validates that learning so that it has the currency in the labour and/or interest markets" (Gourley and Lane 2009, 60). Tait (2008, 88) observes that "UNISA is a very significant single-mode distance-teaching university – that is, it teaches only at a distance".

There are an estimated five million students in Africa who are currently studying through distance education (DE) institutions, and it is our opinion that this number will grow exponentially over the next five years. The University of South Africa (Unisa) is the oldest dedicated distance education institution in the world, having been recognised as such in 1948. It is therefore unsurprising that many other countries look to Unisa as their beacon and guiding light. Unisa carries a moral responsibility to advance, encourage and disseminate research in the field of ODeL. The world as we all knew it, suddenly changed in 2019 with the outbreak and worldwide spread of the Covid-19 pandemic. A pandemic can be described as a new disease that spreads across the entire world at frightening speeds with deadly outcomes. Examples of large-scale pandemics that threatened the world are the Bubonic plague in the 14th century; the Spanish flu (1918–1920; the Spanish flu (1918– 1920); the Asian flu (1957–1958); the Hong Kong flu (1968–1969); and the Swine flu (2009–2010). Felman (2023) explains that a pandemic, such as Covid-19, is an outbreak of global proportions that affects countries across the world. It happens when infection due to a bacterium or virus becomes capable of spreading widely and rapidly.

Some of the non-medical interventions that most countries adopted during the Covid-19 pandemic included the forced mandate for citizens to stay at home, which was colloquially referred to as "lockdown". Within a very short space of time, schools, places of work, recreation spaces and retail centres were closed for fear they might become "super spreaders" of the deadly virus. Only essential medical service personnel were permitted to leave their homes. In both the basic and HE sectors, students needed to leave their physical places of learning and return to their homes. Teaching and learning were propelled into the online space almost overnight. As a result of the measures taken worldwide, more than 1.6 billion enrolled students of all ages from around the world experienced interruption to their education. This equated to almost 90% of the global student population (UNESCO 2020a; 2020b; UNICEF 2020). The lockdown associated with the Covid-19 pandemic lasted far longer than expected. In South Africa, the national state of disaster that was declared because of the pandemic, was finally officially lifted on 5 April 2022.

Structure of the Book

The book comprises 12 chapters drawn from research papers that were presented at the 2021 virtual Unisa Open Distance e-Learning (ODeL) Conference. Each of the chapters was written by 2021 ODeL Conference delegates who complied with the editors' request to expand their papers into standard scholarly chapters. The editors, together with other specialised ODeL researchers, finecombed each chapter and offered support and invaluable feedback to the authors to ensure that their chapters met the highest academic standards and Unisa Press publication

specifications. Subsequently, each chapter underwent critical scholastic double blind peer review, which required each author to make substantive improvements that the reviewers and editors deemed necessary.

The first ODeL Conference was hosted in person under the auspices of the UNESCO Chair on ODL at the African Pride Irene Country Lodge from 26–28 August 2019 only a few months before the world was turned upside down. The conference was not held in 2020 due to the then ongoing lockdown and uncertainties about the severity and length of the pandemic. However, the 2021 and 2022 ODeL conferences, which were held fully online, were a collaborative partnership between the UNESCO Chair on ODL and Unisa's Department of Research and Innovation. Both conferences attracted in excess of 1 200 delegates from 14 African countries, from the Middle East, Australasia, East Asia, Europe, Canada and the United States. The delegates discussed and exchanged research ideas on the potential problems that ODeL faces in times of crisis. They further explored practical and long-term solutions to issues around ODeL teaching, learning, student support, research, and community engagement. The 2021 Unisa International ODeL Conference focused attention on the importance of research and innovation in preparing ODeL institutions to respond meaningfully and sustainably to the challenges students face in times of global and societal upheavals.

Thus, the 12 chapters that are assembled in this book have met the required Unisa Press standards and stylistic specifications and are hereby presented in this collection to showcase the vast array of ODeL research produced and written by authors on the African continent.

Roberts and Van der Walt set the stage for the ODeL research agenda in South Africa with their examination of the research levels (according to the ODL research level framework of Zawacki-Richter (2009)), trends and publication vehicles of South African ODL authors, in a longitudinal study conducted from 2010 to 2019. Setlhodi, and Matjila and Van der Merwe, present conceptual research in ODeL. This is followed by a chapter from the context of other African countries where Amponash and Agyekum discuss the service quality of a Ghanaian open distance institution.

A niche ODeL research area that has been identified is that of the importance of ODeL as a means of providing access to HE to students with disabilities. Wells and Ngubane address this topic in their chapter that examines the lack of psychological and disability perspectives in the Framework for the Rational Analysis of Mobile Education (Frame). Another important aspect of ODeL is the area of teaching and learning, and student support. ODeL students are at the heart of this area. Van Zyl and Le Roux examine the process of implementing continuous assessment in the ODeL environment, while Robinson considers the

use of e-portfolios to improve student success. Both these chapters reflect on teaching and learning in the field of Economic Sciences. Makgakga and Ngubane grapple with teaching practice supervisors' experiences in an ODeL institution through "Post-Conference Feedback". Pillay explores the use of group work in an online environment, with specific reference to the Covid-19 experience in the Natural Sciences. This theme highlights the multi-disciplinary nature of the academic field of ODeL – the fact that it transcends all scholarly disciplines.

No compilation on ODeL research would be complete without research that touches on technology advancements in ODeL. Maboe and Ndwambi investigate the use of social media platforms in teaching and learning as an innovative teaching strategy, while Baloyi discusses supporting Adult Basic Education and Training (ABET) students at Unisa during the Fourth Industrial Revolution (4IR). Finally, Modise and Van den Berg consider Covid-19 as an accelerator for training and technology adoption by academics in large-scale ODeL institutions in Africa

The book, *Mediating Open Distance e-Learning in the Advent of Global Crises* is the first collection of research from the annual Unisa International ODeL conferences that are hosted by the institution. It showcases the research presented at the 2021 conference. It is the intention of the Unisa International ODeL conference organisers to publish a similar book each year after the conference. These books will form a longitudinal scholarly collection that showcases the talent and innovation of ODeL research on the African continent. We are already working on the finalisation of the 2022 conference book of essays which we hope to finalise shortly. As we write this foreword, we are only weeks away from the 2023 Unisa International ODeL conference and the number of presentations has grown substantially – therefore we can look forward to a growing number of chapters on ODeL research – the future for ODeL research in Africa is looking delightfully promising.

References

Felman, A. 2023. "What to Know about Pandemics." Medical News Today. Accessed April 19, 2020. https://www.medicalnewstoday.com

Gourley, B., and A. Lane. 2009. "Re-invigorating Openness at The Open University: The Role of Open Educational Resources." Open Learning: The Journal of Open, Distance and e-Learning 24 (1): 57–65. https://doi.org/10.1080/02680510802627845

Letseka, M. 2021. "Stimulating Open Distance Learning (ODL) Research at the University of South Africa (Unisa) through the UNESCO Chair." Open Learning: The Journal of Open, Distance and e-Learning 36 (2): 133–148. https://doi.org/10.1080/02680513.2020.1724780

Maile, S. 2016. “Open Distance Learning as a Second Chance.” In *Assuring Institutional Quality in Open Distance Learning (ODL) in the Developing Contexts*, edited by R. Aluko, M. Letseka and V. Pitsoe, 85–106, Nova Publishers: New York.

Tait, A. 2008. “What Are Open Universities for?” Open Learning: The Journal of Open, Distance and e-Learning 23 (2): 85–93. https://doi.org/10.1080/02680510802051871

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2020a. “Covid-19 Educational Disruptions and Response.” http://en.unesco.org/covid-19/educationresponse

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2020b. “School Closures Caused by Coronavirus (Covid-19).” http://en.unesco.org/covid-19/educationresponse

UNICEF (United Nations Children’s Fund). 2020. “Unicef and Microsoft Launch Global Learning Platform to Help Address Covid-19 Education Crisis.” http://www.unicef.org/press-releases/unicef-and-microsoft-launch-global-learning-platform-help-address-covid-a9-education

Zawacki-Richter, O. 2009. “Research Areas in Distance Education – a Delphi Study.” *International Review of Research in Open and Distance Learning* 10 (3): 1–17. https://doi.org/10.19173/irrodl.v10i3.674

Part I

Setting the Stage for Open Distance e-Learning Research

Chapter 1

Distance Education Research in South Africa: A Longitudinal Study into the Research Levels of Open Distance Learning Journal Articles*

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Abstract

The measure of an academic field lies in the richness and depth of its published research, especially within the ever-developing field of distance education, which is relatively new. The University of South Africa is the oldest dedicated distance education institution in the world, which has given rise to its status internationally as a leader in distance education. It is prudent to analyse and reflect on the research outputs published by South African academics, particularly regarding the levels of research that are conducted. This chapter follows the research published by Roberts, which analysed South African distance education research levels and sublevels from articles published between 2011 and 2015. This longitudinal study applied a thematic content analysis of the titles and abstracts of all open distance learning-related research articles published by South African authors. The findings compared open distance learning trends for the five-year periods from 2010–2014 and 2015–2019. The data was obtained from the Scopus and the South African Bibliographic and Information Network electronic databases of academic literature, using the same search criteria employed by Roberts. The levels of research publications were analysed according to the open distance learning research framework of Zawacki-Richter presented through descriptive statistics. The results indicated that although the number of published open distance learning-related research articles had more than doubled, the research levels did not show any significant change from the previous five years. Therefore, the South African open distance learning publications should give attention to

meso- and macro-level research to enhance the open distance learning development within Southern Africa and create local trends fit for purpose.

Keywords: distance education; open distance learning; online learning; research trends; South Africa

*** Note:** This chapter previously appeared in *Mousaion* 40(4)(2022)(#10198).

Introduction

The importance of virtual reality Research and development are critical components of an academic environment since they contribute to a country's overall advancement and development. The results of research lead to a country's advancement and development. Research antecedents are focusing on meeting changing needs in social, cultural, environmental, economic, industrial, technical and scientific life conditions (Sultana 2019).

As a relatively new academic field, distance education (DE) research has grown substantially since the early 1980s. Initially, the field attracted a fair amount of criticism owing to its lack of theoretical frameworks and poor research methodologies (Bernard et al. 2004; Perraton 2000). To deal with these concerns and provide a framework to analyse the levels of open distance learning (ODL) research, Zawacki-Richter (2009) developed a framework to classify three significant levels of ODL research and their respective 15 sublevels. A comprehensive literature review and an international Delphi study were used to develop this framework. It is widely regarded as a sound basis for classifying the levels and sublevels of DE research. The three levels of research classification are the macro-, meso- and micro-levels. The macro-level refers to research carried out on DE systems and theories; the meso-level refers to institutional research on management, organisation and technology; and the micro-level focuses on teaching and learning in DE (Zawacki-Richter 2009).

Roberts (2016) found that South African authors contributed very little at the macro-level, particularly concerning the development of theoretical approaches to DE relevant to developing countries. However, South African research was disproportionately high at the micro-level, with many articles revolving around the themes of learner characteristics and lecturers' and students' perceptions of the various aspects of DE.

In 2013, the South African Department of Higher Education and Training (DHET) approved the White Paper for Post-School Education and Training (hereafter the 2013 White Paper). Before 2013, DE was provided solely by the University of South Africa (Unisa), but a provision in the 2013 White Paper was made for all higher education institutions (HEIs) to offer DE. This resulted in new DE programmes being developed by many of the 26 public and private universities in South Africa catching up with DE

offerings for their students. Furthermore, in the light of the expansion of DE beyond the confines of Unisa, ODL researchers from other HEIs started contributing more extensively to the ODL research platform.

For this reason, it is significant to reassess the ODL research publication levels and sublevels since the publication of Roberts' (2016) research, and to assess whether any significant changes were deemed contextually relevant, mainly as a result of the more substantial move towards online education. The findings enabled the conceptualisation and design of a local ODL publication trendline to compare with related trendlines in the United Kingdom (Zawacki-Richter 2009). However, this process acted as a starting point for local ODL researchers to develop ODL-specific publications that might ultimately result in South African ODL publication trends fit for its context. Hence, the following research question is dealt with in this chapter:

- How have the research levels and sublevels in South African ODL research publications developed according to the ODL research framework of Zawacki-Richter (2009) from the five-year period (2010–2014) to the five-year period (2015–2019)?

Literature Review: Research Areas in Distance Education

Because of the criticism of early ODL research, as referred to by Perraton (2000) and Bernard et al. (2004), Zawacki-Richter (2009) developed a categorisation of DE research into three levels and 15 research areas (sublevels) within these three levels. Table 1 summarises Zawacki-Richter's (2009) ODL research framework.

Table 1: Trends in DE research

Research level	Scope	Sublevel
Macro	DE systems and theories	1. Access, equity and ethics
		2. Globalisation of education and cross-cultural aspects
		3. DE teaching systems and institutions
		4. Theories and models
		5. Research methods in DE and knowledge transfer
Meso	Management, organisation and technology	6. Management and organization
		7. Costs and benefits
		8. Educational technology
		9. Innovation and change
		10. Professional development and faculty support
		11. Learner support services
		12. Quality assurance

Research level	Scope	Sublevel
Micro	Teaching and learning in DE	13 Instructional design
		14. Interaction and communication in learning communities
		15. Learner characteristics

Source: Zawacki-Richter (2009)

According to Roberts (2016), just over 67% of South African authors, up to the year 2014, carried out research at the micro-level. Just under 30% of the articles were classified at the meso-level, and only 3% focused on macro-level research topics. The top research areas for South African authors were instructional design, learner characteristics, and interaction and communication in learning communities. As shown in Table 1, these three research areas fall under the micro-level of research. Although the authors of this article agree that research at this level is necessary and valuable, they suggest that consideration be given to including more research at other levels. South African authors must establish themselves as important players in the international field, particularly regarding the elevation of DE in developing countries. According to the World Bank, over 50% of all DE students worldwide hail from developing countries, and South Africa is classified as a developing country (Gauthier 2018). Developing countries have specific challenges that differ from first-world countries, particularly regarding access to technology, digital literacy skills, broadband availability, and a regular electricity supply. This emphasises the importance of the contextual situations and the infrastructure issues DE practitioners and students face, especially in developing countries where key information and communications technology (ICT) infrastructural issues are prominent. Furthermore, this gives particular interest in designing a local South African ODL research framework to act as a basis for conducting research within the DE field.

Methodology and Research Design

The research design for the study was a content analysis of all South African-authored ODL articles published between 2010 and 2014 and between 2015 and 2019. Lee, Driscoll and Nelson (2006) propose that understanding specific trends and issues of topics and methods in a particular field of study is crucial to advancing research. Thematic content analysis is a practical approach to examining particular patterns and trends in textual data embedded within documentation under investigation (Elo et al. 2014; Krippendorff 2013).

The authors of this article agreed that it would be essential to delve into the trends of ODL research within the South African context to project the state of ODL research and publication for the five-year period (2015–2019) and to make a comparison with the research data for the previous five-year period (2010–2014). The data was collected

using published journal articles from the Scopus and the South African Bibliographic and Information Network (Sabinet) electronic databases of academic literature.

The criteria used for classifying an ODL article were that the following terms must appear in the article title, keywords, or abstract: DE, ODL, open distance and e-learning (ODeL), online learning, e-learning or m-learning. This was in line with the same inclusion criteria that Roberts' (2016) research used to analyse comparable pre-and post-2015 analyses. The data were extrapolated from the databases mentioned above, filtered and cleaned by the two authors of this chapter. The authors deemed that this approach was appropriate for the intent of the study. The authors relied on a priori codes for the data set for analytical purposes derived from the major research trends within DE as reported by Zawacki-Richter (2009) (see also Table 1). The authors applied a set of inclusion and exclusion criteria to sort and select published articles from 2015–2019 purposefully. This followed the same criteria Roberts (2016) used for the 2010–2014 database compilation.

Study Sample

The data retrieved, cleaned and analysed for this study included published academic articles in accredited journals retrieved from the Scopus and Sabinet databases. During the data collection process, the authors requested assistance from the Unisa library service to extrapolate relevant ODL articles for the study. They sent a list of inclusion criteria and specific search terms that the librarian applied to the Scopus and Sabinet databases. These criteria included terms that must appear in either the title, keywords or abstract of the article: DE, ODL, ODeL, online learning, e-learning or m-learning. In addition, the authors took notice that all major national and international DE journals were listed in these two information networks and therefore deemed these two databases credible for use in the current research process. Once again, this was comparable to the research carried out by Roberts (2016) and allowed for a comparison between the pre- and post-2014 research results.

The selection of relevant academic articles from these databases was based on search terms pertinent to the ODL context already mentioned. Initially, the authors managed to extrapolate a total number of 454 articles from these journal databases. After that, they used a set of inclusion and exclusion criteria to filter out articles that would be fit for the purpose by adhering to the following list:

- only published journal articles (excluding editorials, books, book reviews, dissertations and theses) were used;
- only articles published in English;

- only South African authors were included (inclusive of collaborative articles from other countries);
- articles had to be set within the context of an HEI in South Africa;
- articles had to be published between 2010 and 2014 (period 1) and between 2015 and 2019 (period 2); and
- the specific focus of the articles was on DE and online learning.

Following the process mentioned above, the authors selected 352 journal articles coded independently by the two authors. Five duplicated journal articles reflected in the Scopus and Sabinet databases and were removed from the data set. In addition, 31 articles were removed as the authors did not deem them to be ODL-related or fitting the context of the inclusion criteria. After this process, the authors selected 316 articles that applied to the analytical process.

Reliability

For intercoder reliability, the two authors, who have similar backgrounds in ODL research, participated in coding the data. They familiarised themselves with the various articles related to the research areas and trends within DE according to Zawacki-Richter's framework (Zawacki-Richter, Bäcker and Vogt 2009; Zawacki-Richter and Naidu 2016). Both authors received the same data set and were responsible for their subjective blind-coding process. The coding structure was divided into a two-level coding structure to initially indicate where the articles fit within the major categories (i.e., macro-, meso- and micro-levels), followed by their respective sublevels (i.e., theories and models, management and organisation, and learner characteristics).

After applying a deductive form of coding, the authors combined their scores into one document to evaluate the intercoder reliability using the Cohen's kappa (K) statistical measure (Cohen 1960). Cohen's kappa coefficient is a statistical measure that concerns the inter-rater agreement between two coders regarding a data set that is qualitative and categorical in nature. Altman (1991) suggests that the level of agreement can be viewed as poor (< 0.20), fair (0.21 to 0.40), moderate (0.41 to 0.60), good (0.61 to 0.80) and very good (0.81 to 1.00). Tables 2 and 3 indicate the Cohen's kappa value for the intercoder reliability for coding the main research levels and the sublevels.

Table 2: Cohen's kappa values for intercoder reliability for the main research levels

Symmetric measures					
		Value	**Asymptotic standard error**	**Approximate T**	**Approximate significance**
Measure of agreement	Cohen's kappa	.862	.029	17.455	.000
Number of valid cases		316			

Table 3: Cohen's kappa values for intercoder reliability for the sublevels

Symmetric measures					
		Value	**Asymptotic standard error**	**Approximate T**	**Approximate significance**
Measure of agreement	Cohen's kappa	.876	.021	35.997	.000
Number of valid cases		315			

As shown in tables 2 and 3, the reliability of raters A and B could be considered acceptable and a very good standard, as the inter-rater agreement between the two coders was K = 0.862 for the main levels and K = 0.876 for the sublevels. In case of disagreements between the two coders, this was discussed and debated until a consensus was reached. This final form of the data set was used for the descriptive analysis of the data in this chapter.

Delimitations

The data derived from secondary sources involving journal databases consisted of credible, accurate and updated information drawn from the Scopus and Sabinet databases. It should be noted that the authors were aware that not all articles published within the South African context were present within these sets.

Although the authors ensured that the articles examined through the coding process were representative of the discipline of DE, it should be noted that there is always the possibility that other researchers could have a different interpretation of the criteria implemented in this study. One of the authors was a coder for both the data sets used for the study. The second author was not a coder for the data set for the period 2010–2014; therefore, the two authors discussed deliberations about the coding process. The other co-coder from the first data set (2010–2014) acted as the third coder in the 2015–2019 data set in case there were disputes.

An additional note concerns the reward and policy of the DHET (2017) accreditation of published articles. This process allows for the payment of research output rewards to

the authors of these articles; therefore, academics are prone to publish their articles in only the journals that appear in the DHET accredited list of journals. It should be noted that there is a possibility that some potential articles concerning the aim and objective of this research process were not included owing to their being published in non-DHET accredited journals.

Data Analysis

The secondary data that was obtained through the methodology as mentioned above was consolidated into one database consisting of 316 articles for the period 2015–2019. In addition, for comparative purposes, the database used in Roberts's (2016) analysis of ODL research by South African authors was also used for the articles for the period (2010–2014), consisting of 142 articles.

The Statistical Package for Social Sciences (SPSS) was used to analyse the descriptive statistics related to the main research levels and sublevels according to the Zawacki-Richter (2009) framework. The results are presented in the form of frequency tables and graphs. Furthermore, additional descriptive analyses have been provided regarding the number of South African-authored ODL journal articles from each of the HEIs in South Africa and a presentation of the most famous journals for publication.

Results

Figure 1 shows the total number of ODL articles that were published in the specified databases over the two time periods, 2010–2014 and 2015–2019. These periods will be called period 1 (2010–2014) and period 2 (2015–2019), respectively, for ease of reference.

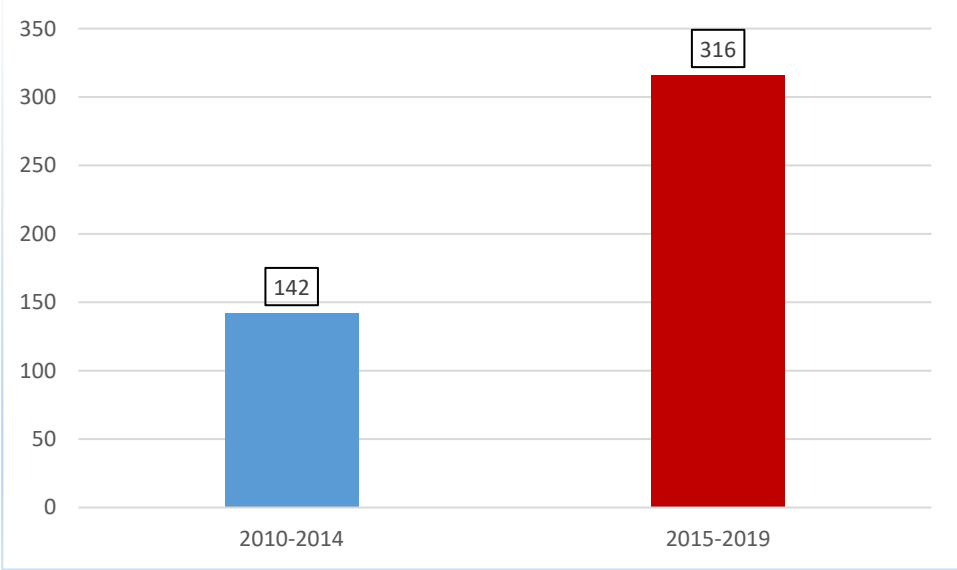


Figure 1: Total number of ODL articles published in period 1 and period 2

From Figure 1, it can be established that a total of 142 ODL articles written by South African authors were published in period 1. This number increased to 316 in the subsequent period 2. This is in line with the maturation of the academic field of ODL in South Africa and the exponential growth in research articles in this field.

The increase in the number of published articles can be attributed to various factors. Firstly, as indicated earlier, the introduction of the 2013 White Paper allowed all HEIs in South Africa to offer DE programmes. In contrast, before this date, Unisa was the sole provider of DE. In addition, many institutions started including ODL publications as part of their research mandate and staff were encouraged to publish in this field. Furthermore, Unisa expanded its Searchlight programme, which provides mentorship and training to academic and administrative staff to assist them with ODL publications. Finally, in 2015, the International Council for Open and Distance Education (ICDE) biannual international conference was hosted by Unisa at the Sun City resort in South Africa. This created a new sense of enthusiasm for ODL publications. These factors may have contributed to the increase in ODL-related research papers authored by South African academic staff.

The research question for this study related to the main research levels and sublevels of these ODL publications by South African authors. Table 4 shows the ranking of the South African articles according to Zawacki-Richter's framework for period 2.

Table 4: Ranking of main research levels and sublevels according to Zawacki-Richter's (2009) framework for period 2

Rank	Research area	Level	Frequency	%	Cum. %
1	Instructional design	13	93	29.4	29.4
2	Learner characteristics	15	79	25.0	54.4
3	Interaction and communication in learning communities	14	35	11.1	65.5
4	Professional development and faculty support	10	33	10.4	75.9
5	Learner support services	11	18	5.7	81.6
6	Management and organisation	6	17	5.4	87.0
7	Innovation and change	9	13	4.1	91.1
8	Educational technology	8	11	3.5	94.6
9	Quality assurance	12	5	1.6	96.2
10	Access, equity and ethics	1	4	1.3	97.5
11	Distance teaching systems and institutions	3	4	1.3	98.8
12	Costs and benefits	7	2	0.6	99.4
13	Theories and models	4	1	0.3	99.7
14	Research methods in DE and knowledge transfer	5	1	0.3	100.0
15	Globalisation of education and cross-cultural aspects	2	0	0.0	100.0

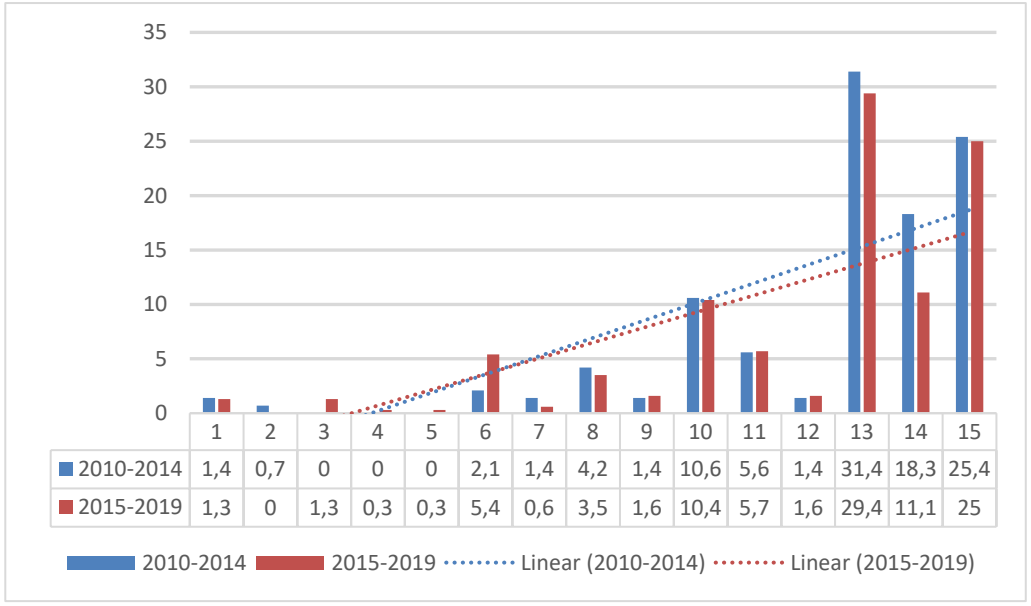
Table 4 shows that the most popular level of ODL research in period 2 in South Africa remained the micro-level, with 66% of articles published falling into this category. This is consistent with Roberts's (2016) finding that 67% of published articles in period 1 targeted this research level. During period 2, ODL published research at the meso-level increased slightly from 30% to 31%, and macro-level research remained consistent at just over 3%. This indicates that there has been little change in the level of ODL research from South African authors from period 1 to period 2. These findings indicated that the research field of ODL in South Africa remains focused at the contextual level of teaching and learning in a developing country. The authors believe that this is important and necessary, although not always of interest to academic staff in the so-called "developed" countries. Staff at HEIs in South Africa are encouraged to publish in international journals and therefore many of the South African contextually specific research articles offer little interest to the international community.

Figure 2 indicates the frequencies of each research sublevel for both periods 1 and 2. In addition, Figure 3 shows the actual number of articles published in each of these periods.

The most published sublevel in period 2 was sublevel 13, instructional design (29.4%); followed by sublevel 15, learner characteristics (25%); and sublevel 14, interaction and communication in learning communities (11.1%). This followed the same trend as the

publications in period 1, although sublevel 14 recorded a definite drop in the number of publications. This could be because there were different coders for each period, and their interpretations of the scope of the sublevel might have differed slightly.

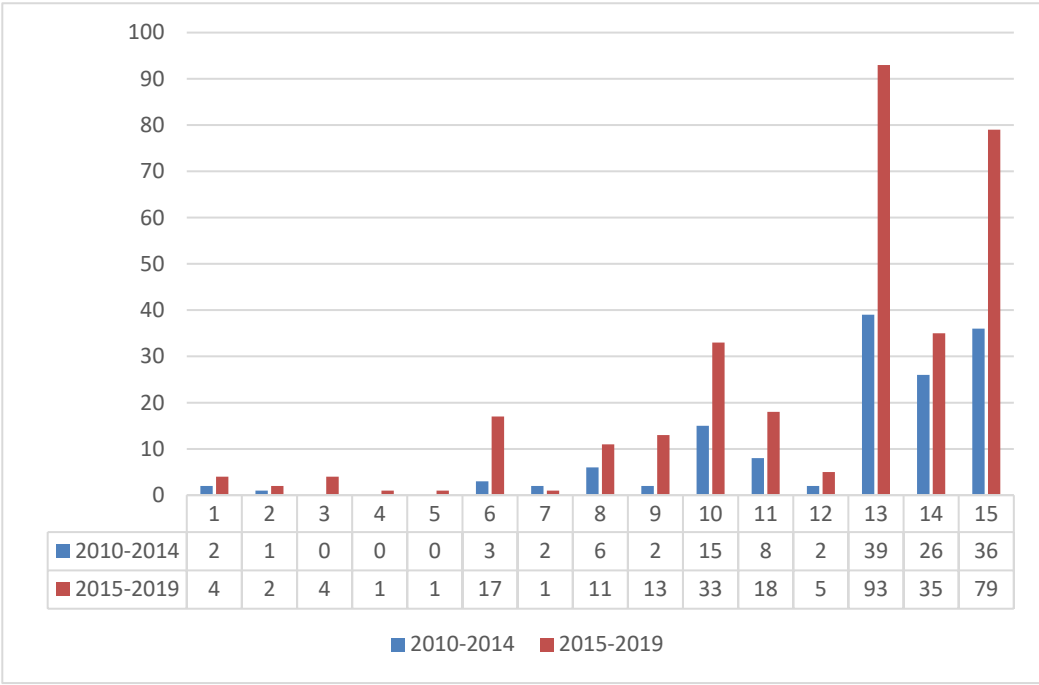
A noticeable increase in publication at sublevel six can be observed. In period 1, only 2.1% of the articles were published on management and organisation, whereas this increased to 5.4% in period 2. This translates to an increase of 14 actual articles, from three articles in period 1 to 17 articles in period 2 (see Figure 3). This trend indicates that all staff in HEIS in South Africa are being encouraged to engage in research, and that research does not only remain the domain of the academic staff.



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2010-2014	1,4	0,7	0	0	0	2,1	1,4	4,2	1,4	10,6	5,6	1,4	31,4	18,3	25,4
2015-2019	1,3	0	1,3	0,3	0,3	5,4	0,6	3,5	1,6	10,4	5,7	1,6	29,4	11,1	25

Figure 2: Comparison of period 1 and period 2 framework results by frequency

Sublevel 10, professional development and faculty support, remained a consistently significant level for South African ODL publications. According to Figure 3, the actual number of articles published increased from 15 in period 1 to 33 in period 2. Since the introduction of the 2013 White Paper, all HEIs are able to offer DE programmes, and many are providing staff development support for publication in this field. An example is Unisa, where a research niche area of professional development has been identified in the School of Human Resource Management (HRM), as well as staff and professional capacity development being one of the four research thrust areas in the Open Distance Learning Research Unit (ODLRU).



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
2010-2014	2	1	0	0	0	3	2	6	2	15	8	2	39	26	36
2015-2019	4	2	4	1	1	17	1	11	13	33	18	5	93	35	79

Figure 3: Number of ODL publications in period 1 and period 2

Learner support services (sublevel 11) have also remained a substantial area for ODL publication in South Africa. There were 18 articles published in period 2 on this sublevel, compared to eight articles in the previous period. However, it was concerning to note that the sublevels of technology and innovation decreased from period 1 to period 2. With the advancements of online learning and the development of ICT-enhanced tools for learning, it would be prudent to ensure that research at these sublevels is prioritised.

Following the international trends (Zawacki-Richter, Bäcker and Vogt 2009), the macro-level of research displayed the least number of ODL publications (see Figure 3). During period 1, there were only three published articles from the macro-level, which increased to 12 articles in period 2. Four articles on ODL theories and models (sublevel 3) were published in period 2, while there were no articles published in the previous period. For the first time, South African articles were published at the sublevels of quality assurance (sublevel 4) and access, equity and ethics (sublevel 5). Various United Nations Educational, Scientific and Cultural Organization (UNESCO) chairs on DE, multimodal learning and open educational resources have been housed at HEIs in South Africa, and it is anticipated that these will lead to an increase in macro-level research within the next few years.

The following section investigates the journals in which South African articles were published in both period 1 and period 2. Table 5 presents the acronyms for each of the journals in which the South African authors published their articles In addition, Table 5 presents the countries in which these journals were published. Figure 4 shows the number of ODL articles published in each of the journals in Table 5.

Table 5: Acronyms for journals

Acronym	**Journal title**	**Country of publication**
AER	*Africa Educational Review*	South Africa
BJET	*British Journal of Educational Technology*	United Kingdom
DE	*Distance Education*	Australia
EJEL	*Electronic Journal of e-Learning*	United Kingdom
Gender and Behaviour	*Gender and Behaviour*	South Africa
HTS	*Hervormde Teologiese Studies*	South Arica
IRRODL	*International Review of Research in Open and Distance Learning*	Canada
Mousaion	*Mousaion*	South Africa
NGS	*Journal for New Generation Sciences*	South Africa
Progressio	*South African Journal for Open and Distance Learning Practice*	South Africa
SACJ	*South African Computer Journal*	South Africa
AJHPE	*African Journal of Health Professions Education*	South Africa
SAJE	*South African Journal of Education*	South Africa
SAJHE	*South African Journal of Higher Education*	South Africa
SAJIM	*South African Journal of Information Management*	South Africa
TOJDE	*Turkish Online Journal of Distance Education*	Turkey

Figure 4 shows the journals that have published the highest number of articles authored by South African academics. It only lists those journals with four or more publications in period 2 and accounts for 187 of the 316 articles that were published in period 2. Only 51 out of these 187 (27%) articles from period 2 were published in international journals.

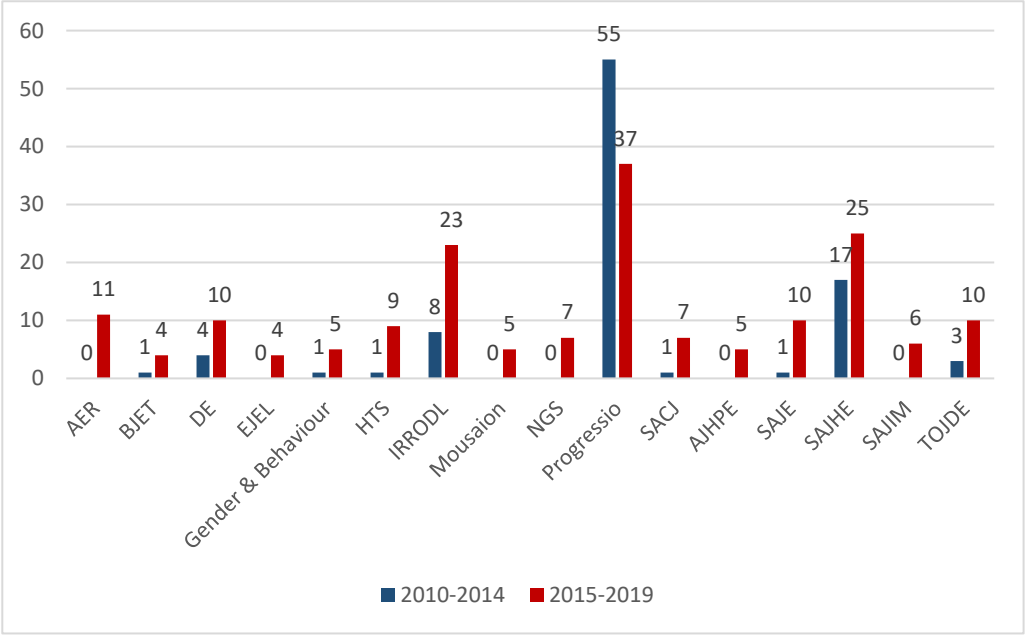


Figure 4: Number of highest publications per journal for periods 1 and 2

Figure 4 shows that there was an increase in the number of articles for all these journals, except for Progressio, a South African journal curated by Unisa. This could be attributed to the number of issues of Progressio decreasing from period 1 to period 2. The largest increase in published journal articles was in the International Review of Research in Open and Distributed Learning (IRRODL), which is a dedicated ODL journal curated by the University of Athabasca in Canada. There was a 65% increase in journal articles by South African authors between period 1 and period 2, and after Progressio, IRRODL had the most significant number of articles published by South African authors.

During period 1, there were 19 publications in the Mediterranean Journal of Social Sciences (Roberts 2016). The DHET removed this journal from its accredited list in 2016, which was the reason there were no publications in period 2. A notable increase can be seen in the new journals that have published South African ODL articles, many of which are in health, information science, engineering and computing. This shows that in addition to the traditional ODL journals, South African authors are now expanding their publication vehicles also to include other academic fields.

Table 6 provides a list of the acronyms used in figures 5 and 6 for each of the HEIs in South Africa. Figures 5 and 6 show the number of publications by South African authors from the various HEIs in South Africa.

Table 6: Acronyms for South African HEIs

Acronym	**Higher Education Institution**
CUT	Central University of Technology
CPUT	Cape Peninsula University of Technology
DUT	Durban University of Technology
Fort Hare	University of Fort Hare
NMMU	Nelson Mandela Metropolitan University
North-West	North-West University
Sol Plaatje	Sol Plaatje University
SUN	Stellenbosch University
TUT	Tshwane University of Technology
Venda	University of Venda
Zululand	University of Zululand
UCT	University of Cape Town
UFS	University of the Free State
UJ	University of Johannesburg
UKZN	University of KwaZulu-Natal
Unisa	University of South Africa
UP	University of Pretoria
VUT	Vaal University of Technology
WSU	Walter Sisulu University
UWC	University of the Western Cape
Wits	University of Witwatersrand
Other	Other HEIs

Figure 5 includes the articles authored by Unisa academics (39%) while Figure 6 excludes the Unisa articles. It indicates the increase in articles published by other HEIs.

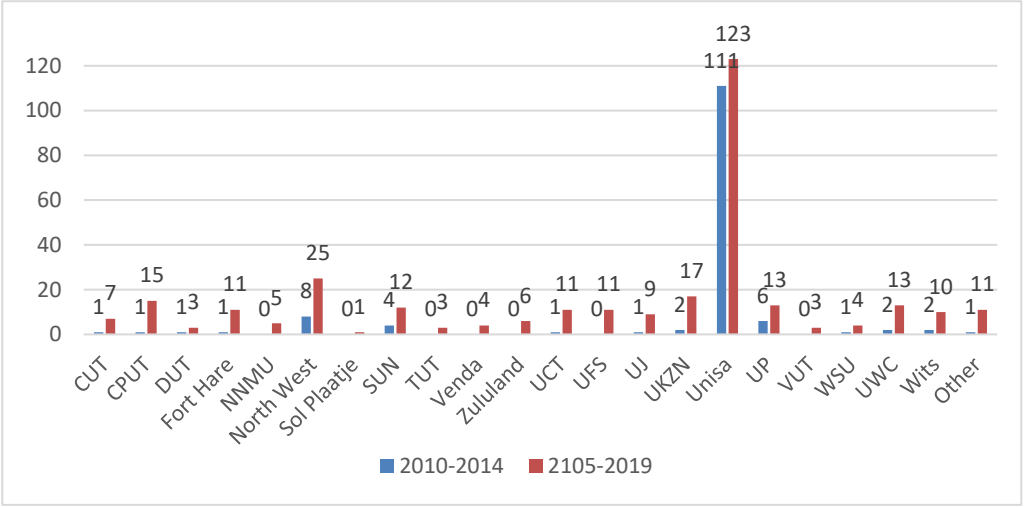
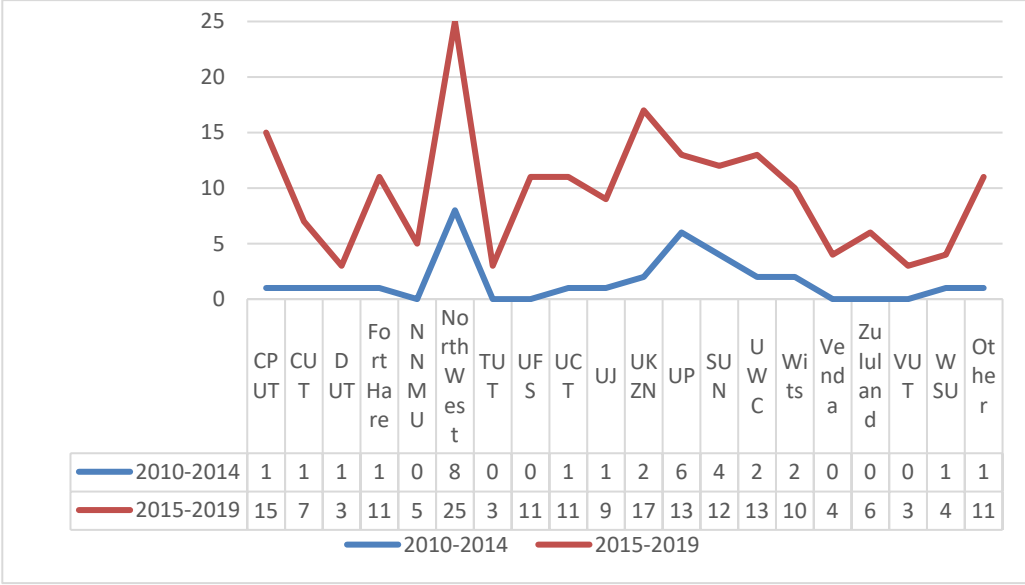


Figure 5: Total number of ODL articles published by South African authors

As shown in Figure 5, the HEI with the highest number of published articles in both period 1 and period 2 was Unisa. Unisa contributed 77% of the articles in period 1 and 39% in period 2. This can be explained by the opening of DE to all HEIs in 2014 and the move to online learning in many of these HEIs, resulting in ODL research publications increasing from HEIs other than Unisa. Figure 6 excludes Unisa publications.



	CPUT	CUT	DUT	Fort Hare	NNMU	North West	TUT	UFS	UCT	UJ	UKZN	UP	SUN	UWC	Wits	Venda	Zululand	VUT	WSU	Other
2010-2014	1	1	1	1	0	8	0	0	1	1	2	6	4	2	2	0	0	0	1	1
2015-2019	15	7	3	11	5	25	3	11	11	9	17	13	12	13	10	4	6	3	4	11

Figure 6: Number of articles by South African HEIs (excluding Unisa)

Figure 6 excludes the number of Unisa articles and indicates that all the other HEIs showed a marked uptake in ODL research publications. Although Unisa is regarded as the leading ODL institution within South Africa, it is important to observe which other HEIs are also publishing within the ODL space. It can be noted that North-West (25 publications), UKZN (17 publications) and CPUT (15 publications) follow on from Unisa in the total number of published ODL articles. Some HEIs published ODL articles for the first time in period 2 (NNMU, TUT, UFS, Fort Hare, Venda, Zululand and VUT), which is an indication of the growing interest and investment in DE by other South African HEIs.

As shown in Figure 6. Unisa was still the largest producer of ODL research in South Africa in terms of the number of articles, but the growth from period 1 to period 2 was far lower than the other HEIs. During period 2, Unisa increased its article publications by just under 10% (from 111 articles to 123 articles). Many other HEIs which have entered the DE research field since the changes in the 2013 White Paper have shown a larger percentage increase in their publications. North-West grew its DE research publications by 68% (from 8 to 25 articles), which was not only a larger percentage increase than Unisa, but also a greater absolute number of articles. Although the other HEIs published fewer articles, the upward trajectory in research outputs on DE showed a similar trend.

Conclusion

Considering that another five-year period has passed since the previous study on research levels and trends in ODL publications (Roberts 2016), the most recent data found that within the five-year period (2015–2019) there seems to have been no significant shift towards the exploration and increased publication on the major overarching themes as identified in Zawacki-Richter's (2009) framework. The authors were perhaps expecting that, due to the increased focus on ODL research in South Africa since the field of DE was expanded to include universities other than Unisa, the field would have matured in terms of research publication levels, according to Zawacki-Richter's framework. The small variance in ODL levels of publication from period 1 to period 2 could be explained by the influx of new researchers into this field. The expectation is that changes in research levels will occur in the next five-year period. This will be due to the addition of UNESCO chairs in the field of DE, multimodal learning and open educational resources, as well as the development of researchers in this relatively new field.

The data presented indicated that South African authors were prone to focus on micro-level publication processes and did not contribute extensively towards the meso- and macro-levels of research. This is consistent with the findings of Roberts (2016). Although some authors have contributed towards meso-level publication, it seems that

some sublevels are falling behind. One such sublevel involves focusing on cost and benefit procedures within the DE context.

The data in the study indicated that there still seems to be a lack of macro-level publication outputs within the most recent five-year period. However, there has been a marked increase in the number of these publications. This might be because macro-level research outputs are strongly related to higher overarching DE factors and are usually published by academics with great insight and experience within the DE context. Research processes at this level are seen as longitudinal and labour intensive in nature. Therefore, DE authors must focus on these research levels and areas to define the macro-level within their own contextually relevant African perspective. South Africa still needs to develop more specialists in the field and the introduction of UNESCO chairs in this field should contribute significantly to this in the future.

The study has highlighted that other HEIs besides Unisa are increasingly focusing on ODL research. This allows for the application, implementation, growth and research opportunities from various institutional perspectives when it comes to ODL research. The study has also highlighted other areas that are noteworthy to South African academics. Only 27% of the articles analysed in the study during period 2 were published in international journals. This was in line with the proliferation of articles published at the micro-level, which, although important in the South African context, could be perceived as irrelevant to the international community. South Africa forms part of the developing countries in the world, and as such, its ODL research must have a broader impact than just locally. The authors believe that publications in both South African and international journals are equally essential, and prospective ODL authors should consider targeting some international journals.

It is recommended that further research be carried out that includes published conference proceedings and book chapters to expand the database for analysing published South African ODL research. Further analyses of the data could include an analysis of the research designs, methodologies and depth of analysis used by South African ODL researchers. In addition, consideration should be given to developing a context-specific ODL research framework for South Africa and other developing countries.

References

Altman, D. G. 1991. *Practical Statistics for Medical Research*. London: Chapman and Hall. https://doi.org/10.1201/9780429258589

Bernard, R. M., P. C. Abrami, Y. Lou, E. Borokhovski, A. Wade, L. Wozney, P. A. Wallet, M. Fiset, and B. Huang. 2004. "How Does Distance Education Compare with Classroom Instruction? A Meta-Analysis of the Empirical Literature." *Review of Educational Research* 74 (3): 379–439. https://doi.org/10.3102/00346543074003379

Cohen, J. 1960. “A Coefficient of Agreement for Nominal Scales.” *Educational and Psychological Measurement* 20 (1): 37–46. https://doi.org/10.1177/001316446002000104

DHET (Department of Higher Education and Training). 2013. “White Paper for Post-School Education and Training.” https://www.dhet.gov.za/SiteAssets/Latest%20News/White%20paper%20for%20post-school%20education%20and%20training.pdf

DHET (Department of Higher Education and Training). 2017. “Report on the Evaluation of the 2015 Universities’ Research Output.” http://www.dhet.gov.za/Policy%20and%20Development%20Support/Report-2015-Research-Outputs-final-version.pdf

Elo, S., M. Kääriäinen, O. Kanste, T. Pölkki, K. Utriainen, and H. Kyngäs. 2014. “Qualitative Content Analysis: A Focus on Trustworthiness.” *SAGE Open* 4: 1–10. https://doi.org/10.1177/2158244014522633

Gauthier, R. F. 2018. “World Development Report 2018: Learning to Realize Education’s Promise.” World Bank. Accessed June 23, 2020. https://doi.org/10.4000/ries.6107

Krippendorff, K. 2013. *Content Analysis: An Introduction to Its Methodology*. 3rd ed. Thousand Oaks: Sage.

Lee, Y., M. P. Driscoll, and D. W. Nelson. 2006. “The Past, Present, and Future of Research in Distance Education: Results of a Content Analysis.” *Journal of Library and Information Services in Distance Learning* 2 (3): 45–61. https://doi.org/10.1300/J192v02n03_05

Perraton, H. 2000. “Rethinking the Research Agenda.” *International Review of Research in Open and Distance Learning* 1 (1): 1–11. https://doi.org/10.19173/irrodl.v1i1.5

Roberts, J. 2016. “The State of Distance Education in South Africa: An Analysis of Trends, Research Areas and Publication Vehicles.” In *Forging New Pathways of Research and Innovation in Open and Distance Learning: Reaching from the Roots – 9th EDEN Research Workshop Proceedings*, edited by A. Volungeviciene, A. Szűcs and I. Mázár, 245–263. Budapest: European Distance and E-Learning Network.

Sultana, M. A. 2019. “A Study of the Importance of Academic Research in Social Sciences and the Role of University Libraries in A.P.” *Library Philosophy and Practice* 2620. https://digitalcommons.unl.edu/libphilprac/2620

Zawacki-Richter, O. 2009. “Research Areas in Distance Education: A Delphi Study.” *International Review of Research in Open and Distance Learning* 10 (3): 1–17. https://doi.org/10.19173/irrodl.v10i3.674

Zawacki-Richter, O., E. M. Bäcker, and S. Vogt. 2009. “Review of Distance Education Research (2000 to 2008): Analysis of Research Areas, Methods, and Authorship Patterns.” *International Review of Research in Open and Distance Learning* 10 (6): 1–30. https://doi.org/10.19173/irrodl.v10i6.741

Zawacki-Richter, O., and S. Naidu. 2016. “Mapping Research Trends from 35 Years of Publications in *Distance Education*.” *Distance Education* 37 (3): 245–269. https://doi.org/10.1080/01587919.2016.1185079

Part II

Open Distance e-Learning Conceptual Chapters

Chapter 2

The Significance of Access and Equity whilst Pursuing Quality: A Framework

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Abstract

The implementation of emergency remote teaching due to Covid-19, which was declared a global pandemic in March 2020, has fast-tracked the need for transformation of online or distance learning; amplified issues of access and equity; and exposed the necessity to assure and ensure quality open distance e-learning. In identifying whether the current measures (following Covid-19 protocols) put in place were accessible to all students at the right time and establishing links regarding access equity and quality, this chapter reports on a study that applied qualitative literature and material review through the MAXQDA software program analysis method. The findings revealed that open distance e-learning is a strategy to be enhanced towards ensuring quality and credible open distance learning. Again, there is intersection and fit of access, equity and quality in distance learning as a perpetual social justice issue. Hence, there is a need to prioritise the following: Firstly, online learning and everything required to make it accessible. Secondly, making related online learning material accessible to all. Thirdly, tackling social justice issues and possible impediments to attaining quality education. Finally, relooking needy students' support and educational needs. This implies that it is essential to have online access portals within the communities which students requiring connectivity can approach for ease of learning. Lessons learnt, crucial recommendations and limitations were outlined.

Keywords: access; distance learning; equity; emergency remote teaching; quality; social justice

Introduction

There is no doubt that Covid-19, which was declared a global pandemic in March 2020, has influenced the way in which students access teaching and learning modalities at a distance and how they access learning in climates of poor economic growth, impacting access, equity issues, and the quality of education. Bates et al. (2020) attest that Covid-19 exposed inequalities in the current system globally and raised the need for accessible low-cost internet access for quality learning. These effects need to be considered in line with a growing recognition that an increased lack of service due to economic downturn, leads to affordance issues (thereby raising access problems) in an open distance e-learning (ODeL) space. The pandemic has accelerated possible long-term strategies of most higher education institutions (HEIs) towards digital transformation of education, conceivably to align with the demands of emergency remote teaching (ERT) and the need for connectivity for the benefit of most vulnerable students. The majority of HEIs were forced to come up with alternative means to continue education online with the aim of saving the 2020 academic year and averting possible long-term effects for those affected (Burgess 2020). This meant that leaders of HEIs had to redefine education provisioning towards meeting the challenges posed by the pandemic. In turn, this thrust equity and access matters to the fore (World Bank 2020), thereby causing the burden of recalibrating education delivery; changing assessment modalities; and highlighting the challenges of quality. Again, this also brought about the problem of access, inadvertently bringing equity problems back into the mainstream struggles, 27 years into democracy in South Africa and other countries globally.

The added pressures brought about by loss of income due to the consequences of the Covid-19 lockdown, have led to a greater need to access open distance learning (ODL) (Le Grange 2020). The struggles of equity and access due to the extent of economic divide are sufficiently documented (CHE 2015; Mncube and Madikizela-Madiya 2013; Notombela and Setlhodi 2021). Even though measures were devised to enable students to observe social distancing by learning fully online, owing to the pandemic protocols, some still struggled because of the inequalities that pervade South Africa (Sokhulu 2020). These inequalities are due to the digital divide caused by students' illiteracy and inability to access technology, particularly those from impoverished and rural areas. There is currently sparse research on the impact of online learning platforms over the course of the Covid-19 pandemic (Mhlanga and Moloi 2020). This brings into sharp focus the nexus between equity and access, and how they impact quality in education. The challenge for HEIs is to create a learning context that enables equal access to learning, and maintain the quality of tuition and learning, plus the assessment procedures to be followed. Lucander and Christersson (2020) declare that quality assurance promotion is important in ensuring credibility and competence, whilst safeguarding that there is equitable access to education. Hence, there is the need to reconsider the critical trio of quality, access and equity, whilst taking care of the needs of students from diverse backgrounds.

Problem Statement

The effects of growing socio-economic disparities disadvantage those students whose learning is disrupted because they lack cellphone data or other resources to connect with online platforms when the need arises. Sokhulu (2020) found that some students' learning was interrupted and curtailed because of their inability to gain access to online platforms due to cellphone data costs or financial constraints. Dichaba and Setlhodi (2017) opine that affordance problems disadvantage students from deprived backgrounds, further exposing inequalities lingering from the past apartheid dispensation and the worsening issues of access and equity temperament in South Africa. Cloete (2011) describes these disparities that arose from an unequal and divided heritage, and which violate the constitutional values of equity, access and ubuntu, and consequently raise social justice problems. Hence, the following research questions are dealt with in this chapter:

- To what extent are current measures put in place (following Covid-19 protocols) accessible to all students at the right time?
- What is the link between equity and access in relation to the provision of quality education?

This chapter reports on a study that embarked on a twofold exploration: firstly, to identify whether the current measures (meant to enable learning amid the lockdown) put in place are accessible to all students at the right time; and secondly, to establish the link between equity and access in relation to the provision of quality education. The overarching literature is delineated together with the theoretical framework underpinning the study. Then the methodology, findings, discussions, and recommendations are presented.

Conceptual Framework

An illustration of whether measures following the pandemic were equally accessible or not, and the need to uphold quality education, require understanding what access and equity entail, as they relate to the constitutional values. This section defines these concepts in order to map their meaningful conception and efficient utilisation in the current study (Adom, Hussein and Agyem 2018). This is done by exploring a large amount of literature and other material towards building a conceptual framework (Casasempere-Satorres and Vercher-Ferrándiz 2021), to highlight the connection and significance of the concepts.

Framework for the Signification of Access and Equity in Pursuance of Quality Education

The Covid-19 pandemic is but one challenge afflicting humanity the world over generally and South Africa specifically. HEIs transitioned to ERT in order to observe the social distancing demanded by the pandemic protocols and to save the 2020 academic year (Madiope and Mendy 2021; Shuma 2020), leaving those who lacked resources struggling to access online tuition and on an unequal learning "turf" (Ntombela and Setlhodi 2021). Higher education (HE) has to be equally accessible to all and is imperative in bridging the equity gap, particularly in South Africa (Letseka, Letseka and Pitsoe 2018, 122), whilst promoting the value of quality provisioning. Figure 1 illustrates the connection between achieving equity through accessible ODL and ensuring quality towards responding adequately to the constitutional values.

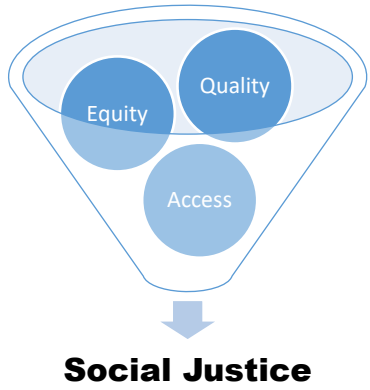

Figure 1: The nexus of access, equity and quality education as an epitome for social justice

Scott (2020) avers that fair access to HE should be carefully considered because it reflects the digital poverty as a great show of unequal student access and engagement to online learning during the pandemic and possibly any other similar occurrence. The learning gap between students from varying social backgrounds climaxes the urgency of addressing pertinent social disparities and the need to level the plane for equitable access to education. Access and equity can arguably be deemed to be two sides of the same coin, particularly in realising the availability of ODL for all. The Constitution of the Republic of South Africa Act 108 of 1996 (RSA 1996) asserts the need for effective access to education with consideration of equity (section 29(2a)) and further assures promotion and achievement of equality (section 9). HEIs are autonomous public institutions and/or private enterprises, thus they are required to uphold basic values to

which social justice, respect and equity promise ease of access (Dlodlo 2018). For the purpose of this study, it is important to understand these values through the attributes access and equity and how they relate to social justice.

Access to Education

Access refers to gaining entry to online tuition or admission to acquire education in this context. A report by Motala et al. (2007) paints a gloomy picture regarding access to education by those from exclusive zones. To this day, it remains endemic, with the pandemic freshly drawing it into the limelight. Distance education (DE) has previously been deemed most accessible to those unable to access other HEIs, but lately DE has become equally difficult to access (Ntombela and Setlhodi 2021). Some of those who have succeeded, struggle to access online tuition due to their socio-economic condition, causing them to struggle with connectivity issues (Dichaba and Setlhodi 2017), thereby hampering the idea of DE being a provision that can be accessed from anywhere online (Unisa 2008). The hardships of learning in an ODeL institution whilst battling with connectivity further threaten the possibility of students acquiring quality education to change their livelihoods (Käpplinger and Lichte 2020). Facing perpetual hardships whilst a significant amount of the state finance goes to education for those in need is unfair (Scott 2020) and a travesty of justice. This has also rendered efforts to provide access and resources for bringing about parity among students from diverse backgrounds insignificant. Variance in affordance and diverse backgrounds points to the perpetual gap in addressing inequality and counters the efforts made to eradicate unfairness and inequities in access to HE. In turn, this variance undermines the gains that birthed democracy (Tlale and Mahlo 2016) and the achievement of equity in education.

Equity in Education

Equity identifies that some people are more disadvantaged than others and intends to recompense for these injustices and socio-economic difficulties to ensure that everyone can attain the same education in this context. Campbell and Storo (1996) enunciate that equity refers to the treatment of students equally after obtaining access to education. Students from underprivileged communities need more support regarding the necessary devices and sufficient internet access to participate equally in DE. Yet, they have less access compared to their more affluent/privileged counterparts (Seale 2020), thereby creating a learning gap. Letseka, Letseka and Pitsoe (2018) aver that provision of DE in a vast socio-economical disparity undermines students' right to access education and have the opportunity for equity in DE. "Distance learning and equitable education both began with an emphasis on access, on providing underserved students with an increased access to education" (Campbell and Storo 1996, 284), in order to achieve social justice. Both equity and access are principles of social justice alongside equality and

participation (Willems 2013). When education is equally accessible measuring quality is credible and ethical and the opposite rings true. To that end, the attainment of United Nations (UN) Sustainable Development Goal 4 (SDG4): Promoting reasonable accommodation for students who are deaf and hard of hearing in open and distance and e-learning (UN 2012), which purports to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all, is inadvertently deflated. The focus in this study was on targets 4.3 and 4.5, which emphasise the need for equal access to affordable technical, vocational and higher education, and elimination of all forms of discrimination in education, respectively (The Global Goals 2015). As a consequence, a methodical approach of using relevant material to identify enablers of learning for all students to establish the correlation regarding equity and access in relation to the provision of quality education is necessary.

Methodology and Material Used

The purpose of this study was two pronged: firstly, to identify whether the measures meant to enable learning amid the lockdown were accessible to all students at the right time; and secondly, to establish the correlation regarding equity and access in relation to the provision of quality education. The study largely used the literature review method, inclusive of document analysis and conceptual analysis of ancillary sources of data, encompassing reports, recently peer-reviewed journal articles (the inclusion and exclusion criteria are specified below) policies, reports, social media comments, and other online sources. According to Mhlanga and Moloi (2020), such methodology can benefit qualitative studies, particularly in data collection related to current affairs, and in essence, for ethical reasons. Issues of online quality assurance in relation to access and equity in the era of the pandemic are developing, hence the need for sensible ethical consideration. The following material and thinking informed the methodology and evidence used in this article. Excluded from the reference list were articles that supported the study discourse and shaped the course of the discussions as captured in Table 1. All sources used for analysis purposes have been included in the reference list.

Table 1: List of sources used for analysis purposes

Material read	Quantity acquired
Journal articles	15
Policies and legislation	08
Reports	13
Webinars, TED talks and YouTube clips	07
Blogs	05
News articles, broadcasts and academic talk shows	25
University of South Africa's assessment reports compiled by the academic quality assurance and enhancement unit	45
Social media platforms of the ODeL institution under study (the institution enjoys the highest media hits "with more fans, more likes and more followers" and responses on face book, Twitter, LinkedIn within South Africa's higher education space) (Unisa 2021)	03

The data used was readily available and formed part of the outcomes of varied formal and informal processes, including reports, and therefore conveys the truths as captured, particularly over the pandemic period. The data was deemed more than sufficient for analysis (O'Leary 2014). Müller (2021) advises that using available data (previously coded) that the researcher cannot influence or control, as in this context, requires the use of visual tools for analysis because they enable thematic configuration of data. This study used the MAXQDA software program visual tools to analyse process-generated data. MAXQDA is a registered trademark of VERBI Software used for analysing data (Gizzi and Rädiker 2021). It provides an interactive correlation of data and processing documents portrait by connecting discovered pattern frequencies to give a holistic perspective.

The data presented in Table 1 had varying content per page and paragraph. Only the content linked to equity, access and quality (EAQ) in education, relating to Covid-19, in line with the concept's attributes, were considered analytical units and thus deemed material for analysis. All the sources whose content was analysed through MAXQDA are included in the reference list. The social media comments were cut and pasted according to the EAQ concepts over the pandemic. The objective of the study was: firstly, to identify whether the current measures (following Covid-19 protocols) put in place were accessible to all students at the right time; and secondly, to establish the correlation regarding equity and access in relation to the provision of quality education. The relevant documents were arranged according to content related to equity and access in order to determine how these influenced quality, respectively.

The documents bearing relevant text were split into three groups labelled according to EAQ, using the code memo function, thereby enabling a thorough analysis of EAQ through crosstab from the system menu, and yielding different colour encryption in each case (Müller 2021). Through the frequent analysis process of co-occurrence of cryptograms, to ensure trustworthiness (Gizzi and Harm 2021), the process yielded the

following themes which are represented by the concept's attributes informing the themes:

- Socio-economic inequalities – disadvantages, vulnerable, financial pressure, poor, unfair, unemployment, government support, justice, high costs, delays in support, frustrations, deprived, participation
- Online learning as the now strategy – online teaching, learning, assessment, access, data, ICT devices, bend-with/ connectivity, inability to keep track
- Quality matters – credibility of assessment, student support, policy compliance, meeting set standards, reviews, monitoring

Results and Discussion

The analysis process yielded three main themes that are represented by the concept's attributes, which point directly to the issues informing the themes. The concepts form part of the MAXQDA word combinations and phrases applied with the analytical tools used, as discussed above. Casasempere-Satorres and Vercher-Ferrándiz (2021) suggest that word combinations are efficient in exploring large amounts of literature and text information to build a conceptual framework and analytical themes.

Socio-Economic Inequalities

The socio-economic concepts' attributes yielded through the analysis process, revealed that students from deprived environments were the most vulnerable and disadvantaged by ERT due to the Covid-19 protocols (Bates et al. 2020; Bonal and González 2020; Käpplinger and Lichte 2020; Le Grange 2020). Students from these underprivileged backgrounds have a socio-economic standing, which compromised their ability to measure well with those who can afford the necessary commodities, resulting into those who soldiered on with their studies largely disadvantaged (Le Grange 2020; World Bank 2020). Paterson (2021) confirms that students who relied on the university resources and vulnerable HEIs were disadvantaged, further making it difficult for such institutions and students to cope with the ERT process. Further exacerbating the situation of those already affected by inequitable provision (ICFE 2021), including those who could not afford the migration to ERT and learning whilst awaiting support from their institutions. Access and support remain complicatedly dependent on external sources (Opoku 2020). This inadvertently increased the prevailing gap between the "have and have nots" (Bonal and González 2020). Social media expressions verbalised frustrations from those affected, for eample, "It's like we're punished for being poor"

from a Twitter comment, and "It's *a luta continua* for the poor …" meaning, the struggle continues for the poor, from a Facebook comment with 23.7 000 likes and 5 698 comments. Students benefitting from the National Student Financial Aid Scheme (NSFAS) bursaries in South Africa were mostly affected, forcing the government to reprioritise money in favour of the fund (Koornhof 2020). That students struggle to access timeous education, and feel left out, suggests the continuous imbalance of access to learning and perpetual equity divide that vexes the needy.

Ashman (2015) argues that all students, irrespective of their backgrounds and locations, should have learning opportunities to them. The delays in delivery of learning resources and provision of data meant that needy students, forfeited ERT and were unable to access online material, particularly at the initial rollout of support during Covid-19 (Hedding et al. 2020). This further caused distress to those affected. Women were additionally disadvantaged because of additional responsibilities such as taking care of their families among others (Käpplinger and Lichte 2020). Resultantly, the gender inequity unintentionally holding them back, because of the pandemic. Education is seen as an investment for a productive society (Green et al. 2021). However, adversities like these, will perpetually render underprivileged societies unproductive. Thereby portraying the hallmark of an unequal society and the dire urgency for HEIs, particularly ODeL institutions, to streamline online learning, and make it accessible to all students. It is therefore essential to equitably prioritise students' needs towards espousing justice and transacting good to humanity.

Online Learning as the Now Strategy

Covid-19 has exposed that the need for leaders in HEIs to realise that online learning is a priority for now and thus has to be accessible for all students. Considering strategies when providing ICT devices and reliable connectivity is crucial Letseka, Letseka and Pitsoe (2018) suggest that ODeL institutions in their nature offer online tuition and should therefore make it accessible for all students. Making any other matter take precedence over online learning during Covid-19, or any extraordinary circumstances beyond students' control, suggests that institutions have not grasped the reality of current transformation in education. Koornhof (2020) submits that some universities have instead prioritised the pandemic itself, arguably instead of the students, who are central to these institutions' existence and financial stability. Inexorably, this is a situation of missed opportunity to tackle inequality and misfortune of access to online learning due to lack of ICT devices and data. Thereby going against own and government policy grain in relation to enabling access to education by all students. Sokhulu (2020) opines that technology that enables distance learning, is a formidable asset, and a great source of advancement that could redress of equity gap. Hence, universities, particularly ODeL institutions, should ensure that all students are afforded equitable opportunities to learn.

The intention to bring about equity and equality, and close the gap through education is therefore thwarted when some students are unable to access education (Green et al. 2021). Dichaba and Setlhodi (2017) found that affordance was the main cause for needy students who struggled to access new technologies and data, which maintained the status quo between those from deprived environments. It further perpetuates inequalities because students who do not have sufficient financial means, continue to be disadvantaged and distressed. This was the case during the lockdown, hence an alarm was raised in the sources and social media platforms searched in this study (Green et al. 2021; Koornhof 2020; Opoku 2020). Ng'ambi and Bozalek (2013) suggest that knowing institution-wide latest technologies within HEIs marks critical realisation to prioritise technology by those leading and acceptance of new technologies. Even though there are efforts to intensify accessing online learning through partnerships with mobile companies, and the use of various 4IR tools, those who should be benefitting more seem to be the most disadvantaged, given challenges such as continued connectivity and poor bandwidth, availability of data, and suitable ICT devices. Dwolatzky and Harris (2020) reported that connectivity data cost was a problem even for those having internet, as well as lack of suitable devices and digital acumen during the lockdown, which resulted in a large learning disparity. Scott (2020) maintains that digital illiteracy itself signifies incongruence and raises stark gap between those who can afford data and those who cannot. Affordance in this context refers to the acquisition of both ICT skills and data, compounded by the protocols imposed during the pandemic. Setbacks like these can unintentionally have a huge impact on the quality of education and academic success.

Quality Matters

According to Gustafsson and Deliwe (2020), trends in South Africa reveal that the quality of education has been adversely affected by the pandemic, with some students having missed out on online learning opportunities due to other socio-economic issues. Even though some of these students may have progressed to the next level of their education, the knowledge gap caused by missing out on their learning raises a concern on the quality of their assessment results. Most sources consulted for this study attest to the possible gaps due to the abrupt transitioning to online learning and determination to save the academic year (Cloete 2020; Dipa 2020; Karrim and Mitchley 2020; Mahope 2020; Mbolekwa 2020; Shoba 2020; UNICEF 2021), albeit HEIs were required to submit plans towards saving the academic year (Mapulane 2020). Baijnath (2018) suggests that HEIs in South Africa have to provide quality education to ensure that students do not lag behind. Hence, there is a need to prioritise support for students to ascertain those issues of offering quality HE, particularly in DE spaces, are addressed to adequately mitigate against problems that may erupt due to issues arising from the pandemic (Madiope and Mendy 2021). Provision of support entails taking authentic steps to strengthen distance learning to maintain credible offering (Dipa 2020). The university under study has a platform termed MyUnisa for students and lecturers to engage in discussions. Thus, online engagements were intensified to ensure optimal use

of the platform and ascertain that students were adequately supported and prepared for online assessment (Unisa 2020). Recorded lessons through the use of Tippy tubes, as part of asynchronous learning within the College of Education (CEDU), were used and students could freely access the learning material to prepare for their online assessment, which was deemed successful and credible (Mahope 2020).

However, students who could not access online material or struggled with weak internet connections were disadvantaged as they could not prepare adequately nor complete and submit their assessment online (AQAE Reports 2020). This meant that students had to either apply for supplementary assessment or defer their assessment to the following semester (Shuma 2020), further disadvantaging those who require help most. Stringent quality measures were followed to ascertain quality assessment, even though there were media concerns of possible irregularities, however the examination format adopted ensured that quality assessment was maintained through plagiarism tools and virtual proctoring (Mahope 2020), with staff working from home and beyond normal working hours to ensure credibility of online assessment (Shuma 2020). Comments from various social media platforms and the media, confirmed that it was not possible for students to engage in irregularities even though they were assessed remotely (Fengu 2020). "With all the anxiety and the stress … with Covid-19 I'm … best is good enough" (Shuma 2020, n.p.). Other students said: "It's literally setting us up for failure" (Govender 2020), thus, dismally failing to advance social justice, and redress equity issues (Letseka, Letseka and Pitsoe 2018, 127).

Lessons Learnt

The most valuable lesson learnt was a sense-making process of the rich data available about the pandemic, and the thrusting of online learning into the limelight, thereby changing the course of education provisioning in HE. This included fostering the refinement of practices in an ODeL institution, whilst making an effort to ensure online access for all students, cognisant of equality issues and assuring quality online provisioning and assessment. Thus, there is a need for self-determination to deepen the ongoing retrospective data about the pandemic plus the existential gaps as universities grapple with congruence in online offerings. Another lesson learnt was the ability for HEIs and students to step-up and adapt when the need arose, creating an opportunity for HEIs to learn from others, particularly those whose transition to online provisioning and assessment was less disruptive, and with sound quality measures. Documenting these good practices can offer invaluable lessons for similar occurrences in future. Lastly, the equality agenda, expressed in various policies, documents and reports, remains a tall order due to persistent class divide, and perpetual social injustices, as the HE sector grapple with the transformation project. Perhaps making additional mandatory transformational projects can afford universities an opportunity to foster communities

of practice and collaboration, rather than competition, to advance quality HE in South Africa.

Recommendations

There is a need to provide comprehensive connection centres, within needy communities, to enhance eLearning as well as inculcate a learning culture for self-regulation and pacing of own learning, particularly when HEIs are inaccessible. Hence, there is a need for a policy to regulate the creation and operations of these learning centres.

Limitations of the Study

Unfavourable conditions disadvantaged an in-depth study on the topic, resulting in the data of other researchers being used. This may not have adequately covered the AEQ. With the pandemic "normalised", and experiences gained, an empirical study could provide further lessons in relation to the inclusion of students from diverse backgrounds as well as maintaining the balance between access, equity and quality, given that these issues continue to pervade practices in an ODeL institution.

Conclusion

Perpetual hardships whilst a significant amount of the state government goes to education for relief to those in need is unfair (Scott 2020) and a travesty of justice. The objective of this study was to identify whether the current measures (following Covid-19 protocols) put in place were accessible to all students at the right time; and further, to establish the correlation regarding equity and access in relation to quality.

The interplay of access, equity and quality brought about by the implementation of ERT in response to the pandemic protocols, resuscitated issues of social justice in DE overall. Access to ERT during the pandemic was problematic for students from disadvantaged backgrounds, highlighting equity concerns and exposing the limitations these might bring in assuring quality education. The conceptual framework was presented to define relevant variables and their relationship in relation to ERT. A qualitative methodology was employed, and the MAXQDA visual analysis tool was employed by analysing the literature reviewed in this study. The concepts "access", "equity" and "quality" raised social justice issues and possible impediments in attaining quality education; thereby raising a red flag to the provision of quality education for all.

This chapter recommends that DE requires leaders to prioritise the following: Firstly, online learning and everything required to make it accessible. Secondly, making related online learning material accessible to all. Thirdly, tackling social justice issues and possible impediments to attaining quality education. Finally, relooking needy students' support and educational needs.

References

Adom, D., Hussein, E. K. and Agyem, J. A. 2018. "Theoretical and Conceptual Framework: Mandatory Ingredients of a Quality Research." *International Journal of Scientific Research* 7 (1): 438–441.

AQAE (Academic Quality Assurance and Enhancement) Reports – Examination Module Reports. 2020. "May/June Online Assessment: Checking and Fixing Online Exams' Issues (Complaints) on the Same Day." Academic Quality Assurance and Enhancement Directorate: University of South Africa. 25 May 2020–6 July 2020

Ashman, A. 2015. *Education for Inclusion and Diversity*. Melbourne: Pearson.

Baijnath, N. 2018. "Learning for Development in the Context of South Africa: Considerations for Open Education Resources in Improving Higher Education Outcomes." *Journal of Learning for Development* 5 (2): 87–100. https://doi.org/10.56059/jl4d.v5i2.299

Bates L. C., G. Zieff, K. Stanford, J. B. Moore, Z. Y. Kerr, E. D. Hanson, B. Barone Gibbs, C. E. Kline, and L. Stoner L. 2020. "COVID-19 Impact on Behaviors across the 24-Hour Day in Children and Adolescents: Physical Activity, Sedentary Behavior, and Sleep." *Children* (Basel) 7 (9): 138. https://doi.org/10.3390/children7090138

Bonal, X., and S. González. 2020. "The Impact of Lockdown on the Learning Gap: Family and School Divisions in Times of Crisis." *International Review of Education* 66: 635–655. https://doi.org/10.1007/s11159-020-09860-z

Burgess, S. (2020). "How Should We Help the Covid-19 Cohorts Make Up the Learning Loss from Lockdown?" Vox EU. Accessed February 22, 2020. https://cepr.org/voxeu/columns/how-we-should-deal-lockdown-learning-loss-englands-schools

Campbell, P. and Storo, J. 1996. "Reducing the Distance: Equity Issues in Distance Learning in Public Education." *Journal of Science Education and Technology* 5 (4): 284–295. https://doi.org/10.1007/BF01677125

Casasempere-Satorres, M. and Vercher-Ferrándiz, M. 2021. "Using MAXQDA for Bibliographic Documentary Analysis: Combining Automatic and Manual Procedures Within a Literature Review. In *The Practice of Qualitative Data Analysis Research: Examples Using MAXQDA*, edited by M. C. Gizzi and S. Rädiker, 149–167. 1st ed. Berlin: MAXQDA Press.

CHE (Council on Higher Education). 2015. "Transformation in Higher Education." Discussion Paper presented at the 2nd National Higher Education Summit, Durban, October 15–17.

Cloete, J. 2020. "SA Universities Are Failing to Meet the Challenges of Teaching during the COVID-19 Lockdown." *Daily Maverick*, 9 April. https://www.dailymaverick.co.za/opinionista/2020-04-09-sa-universities-are-failing-to-meet-the-challenges-of-teaching-during-the-covid-19-lockdown/

Cloete, N. 2011. “New South African Realities.” In *Transformation in Higher Education: Global Pressures and Local Realities in South Africa*, edited by N. Cloete, R. Fehnel, P. A. M. Maasen. I. A. Moja, H. Perold and T. Gibbon, 269–288. 2nd ed. Dordrecht: Kluwer Academic. https://doi.org/10.1007/1-4020-4006-7_22

Dichaba, M., and I. Setlhodi. 2017. “Understanding Students’ Affordances of new Media Technologies in Open Distance Learning at UNISA.” Paper presented at the South Africa International Conference on Educational Technologies, Pretoria, April 24–26.

Dipa, K. 2020. “Covid-19 Presents Curricula Crunch for SA’s Universities.” *Saturday Star*, April 27. https://www.iol.co.za/saturday-star/news/covid-19-presents-curricula-crunch-for-sas-universities-47191206

Dlodlo, A. 2018. “Building a Value-Driven Public Service through Ethical Leadership for Service Delivery.” Speech presented at the launch of the Constitutional Values and Principles (CVPs), Z. K. Matthews Hall, University of South Africa, September 20.

Dwolatzky, B., and M. Harris. 2020. “SA Education: A National Reset Is Needed and Mass Internet Access Is the Only Way Forward.” *Daily Maverick*, July 02. https://www.dailymaverick.co.za/article/2020-07-02-sa-education-a-national-reset-is-needed-and-mass-internet-access-is-the-only-way-forward/

Fengu, M. 2020. “Unisa Students Unhappy with Online Exams.” *City Press*. May 08. https://www.news24.com/citypress/news/unisa-students-unhappy-with-online-exams-20200511

Gizzi, M. C., and A. Harm. 2021. “Using MAXQDA from Literature Review to Analyzing Coded Data: Following a Systematic Process in Student Research.” In *The Practice of Qualitative Data Analysis Research: Examples Using MAXQDA*, edited by M. C. Gizzi and S. Rädiker, 71–88. 1st ed. Berlin: MAXQDA Press.

Gizzi, M. C., and S. Rädiker. 2021. *The Practice of Qualitative Data Analysis Research: Examples Using MAXQDA*. 1st ed. Berlin: MAXQDA Press.

Govender, P. 2020. “‘It’s Literally Setting Us Up For Failure’: Students Fury at Online Exam Dates.” *Sunday Times*, October 8. https://www.timeslive.co.za/sunday-times-daily/news/2020-10-08-its-literally-setting-us-up-for-failure-students-fury-at-unisa-exam-dates/

Green, C., Mynhier, L., Banfill, J. Edwards, P., Kim, J. and Desjardins, R. 2021. “Preparing education for the crises of tomorrow: A framework for adaptability.” *International Review of Education* 66:857–879. https://doi.org/10.1007/s11159-020-09878-3

Gustafsson, M., and C. N. Deliwe. 2020. “How is the COVID-19 Pandemic Affecting Educational Quality in South Africa? Evidence to Date and Future Risks.” WP23/2020. Accessed February 22, 2020. https://cramsurvey.org/wp-content/uploads/2020/07/Gustafsson.-Nuga.-How-is-the-COVID-19-pandemic-affecting-educational-quality-in-South-Africa_-1.pdf

Hedding, D. W., M. Greve, G. D. Breetzke, W. Nel, and B. jansen van Vuuren. 2020. “COVID-19 and the Academe in South Africa: Not Business as Usual.” *South African Journal of Science* 116 (7/8): a8298. https://doi.org/10.17159/sajs.2020/8298

ICFE (International Commission of the Futures of Education). 2021. “Reimagining Our Futures Together: A New Social Contract for Education.” UNESCO. Accessed January 25, 2020. https://unesdoc.unesco.org/ark:/48223/pf0000379707.locale=en

Käpplinger, B., and N. Lichte. 2020. "'The Lockdown of Physical Co-operation Touches the Heart of Adult Education': A Delphi Study on Immediate and Expected Effects of COVID-19." *International Review of Education* 66: 777–795. https://doi.org/10.1007/s11159-020-09871-w

Karrim, A., and A. Mitchley. 2020. "Some Varsities Shut Doors, Others Wait, Following Ramaphosa's Address." *News24*, March 16. https://www.news24.com/news24/southafrica/news/coronavirus-some-varsities-shut-doors-others-wait-following-ramaphosas-address-20200316

Koornhof, C. 2020. "OPINION | Covid-19: The Impact on Universities and How Their Business Models Need to Flexible." *News24*, October 9. https://www.news24.com/news24/columnists/guestcolumn/opinion-covid-19-the-impact-on-universities-and-how-their-business-models-need-to-flexible-20201009

Le Grange, L. 2020. "Covid-19 Pandemic and the Prospects of Education in South Africa." *Prospects* 31: 425–436. https://doi.org/10.1007/s11125-020-09514-w

Letseka, M., M. M. Letseka, and V. Pitsoe. 2018. "The Challenge of E-Learning in South Africa", 121–138. https://doi.org/10.5772/intechopen.74843

Lucander, H., and C. Christersson. 2020. "Engagement for Quality Development in Higher Education: A Process for Quality Assurance of Assessment." *Quality in Higher Education* 26 (2): 135–155. https://doi.org/10.1080/13538322.2020.1761008

Madiope, M., and J. Mendy. 2021. "Analysis of Current Trends in Distance Education during COVID-19: A South African Higher Education Context." *Online Journal of Distance Education and e-Learning* 9 (1): 1–7.

Mahope, R. 2020." "No Online Exam Cheating, Says Unisa." Pretoria Rekord, May 20. https://rekord.co.za/339073/no-online-exam-cheating-says-unisa/

Mapulane, P. 2020. "COVID-19 Response: University & TVET Plans for 2020 Academic DSI Work on COVID-19 with Minister." Higher Education, Science and Innovation. Accessed February 22, 2020. https://pmg.org.za/committee-meeting/30102/

Mbolekwa, S. A. 2020. "Universities Consider Reconfiguring Academic Year to Match that of Northern Hemisphere." *Sunday Times*, April 6. https://www.timeslive.co.za/news/south-africa/2020-04-06-covid-19--universities-consider-reconfiguring-academic-year-to-match-that-of-northern-hemisphere/

Mhlanga, D., and T. Moloi. 2020. "COVID-19 and the Digital Transformation of Education: What Are We Learning on 4IR in South Africa?" *Education Sciences* 10 (7): 180. https://doi.org/10.3390/educsci10070180

Mncube, V. S., and N. Madikizela-Madiya. 2013. "South Africa: Educational Reform – Curriculum, Governance and Teacher Education." In *Education in Southern Africa*, edited by C. Harber, 165–188. London: Bloomsbury. https://doi.org/10.5040/9781472544476.ch-007

Motala, S., V. Dieltiens, N. Carrim, P. Kgobe, G. Moyo, and S. Rembe. 2007. *Educational Access in South Africa: Country Analytic Report*. Brighton: Consortium for Research on Educational Access, Transitions and Equity (CREATE).

Müller, A. 2021. "An Example with Historical Legal Documents." In *The Practice of Qualitative Data Analysis Research: Examples Using MAXQDA*, edited by M. C. Gizzi and S. Rädiker, 55–70. 1st ed. Berlin: MAXQDA Press.

Ntombela, S., and I. I. Setlhodi. 2021. “Transformation and Social Justice in South African Higher Education: An Unequal Turf.” In Research Anthology on Instilling Social Justice in the Classroom, edited by Information Resources Management Association (IRMA), 1248–1262. https://doi.org/10.4018/978-1-7998-7706-6

O’Leary, Z. 2014. *The Essential Guide to Doing Your Research Project*. 2nd ed. Thousand Oaks: Sage.

Opoku, M. P. 2020. “Inclusive Education without Resources: A Policy Approach for Sub-Saharan Africa.” In *Developing Teaching and Learning in Africa: Decolonising Perspectives*, edited by V. Msila, 59–74. Stellenbosch: SUN PReSS. https://doi.org/10.18820/9781928480716/04

Paterson, M. 2021. “COVID-19 And Higher Education: Damage Done, Lessons Learnt.” *University World News: Africa Edition*. April 12, 2021. https://www.universityworldnews.com/post.php?story=20210211103422612

RSA (Republic of South Africa). 1996. “The Constitution of the Republic of South Africa.” https://www.gov.za/sites/default/files/images/a108-96.pdf

Scott, P. 2020. “The Impact of Covid-19 on Fair Access to Higher Education.” Report by the Commissioner for Fair Access. Accessed February 22, 2020. https://www.gov.scot/binaries/content/documents/govscot/publications/progress-report/2020/12/impact-covid-19-fair-access-higher-education2/documents/impact-covid-19-fair-access-higher-education/govscot%3Adocument/impact-covid-19-fair-access-higher-education.pdf

Seale, C. 2020. “Distance Learning during the Coronavirus Pandemic: Equity and Access Questions for School Leaders.” *Forbes*, March 17. https://www.forbes.com/sites/colinseale/2020/03/17/distance-learning-during-the-coronavirus-pandemic-equity-and-access-questions-for-school-leaders/?sh=34d015211d4d

Shoba, S. 2020. “Universities Gear Up to Save the Academic Year.” *Daily Maverick*, April 17. https://www.dailymaverick.co.za/article/2020-04-17-universities-gear-up-to-save-the-academic-year/

Shuma, P. 2020. “UNISA Conducts Online Exams for First Time Ever, Some Students Feel Overwhelmed.” South African Broadcasting Cooperation (SABC), May 29. https://www.sabcnews.com/sabcnews/unisa-conducts-online-exams-for-first-time-ever-some-students-feel-overwhelmed

Sokhulu, L. H. 2020. “Students’ Experiences of Using Digital Technologies to Address Their Personal Research Needs during the COVID-19 Lockdown.” *African Identities* 19 (4): 436–452. https://doi.org/10.1080/14725843.2020.1801384

The Global Goals. 2015. “4 Quality Education.” Accessed February 22, 2020. https://www.globalgoals.org/goals/4-quality-education/

Tlale, D., and D. Mahlo. 2016. “Inclusive Education and Ubuntu in Open and Distance Education.” In *Open Distance Learning (ODL) through the Philosophy of Ubuntu*, edited by M. Letseka, 163–174. New York: Nova.

UN (United Nations). 2012. “Transforming Our World: The 2030 Agenda for Sustainable Development.” https://sdgs.un.org/2030agenda

UNICEF (United Nations Children’s Fund). 2021. “Learners in South Africa Up to One School Year Behind Where They Should Be”. Press Release, July 22. https://www.unicef.org/press-releases/learners-south-africa-one-school-year-behind-where-they-should-be

Unisa (University of South Africa). 2008. *Open Distance Learning Policy*. Pretoria: Unisa Press.
Unisa (University of South Africa). 2020. "Connect Online." Accessed February 22, 2020. https://www.unisa.ac.za/sites/myunisa/default/Study-@-Unisa/Prepare-for-study-success/Connect-online
Unisa (University of South Africa). 2021. *Unisa Media Strategy*. Pretoria: Unisa Press.
Willems, J. 2013. "Equity in Distance Education." In *Global Challenges and Perspectives in Blended and Distance Education*, edited by J. Willems, B. Tynan and R. James, 17–34. Hershey: IGI Global. https://doi.org/10.4018/978-1-4666-3978-2.ch002
World Bank. 2020. "The World Bank Education Global Practice. Guidance Note: Remote Learning & COVID-19." World Bank. Accessed February 22, 2020. https://documents1.worldbank.org/curated/en/531681585957264427/pdf/Guidance-Note-on-Remote-Learning-and-COVID-19.pdf

Chapter 3

Operationalising the Transformative Research Paradigm towards Sustainable Development Goal 4

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Abstract

Due to the world's rapid change, students in higher education in developing countries continue to experience difficulties in receiving adequate student support services. One of the groups most impacted appears to be students who are deaf and hard of hearing in open distance e-learning contexts. If these challenges are not addressed, open distance e-learning universities may have a lower contribution to the United Nations Sustainable Development Goal 4, which is the education goal. This chapter argues how the transformative research paradigm may be operationalised to accelerate the response to Sustainable Development Goal 4. Firstly, the transformative and emancipatory standpoint suggests theories like critical disability theory and transactional distance theory and discusses their relevance in promoting scholarship for deafhood in open distance e-learning to inform practice. Secondly, it highlights the transformative assumptions on ontology, epistemology, axiology and methodology which are often ignored when developing deafhood and general disability interventions. This chapter reports on a study that evaluated the existing student support framework at an open distance e-learning university in South Africa. The study used transformative mixed methods research where the explanatory sequential design ensured quantitative data collection from 105 students who are deaf and hard of hearing and 118 staff members at an open distance e-learning university as well as qualitative data from five students who are deaf and hard of hearing and eight staff members. The study results showed that student support services were neither inclusive, efficient, nor available to students who are deaf and hard of hearing. A student support framework was developed from integrating the results and findings considering the

philosophical foundation and assumptions, theoretical framework and Sustainable Development Goal 4 targets.

Keywords: deaf; hard of hearing; open distance e-learning; student support services; transformative research paradigm; transformative mixed methods research

Introduction

The landscape of higher education (HE) globally is beset with several challenges resulting from uncertainty in the economy, globalisation, and developing technologies that are difficult to understand and use (Waller et al. 2019). Lack of the provision of student support services (SSS) for students who are deaf and hard of hearing (SDHH) continues to plague the HE system in developing countries like South Africa, especially in the context of open distance e-learning (ODeL).

Magongwa (2010) deliberates on the findings of the Deaf Federation of South Africa (DeafSA) and states that the limited access to and exclusion of SDHH from quality education results in one out of three deaf people functioning only to a degree of full literacy. Thus, it can be deduced that as a result of the disempowering educational experiences, deaf adults may not easily be integrated into mainstream society (DeafSA 2009).

DeafSA (2009) further notes that while a limited number of SDHH enter higher education institutions (HEIs) in South Africa, there seem to be fewer opportunities and reasonable accommodations to retain those who are already registered which results in a higher unemployment rate among deaf people in South Africa. Accommodations are provided to ensure that deaf people are able to fully access all the experiences and activities offered. Most SDHH may be inadequately prepared for HE and their desired profession after leaving high school. Thus, in the "hearing world", they experience communication and socio-emotional adjustment difficulties.

In a study which set out to determine the level of inclusion of deaf students in HE, Skrebneva (2015) found that deafness and hearing loss are often overlooked or even underestimated in the extent of their effect which brings forth several challenges regarding SSS that address the special needs of SDHH. The reasonable accommodations in place do not seem to redress the daily challenges faced by SDHH at an ODeL institution despite the policies and legislatures in place. Recent evidence suggests that communication access and cultural identity are major factors that impact the successful inclusion of SDHH (Silvestri and Hartman 2022).

While there seems to be increased access for SDHH to study at an ODeL university in South Africa, this has come with several inclusion, integrational and transformational

challenges. Deaf prospective students continue to encounter problems as they want to be admitted to HEIs (DeafSA 2016). SDHH tend to experience negative learning practices after admission because of the obstacles they encounter through the teaching and learning process, before graduation and beyond Matjila (2018).

HEIs in South Africa, notably the University of South Africa (Unisa), have several policies, such as: a diversity policy; a policy for students with disabilities; as well as communication and language policies which seek to accommodate the special needs of SDHH. Nonetheless, there is little evidence of the effective adoption of disability programmes, such as the lack of an implementation plan following the approval of a policy for students with disabilities to better support SDHH. Mutanga (2017) draws a picture of the legacy of exclusion of students with disabilities at all levels of education during apartheid; however, he also highlights the failure upon promulgation of the White Paper for Post-School Education and Training (DHET 2013), which was intended to promote access issues for students with special needs.

The presumption that the incorporation of these policies, centred on inclusive education, ensures equal rights, resources, and access to education, reveals unfamiliarity with the experiences of SDHH in an inclusive educational setting. Evidence shows that SDHH continue to encounter daily difficulties due to a variety of factors, such as a lack of funding; a lack of access to support services; a lack of knowledge of deaf culture; and a shortage of available qualified sign language interpreters (Bell and Swart 2018; Matjila 2023).

These limited reasonable accommodations are ongoing despite the government having gazetted amendments to the Constitution of the Republic of South Africa Act, 108 of 1996 (RSA 1996) to include South African Sign Language (SASL) as the country's 12th official language. The Constitutional Review Committee suggested in 2017 that SASL be added to the list of official languages (Department of Justice and Constitutional Development 2022). Following the approval of the Constitution 18th Amendment Bill (RSA 2021), requests for public feedback on the amendment that would make SASL an official language were made. While the law has been effectively implemented in lower primary and high schools, where SASL is one of the required subjects, HE education has yet to do so in order to ensure that deaf matriculants have an easy transition (Umalusi 2018).

The highlighted problems seem to contribute to the slow progress in responding to the achievement of SDG 4 (UN 2012). This notion is supported by Ntombela and Mngomezulu (2018) who highlight the perspectives on the inclusion challenges and the lack of student support frameworks in HE spaces. Failure to address the challenges faced by SDHH at ODeL institutions will decelerate the national imperative in responding to the South African National Development Plan (NDP) 2030 (Department of Social Development 2015), which in turn feeds into the United Nations (UN) SDGs, specifically SDG 4 (UN 2012).

In response to SDG 4, this chapter makes the case that the transformative research paradigm can be operationalised to provide reasonable accommodations for SDHH in an ODeL institution.

Transformative Underpinnings and Perspectives

Considering the foregoing highlighted developments, this chapter seeks to initiate discussion on research about the provision of student support in ODeL and the level of inclusion in line with SDG 4. The current study attempted to operationalise the transformative research paradigm by evaluating student support services (SSS) to establish if the provision thereof was in line with and contributed to the legislature as well as SDG 4.

Rembis (2019) argues that not a lot of attention is paid to the marginalisation of minorities in cultures. The transformative research paradigm evolved as a result of the need to address the flaws of the two prominent paradigms, namely, constructivism and positivism (Mertens 2010). This research paradigm may be one vehicle to address these flaws by influencing, advancing and transforming epistemological positions in various disciplines inclusive of deaf studies (Ukwoma and Ngulube 2021).

Mertens (2015) asserts that the transformative research paradigm may be a panacea to these wicked problems provided the philosophical foundations and assumptions are dealt with through ontology (the reality of barriers faced by SDHH in ODeL); epistemology (how knowledge production should be realised); axiology (ethical principles and considerations when approaching matters of deafness and the labelling thereof); and methodology (how to obtain findings about the reality and reliable answers while applying scientific methods).

Ontology

When fostering and acknowledging SDHH's perceptions of what constitutes reality, cultural relativism is frequently opposed. Widianingsih and Mertens (2019) explain the need to consider that privilege is given to some versions of reality over others and that it is important to objectively analyse the privileged views to assess what is lacking when the views of SDHH are not privileged. This links transformative research to SDG 4 targets on equal access to HE and also addresses gender equality and inclusion.

It is necessary to consider all of the realities and layers of impairment, including deafness and hard of hearing, whenever the SSS are evaluated, or policies are reviewed. The marginalised persons in the context of this study were the SDHH at an ODeL university. Thus, the primary ontological presupposition question that had to be investigated was:

- What version of truth affords an awareness that can change the staue quo, which in turn can contribute to the promotion of social justice for SDHH?

HEIs frequently believe that any SASL interpreter can translate anything, which is one of the ontological presumptions that have been noted in the literature. However, just like every interpreter should be aware of the linguistic features of the language they are translating, sign language interpreters should be familiar with the module's content as well as the clinical language involved.

Since this goes against the tenets of this worldview, deafhood should not be classified as a disability unless consulted and confirmed by SDHH as prescribed by the Sociocultural Model of Disability (Humphries, Mertens and Truman 2020; Peel 2004; Possi 2018). Additionally, SDHH need to be sufficiently consulted when projects or studies are being conceptualised in promoting the successful implementation of the improvement plans and policies. One way the government embraced this paradigm was through a public process for SASL submissions as the 12th official language, and ODeL universities should and must follow suit.

Epistemology

The transformative epistemological premises raise questions concerning the possibility of a researcher who is a non-member of the marginalised group being studied, that is, a researcher who is not deaf or hard of hearing carrying out a study on this subject – as was the case in the current study. Building rapport with the SDHH community required other stakeholders besides the authors, including sign language interpreters. As prescribed by Mertens (2012), the authors were cautious in managing this process carefully to ensure that the participants felt comfortable throughout the research process.

Axiology

Cram and Mertens (2016) discuss the transformational axiological presuppositions, which also encompass cultural histories, norms and identities. These are essential for supporting social justice and being aware of the prejudice brought on by labels and other repressive elements. Romm (2018) emphasises the value of cultural competency and how it should be a fundamental tenet for individuals functioning within the transformative frameworks with philosophical presumptions, supporting this. Therefore, cultural competence was a crucial requirement in the study, and this assisted the authors to be authentic in reflecting on the participants' situation on the ground in culturally varied regions and provinces as well as different countries.

In the scope of the transformative research paradigm focusing on SDHH, the selection of the theories provided a coherent explanation in line with the focus on the provision

of support to SDHH in ODeL. Similarly, there was a conceptual basis for understanding, evaluating and constructing ways of exploring the research problem. Thus, SDG 4 formed a theoretical grounding for the study inclusive of critical disability theory (CDT) as well as transactional distance theory (TDT) which were applied to accommodate this context (Moore and Mertens 2015).

Unpacking Sustainable Development Goal 4

SDG 4 was used as a theoretical grounding for the study while arguing for operationalising the transformative research paradigm for accessible and inclusive SSS. This is significant in that the policies and implementation plans developed in ODeL to accommodate SDHH must be in line with and feed into the SDG 4 targets. This is also imperative since the 2030 Agenda for Sustainable Development (UN 2012) offers a worldwide road map for human and environmental well-being both today and in the future, including HE spaces. The Agenda aimed at creating a set of global objectives that would aid in addressing the pressing political, economic, and environmental problems which the planet is currently facing (UNESCO 2022).

SDG 4 is the education goal intended to ensure inclusive and equitable quality education and encourage lifelong learning opportunities for all, including SDHH. Nhamo (2021) reveals how Sub-Saharan Africa faces the greatest difficulty in providing HEIs with basic resources to promote quality education. Furthermore, Nhamo's study provides reassurance that this challenge may be partially resolved by contributing to SDG 4 which ensures inclusive and quality education for all while promoting lifelong learning. Quality education may be one of the solutions to help reduce inequalities and reach gender equality which is crucial to fostering tolerance and more peaceful societies; consequently, reasonable accommodations for SDHH are key. Though this was generalised, it provides insights into the challenges faced by HE students in the Global South. Future studies on the current topic are therefore recommended, especially for SDHH in ODeL.

Exceptional challenges have been faced by the majority of the world's educational systems as a result of disruptions in the education sector. Global education is currently experiencing a crisis as a result of Covid-19, which was declared a global pandemic in March 2020. The pandemic, however, has served as a remarkable wake-up call, highlighting significant injustices and exactly the flaws that the Paris Agreement (UN 2015) and the 2030 Agenda for Sustainable Development (UN 2012) address. To remedy the aforementioned weakness, the majority of HEIs created online learning systems. The gap between countries with low levels of digitalisation and those with high levels of connectivity appears to have become wider as a result of the digital divide.

According to SDG 4, the following goals must be accomplished before or by 2030:

> Target 4.5: Eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples, and children in vulnerable situations. (UN 2012)

Following this, the authors deduced that while eliminating gender disparities, female SDHH should not be left behind in the initiatives to address this objective. Female SDHH need to have equal opportunities to enjoy education of high quality, achieve at equal levels and enjoy equal benefits from education just like other student populations:

> Target 4.A: Build and upgrade education facilities that are child, disability, and gender sensitive and provide safe, nonviolent, inclusive, and effective learning environments for all. (UN 2012)

This target addresses the need for adequate physical infrastructure and safe, inclusive environments that nurture learning for all, regardless of background or disability status. In going fully online, it is recommended that ODeL universities build sustainable online systems allowing transcripts, real-time captions and interpretation services on online platforms:

> Target 4.B: By 2020, substantially expand globally the number of scholarships available to developing countries, in particular, least developed countries, small island developing States and African countries, for enrolment in higher education, including vocational training and information and communications technology, technical, engineering, and scientific programmes, in developed countries and other developing countries. (UN 2012)

This is one of the few objectives – if not the only one – with a 2020 due date which has not been fully achieved, especially by developing countries. Scholarship in this context responds to a range of financial aid for academic development and excellence. ODeL universities need to look at allocating funds to SDHH to acquire assistive devices, technology, and adaptive tools, as also demanded by Chiwandire and Vincent (2019). The Department of Higher Education and Training (DHET) in South Africa has committed to developing a multipronged funding strategy for mainstreaming and the inclusion of persons with special needs in the Post School Education and Training system above the existing National Student Financial Aid Scheme (DHET 2018, 72–73):

> Target 4.C: By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries, especially least developed countries and small island developing states.

To achieve this objective, one of the initiatives should be to employ sign language interpreters and capacitate ODeL staff to reasonably accommodate lip reading, as well as communication disabilities like stuttering, among others. Although this is supported to a great extent by Kadam et al. (2012) and Napier (2006), it is a contested opinion and

there are conflicting viewpoints from the deaf community who feel that employing a sign language interpreter is an illusion of inclusion that perpetuates language deprivation (Caselli, Hall and Henner 2020). This view is based on the Global North and is yet to be tested at ODeL institutions in the Global South. Employing sign language interpreters may be the start of creating awareness and advocacy campaigns which may follow and may partially address communication barriers experienced by SDHH.

The authors believe that the lack of qualified staff and their unequal distribution, particularly in underprivileged areas, may exacerbate the equity gap in HE education. The staff need to be empowered, properly recruited, compensated, motivated, professionally qualified, and supported within well-resourced, effective, and controlled systems since they are a requirement for ensuring high-quality education. Contribution to the alluded objectives may respond indirectly to the following SDG targets:

- Health and well-being (SDG 3 target 3.7)
- Gender equality (SDG 5 target 5.6)
- Decent work and sustainable growth (SDG 8 target 8.6)
- Responsible consumption and production (SDG 12 target 12.8)
- Climate change mitigation (SDG 13 target 13.3)

Theoretical Framework

Grant and Osanloo (2014) and Varpio et al. (2020) refer to the theoretical framework as a blueprint for an imperial study. A theoretical framework thus identified and justified CDT as well as TDT which applied to deafhood in ODeL. Furthermore, it gave a reflection on inclusive support of funding opportunities for SDHH at an ODeL university.

Alavi et al. (2018) provide guidelines for how the theoretical framework and research methods are linked through the transformative research paradigm. Failure to link these may result in a faulty study in which the research issue may be inconsistent with the methodology. From these guidelines, it can be inferred that it is important to identify the theoretical orientation that will not only promote comprehension but should also direct the design of research in which dynamic phenomena (e.g., deafhood) are at the core of the investigation.

Critical Disability Theory

Hall (2019) contends that CDT relates to a theoretical approach involving diversity, interdisciplinarity, and he supports this point of view. Additionally, Hall supports CDT's adherence to the transformative research paradigm, which encourages action and limits the dissemination of findings to both academics and the general public. There appears to be a consensus among researchers on the purposes and goals of CDT, but some researchers, such as Schalk (2017), place CDT as a methodology rather than as a research framework, applying the same purposes as others.

As a result, CDT responds to the transformative research agenda where the researcher engages the participants with the focus on uncovering agency that is hidden by social practices and aids in freedom and emancipation. The first benefit of CDT is that it ensures that research is conducted *with* SDHH and not *for* SDHH. Consequently their voice are heard leading to achievable recommendations which may positively inform policies with practical implementation plans.

The second benefit of CDT is that it offers a cogent justification for the concepts of being deaf or hard of hearing using models of disability, where being deaf in the context of a social model refers to culture rather than disability. During the registration process, as required by the institution, SDHH occasionally fail to declare their "disability status", and this needs to be understood rather than imposed as it is currently.

The third benefit is that CDT offers guidelines for how the Universal Design for Learning (UDL) Guidelines defined by the Center for Applied Special Technology (CAST 2011) can be incorporated into the ideology surrounding disabilities through a discussion of the continuum between the two most prevalent models of disability, namely, the clinical-pathological model (known as the medical model) and the social-cultural model (known as the social model) of disability (Kivunja and Kuyini 2017).

If this notion is considered through the UDL Guidelines (CAST 2011), it may be possible to do away with separate support systems for students in favour of a single system. According to the guidelines for inclusive classroom instruction and accessible courses (CAST 2011), this system will accommodate everyone where:

- SDHH have several approaches to acquiring knowledge and receiving information thanks to the many representation techniques;
- There are many ways for SDHH to act and express themselves, giving them different ways to show what they have learnt; and
- Numerous strategies for involving SDHH appeal to their interests; present them with appropriate challenges; and inspire them to learn.

Transactional Distance Theory

The context is crucial to research and TDT affords that and gives guidelines for how to provide support to SDHH in an ODeL setting (Bozkurt 2019). Similarly, Letseka and Pitsoe (2013) concur with the functions and aims of student support as proposed by Tait (2000) while dealing with the need to care for all students irrespective of gender, disability, or any other factor.

These functions are in line with the theoretical framework which provides the structure for defining how (philosophically, epistemologically, methodologically and analytically) the study has been approached to promote interdisciplinarity scholarships for student support in ODeL in the context of deafness across various disciplines, such as Psychology, Distance Education, Disability Studies, and Inclusive Education. These functions deal with the following comprehensive components of student support:

- Cognitive: Supporting and enhancing learning by using the normative and standardised elements of each student's unique course materials and study aids.

- Effective: Fostering a culture that values students, encourages commitment, and raises self-esteem.

    - When SDHH require effective assistance in resolving issues they may encounter, student counselling services should be easily accessible. That is how programs should be created. According to P21's framework for 21st-century learning, they could include life and career skills, learning and innovation skills, core subjects, and 21st-century themes (Tsekeris 2019).

- Systems: Establishing reliable, accessible, and usually student-friendly administrative processes and information management systems.

    - These include problems with the admission and registration procedures as well as the use of learning management systems, which should include flexible online tools for workshops. Email systems and other forms of communication should work well to accommodate SDHH, who rarely use telephones.

Research Design

Methodology

The purpose of using transformative mixed methods research (TMMR) was to combine elements of quantitative as well as qualitative research in the context of deafhood as well as transformation and emancipation (Baggett and Andrzejewski 2019; Camacho 2020). TMMR was deemed appropriate for the study since it guarantees the integration of both the quantitative and qualitative approaches through the sequential approach and strategies while adhering to axiological parameters.

This integration through quantitative and qualitative data synthesis then translates to richer evaluation inference for evaluation practitioners (Peter 2010). Therefore, the use of a mono-approach for evaluating the existing student support framework at an ODeL university would have limited the study to achieve its objectives. Consequently, and in line with the rationale for TMMR outlined by Creswell (2014), the application of TMMR was appropriate for the study.

To evaluate the student support framework, it was important to first establish the relationship and the degree of inclusion with accommodating SDHH in the ODeL setting. This approach was important in that it enabled the authors to quantify the results and make statistical inferences to understand the degree of inclusion. While the generalisation was realised, the qualitative part allowed the authors to go further and understand the results and inferences made from the quantitative part by seeking meaning and patterns in the participants which allowed for a richer understanding of the phenomenon in addressing the outlined problem.

Research Strategy: Transformative Explanatory Sequential Design

The data collection was done in phases and sequentially, which started with the collection of quantitative data to test the hypothesis, namely: SDHH will experience lower inclusion rates throughout student support service programmes at an ODeL university. The descriptive stats and inferences informed the second phase of the study which was qualitative with the intent of exploring the phenomenon further to expand the understanding and responding to the research question:

- How does the provision of student support services contribute to the inclusion of SDHH at an ODeL university in South Africa?

Population and Sampling

The transformative and pragmatic nature of the study allowed the use of both probability and non-probability sampling techniques in responding to the quantitative and qualitative phases. In the case of SDHH, the census was applied due to the smaller population which was around 500 students who declared their condition and were categorised on the systems as SDHH. Similarly, stratified random sampling was applied to ensure that all staff members in all portfolios and departments had an equal chance of being included in the study. The adopted measure was designed by Mowes (2005) in a different context and country where reliability, validity and objective were further addressed and incorporated. This tool provided a base for evaluating the existing student support framework in an ODeL university in South Africa.

Convenience sampling was applied since it was found to be inexpensive and allowed expediency to interview those who indicated so on the data collection tool from the first phase of the study. It also allowed for data collection during the imposed Covid-19 lockdowns in the country. Gunawan (2015) considers reliability/dependability as a validity/credibility threat, challenging many of the normal qualitative qualities of reliability checks, such as member inspection (returning to the participants after data analysis) or peer inspection (using an expert panel or an experienced colleague to reanalyse any of the data) as ways to verify that the researcher has correctly evaluated the data.

These doubts were eliminated in the study by recognising the value of qualitative research and the criteria in place to ensure that they respond to trustworthiness as prescribed by Nowell et al. (2017). The study demonstrated this through the accurate qualitative data analysis process by disclosing the analytical methods with sufficient details. Furthermore, the consistency and audit trail ensured that the criteria were met in responding to the trustworthiness of the data.

Data Analysis

The descriptive design was used to analyse the quantitative data using a correlation procedure through Statistical Package for the Social Sciences (SPSS), while the thematic analysis procedure was followed to analyse qualitative data using ATLAS.ti software.

Ethical Considerations

The study underwent a thorough ethical clearance process, and permission to conduct the research was granted by the College of Human Sciences at Unisa. Furthermore, the

research principles of beneficence and non-maleficence ensured that the participants' risk of harm was minimised.

Moreover, the authors protected the participants' anonymity, confidentiality and rights, including that of withdrawing from the study without penalty (two participants withdrew from participating in the study). The recruitment criteria involved sending emails to the sample that included information about the nature of the study and its objectives. This ethical consideration was in line with the Protection of Personal Information (POPI) Act 4 of 2013 (RSA 2013), as the sample is considered and classified as a vulnerable group (Adams et al. 2021).

Results: Quantitative Phase

The descriptive statistics provided and presented demographic data of 105 SDHH and 118 staff members as frequencies and percentages. The following SSS were evaluated concerning awareness, access, effectiveness and satisfaction: Admission (Applications) and Registration; the Directorate for Counselling and Career Development (DCCD); Library services; Face-to-face tutorials; Online tutorials; the Advocacy and Resource Centre for Students with Disabilities (ARCSWID); the Academic Literacy Unit (reading and writing skills); Computer labs – technology enhanced learning (TEL); Digital Access Centres (internet cafés registered with Unisa); the Directorate of Student Funding (DSF); the Student Development Division; Information services; and the Student Retention Unit (SRU).

Awareness

The majority of SDHH were significantly aware of the SSS. Similarly, the staff were aware of the SSS with lower levels correlating to those of SDHH on the Academic Literacy Unit; Digital Access Centres; Information Services; and the SRU.

Access

Despite having higher levels of awareness, the SDHH did not frequently use the DCCD; Library services; Face-to-face tutorials; Online tutorials; or the ARCSWID. More than 90% of the SDHH had never used the SRU and 92% of them had never used the Digital Access Centres. The majority of the SDHH frequently used Admission (Applications) and Registration and these findings were supported by *t*-test results, which showed that the majority of participants frequently used and had access to these SSS.

The results showed that the majority of the staff often consulted with Admission (Applications) and Registration; Student Assessment Administration (Assignments and

Exams); the DCCD; Library services; Face-to-face tutorials; the ARCSWID; Digital Access Centres; Computer Labs; and the DSF since the means of these support services were greater than 3 and their *p*-values less than 0,05.

Effectiveness

Most of the SDHH indicated that the SSS were ineffective and only 47% expressed the effectiveness of Admission (Applications) and Registration support services. The *t*-test results showed that there was a significant difference between staff opinions of the effectiveness of the ARCSWID services versus all the other SSS since they referred SDHH to the ARCSWID. However, this did not correlate with the students' perception of the unit being effective.

Satisfaction on Inclusiveness

The majority of the SDHH were not satisfied with the DCCD; Face-to-face tutorials; the Academic Literacy Unit (reading and writing skills); Computer labs – technology enhanced learning (TEL); Digital Access Centres (internet cafés registered with Unisa); the Student Development Division; and the SRU, since their means were less than 3 and their *p*-values were less than 0,05. According to the *t*-test results, the students' satisfaction with Admission (Applications and Registration); Library services; Online tutorials; the ARCSWID; the DSF; and Information services did not differ significantly from each other since the *p*-values were higher than 0,05 in these areas. The results showed that the majority of staff had a low level of satisfaction with the SSS provided to SDHH.

Regression Analysis

Regression analysis and analysis of variance (ANOVA) were performed to ascertain the disparity in responses and the relationship between the responses of staff and students as indicated in Table 1.

Table 1: Regression results: Awareness

Regression statistics						
Multiple R	0,823219					
R-squared	0,67769					
Adjusted R-squared	0,648389					
Standard error	0,125308					
Observations	13					

ANOVA						
	Df	SS	MS	F	Significance F	
Regression	1	0,363169	0,363169	23,12861	0,000545	
Residual	11	0,172724	0,015702			
Total	12	0,535892				
	Coefficients	Standard error	*t* Stat	*p*-value	Lower 95%	Upper 95%
Intercept	-0,8093	0,291124	–2,77991	0,017907	–1,45006	–0,16854
Student awareness	1,581004	0,328744	4,809221	0,000545	0,857443	2,304565

The results further showed that there was a significant difference between staff and students who were aware of the SSS. Most of the students (87%) were aware of the SSS compared to just over half of the staff (58%); (*f* test = 20,4; *p*-value of 0,0001 < 0,05).

Table 2: Difference in awareness of SSS between staff and students' responses

Group	**Count**	**Sum**	**Average**	**Variance**		
Student	13	11,43	0,879231	0,012108		
Staff	13	7,55	0,580769	0,044658		
ANOVA						
Source of variation	SS	Df	MS	F	*p*-value	F crit
Between groups	0,579015	1	0,579015	20,4003	0,000142	4,259677
Within groups	0,681185	24	0,028383			
Total	**1,2602**	**25**				

From these results, the authors concluded that the relationship impact of student awareness on staff was 1,5810 and had a *p*-value of 0,0005 < 0,05. Thus, there is a risk that if staff are not aware of the SSS, this may either directly or indirectly affect the students' awareness of these support services.

With regard to access, the results showed that there was a significant difference between students accessing the SSS and staff who either had to liaise with or refer students to SSS. Most of the students (Mean = 1,84 < 3) did not access SSS compared to most of the staff who either liaised with or referred students to SSS (3,24 > 3); (*f*-test = 24,4; *p*-value 0,0001 < 0,05).

Thus, from the results it was concluded that there was a strong relationship between Staff liaising with or referring students to other SSS and students accessing those

services. Thus, there is a risk thath if staff do not liaise with or refer students to SSS, it may directly or indirectly affect the students' access to these support services.

On the effectiveness of SSS, the results showed that there was a strong relationship between staff and students finding the SSS ineffective. Furthermore, there was no significant difference between the majority of students and staff who found the support services ineffective. Thus, there is a risk that the SSS are ineffective and do not support the services' proper functioning.

On the inclusion of SSS, there was a significant difference between students being dissatisfied with the level of SSS compared to staff being dissatisfied with the inclusion of SDHH in SSS. The results showed that there was a weaker relationship between staff and students being dissatisfied both with the SSS and inclusion of SDHH.

Correlation Analysis

The results showed that there was a significant association between SDHH accessing SSS and staff liaising with or referring SDHH to SSS. Correspondingly, comparable results were seen with student effectiveness and staff liaison or referrals of SDHH. The quantitative results led to the following conclusion in response to the hypothesis:

- SDHH will experience lower inclusion rates throughout student support service programmes at an ODeL university.

- There seems to be no relationship between the degree of inclusion and student support service programmes for SDHH at an ODeL university.

The satisfaction levels on inclusion were lower than 30% on all SSS except for Admission (Applications) and Registration at 42%. Similarly, staff satisfaction levels were also below 30% except for the ARCSWID where they refer most SDHH at 53% vs SDHH at 27%.

Mixing of Data

The quantitative phase connected to the qualitative phase through the sampling frame, where some surveyed participants consented to take part in the follow-up study. Also, the link between the two phases came about as a result of the limitations and outliers from the quantitative results which were instrumental in developing the qualitative data collection protocol that addressed the primary research question of the study in line with the principles of TMMR.

Findings

Awareness of Student Support Services

The majority of the SDHH were aware of the admission and registration offices being the primary points of entry for the ODeL university. Because acceptable accommodations, such as SASL interpretation services, were not available, those who participated in awareness programmes like orientation days reported that they did not learn anything. Despite these drawbacks, face-to-face awareness interventions were favoured over the online version in the hope that staff would be present and able to help on the day as opposed to online where it is challenging to seek help.

Most employees were unaware of the variety of services that are provided to SDHH. They believed that the mentioned difficulty was exacerbated by a lack of departmental cooperation. When registering, SDHH disclose information about their status, but frequently, other support departments are not informed of this.

Accessibility of Student Support Services

According to the study findings, the inaccessibility of SSS was primarily caused by pre-existing communication barriers and a lack of SASL interpretation services. The participants believed that these issues could be resolved by deaf culture education programmes that would help the university to better understand the communication needs of SDHH and lessen negative attitudes toward the lack of access to SSS.

Nearly all of the staff did not have any factors or causes influencing the availability of SSS. The way things are done at the university, including the traditional methods of supporting students with special needs, were expected to change with the execution of the transformation agenda.

Effectiveness of Student Support Services

The reasons behind the SSS being ineffective were due to the poor referral systems in place as well as the absence of reasonable accommodations on online platforms like workshops and discussion classes. It was found that SASL interpretation services play a huge role in the academic progression of SDHH – since they learn through visualisation, face-to-face services are preferred.

The major causes of ineffective SSS were the demarcation of services and a lack of understanding. Nearly all SSS, including some college (faculty) operations, are provided by the regional centres, but the academic staff seem not to be on board with

how the regions should serve SDHH. Additionally, the services they offer to SDHH are not specialised, making them ineffective; as a result, it is necessary to comprehend distinct demands and how to meet them.

Inclusivity in Student Support Services

The SSS were deemed to have a lower overall level of inclusion. This included online assessments and presentations that did not provide live captioning or subtitles for SDHH. In addition, several thought that group assignments made it difficult for the students to develop significant arguments because of communication problems that fuelled stereotypes and assumptions about SDHH as dependent students.

Staff members generally concurred that the SSS were not inclusive. Contrary to the students, the majority of staff members thought that SDHH disclosing their deafness would enable the university to be ready and provide inclusive services. However, SDHH occasionally disclose their status only to be excluded from events since no interpreters were available, as staff responders verified. This is a reactive method of operating, necessitating the adoption of a proactive strategy for universal learning design.

Open Distance e-Learning Lived Experiences

The participants discussed their personal stories of studying in an ODeL environment, which was marked by meagre support, a lack of financial opportunities, ineffective help, inequality, and stigma. Their academic performance was negatively impacted by these, and remedial measures could include peer and social assistance as well as education to encourage SSS. One of the subthemes that arose was the disclosure of deafhood. The participants discussed their personal experiences of how their expectations were raised to accommodate their unique requirements. Some said that they no longer reveal their status as a result of failure to provide reasonable adjustments.

Recommendations for Reasonable Accommodations

The participants pushed for partnerships, inclusive policies, a stand-alone disability unit, SASL advocacy programmes, and ongoing benchmarking studies as part of their recommendations for inclusive SSS for SDHH at the ODeL university under study.

The staff members made various proposals for encouraging reasonable accommodations for SDHH, such as hiring SASL interpreters and registered SDHH, which would address the employability of SDHH graduates. It was suggested that SSS be decentralised so that they could be accessed through all service departments rather than just the

ARCSWID, which is located on the main campus. The staff suggested training and advocacy programmes as part of their proposals.

Discussion

The first phase of the sequential design study addressed the hypothesis, namely: SDHH will experience lower inclusion rates throughout student support service programmes at an ODeL university. Moreover, to reiterate, there seems to be no relationship between the degree of inclusion and SSS programmes for SDHH at the ODeL university.

The results showed that SDHH experienced lower inclusion rates across all SSS at the ODeL university. The interviews supported this concept and offered information on the causes of the lack of inclusivity. The lack of live captions and subtitles for online interventions like workshops and classes was considered a reasonable accommodation that promoted inclusivity to communication challenges. The same was also frequently true in face-to-face interactions where SASL interpretation was not offered by the institution. There seems to be a relationship between the degree of inclusion and SSS programmes for SDHH. Inclusion is absent on online platforms in contrast to in-person interactions where people can ask for help when services are not readily apparent. Thus, it may be concluded that the lesser the level of inclusion, the less accessible and effective the SSS will be.

Staff members who provided the SSS also affirmed that the provided services are not inclusive, supporting this claim. The correlations analysis supported the finding that the SSS as a whole had lower levels of satisfaction levels on inclusion. Except for the ARCSWID, to which they refer the majority of the SDHH, staff numbers were similarly below 30%. Although there were generally available SSS, the majority of SDHH were unaware of them. Even though there was some awareness of Admission (Applications) and Registration and Library services, the fact that a portion of the SDHH were unaware of these services while registered students should raise concerns.

In response to the main research question of the study: “How does the provision of student support services contribute to the inclusion of SDHH at an ODeL university in South Africa?”, it may be concluded that SSS do not assist in the inclusion interventions. The interviews showed that most SDHH do not attend the awareness interventions organised by the university due to the absence of reasonable accommodations, especially language and communication barriers, mostly on the online platforms which seemed to be the preferred mode since the Covid-19 pandemic.

Some participants claimed that although there were a few SASL interpretation services available, they were unable to use them because of the unit’s lack of staff. It was strongly advised that the ARCSWID be independent so that it could handle the issues of inclusion and access that were raised. Although this may appear to be a solution, it does not

address the issue of general inclusion of SSS, which should be decentralised to all student support departments in the university and will only benefit those who live close to the two campuses, not those in regional centres or those who live outside the country's borders.

Future Research

The experiences of SASL interpreters at ODeL institutions should be the subject of future research. The study should resolve any shortcomings in the interpretation of academic material, which calls for specialised knowledge and expertise.

Also, the transformative research paradigm suggests that the participants should be at the forefront of the research project, meaning it should be ideal to involve the participants in the conceptualisation stages and proposal of the research project. However, this goes against the policies as per the Research Ethics Committee (REC) governance resulting in limitations for researchers to fully apply the transformative research paradigm. REC policies seem to be misaligned with the recent development in methodologies thus contributing to epistemic injustice.

Recommended Inclusive Student Support Framework for Students who are Deaf and Hard of Hearing in Open Distance e-Learning

Figure 1 shows the developed student support framework for SDHH in ODeL.

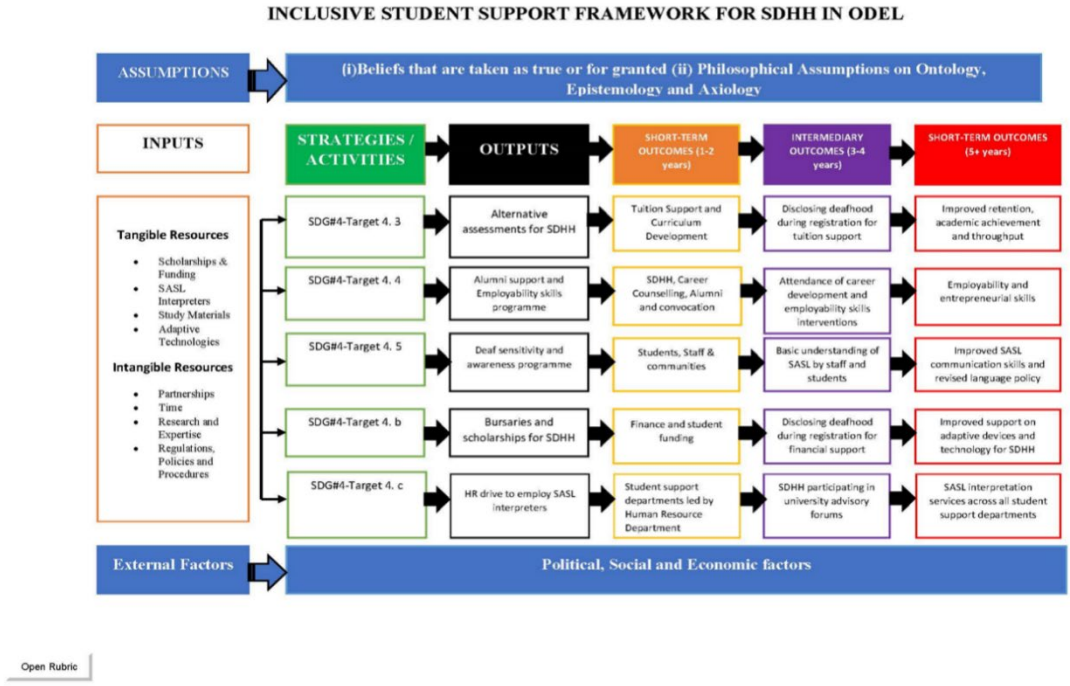

Figure 1: Developed student support framework for SDHH in ODeL

Firstly, the theoretical framework, components of the transformative research paradigm, and gaps in SDG 4 were taken into consideration when developing the recommended inclusive student support framework for SDHH in ODeL. Secondly, for the framework issues related to online instruction were considered because of the quick transition to 4IR. During the semi-structured interviews, the SDHH discussed relevant practical issues that confirmed the challenges they faced when working online.

References

Adams, R., F. Adeleke, D. Anderson, A. Bawa, N. Branson, A. Christoffels, J. de Vries, H, Etheredge, E. Flack-Davison, M. Gaffley, et al. 2021. "POPIA Code of Conduct for Research." *South African Journal of Science* 117 (5–6). http://doi.org/10.17159/SAJS.2021/10933

Alavi, M., M. Archibald, R. McMaster, V. Lopez, and M. Cleary. 2018. "Aligning Theory and Methodology in Mixed Methods Research: Before Design Theoretical Placement." *International Journal of Social Research Methodology* 21 (5): 527–540. https://doi.org/10.1080/13645579.2018.1435016

Baggett, H. C., and C. E. Andrzejewski. 2019. “Teaching for Social Justice in Qualitative Methods: Examples from Class.” Paper presented at the 10th Annual Conference of The Qualitative Report, Fort Lauderdale, January 16–18. https://doi.org/10.46743/2160-3715/2020.4139

Bell, D., and E. Swart. 2018. “Learning Experiences of Students Who Are Hard of Hearing in Higher Education: Case Study of a South African University.” *Social Inclusion* 6 (4): 137–148. https://doi.org/10.17645/si.v6i4.1643

Bozkurt, A. 2019. “From Distance Education to Open and Distance Learning.” In Handbook of Research on Learning in the Age of Transhumanism, edited by S. Sisman-Ugur and G. Kurubacak, 252–273. Hershey: IGI Global. https://doi.org/10.4018/978-1-5225-8431-5.ch016

Caselli, N. K., W. C. Hall, and J. Henner. 2020. “American Sign Language Interpreters in Public Schools: An Illusion of Inclusion That Perpetuates Language Deprivation.” *Maternal and Child Health Journal* 24: 1323–1329. https://doi.org/10.1007/s10995-020-02975-7

Camacho, S. 2020. “From Theory to Practice: Operationalizing Transformative Mixed Methods with and for the Studied Population.” *Journal of Mixed Methods Research* 14 (3): 305–335. https://doi.org/10.1177/1558689819872614

CAST (Center for Applied Special Technology). 2011. “Universal Design for Learning (UDL) Guidelines: Full-Text Representation Version 2.0.” CAST. Accessed October 26, 2020. https://wvde.state.wv.us/osp/UDL/4.%20Guidelines%202.0.pdf

Chiwandire, D., and L. Vincent. 2019. “Funding and Inclusion in Higher Education Institutions for Students with Disabilities.” *African Journal of Disability* 8: 1–12. https://doi.org/10.4102/ajod.v7i0.518

Cram, F., and D. M. Mertens. 2016. “Negotiating Solidarity between Indigenous and Transformative Paradigms in Evaluation.” *Evaluation Matters* 2: 161–189. https://doi.org/10.18296/em.0015

Creswell, J. W. 2014. *Research Design: Qualitative, Quantitative and Mixed Approaches*. 4th ed. Thousand Oaks: Sage.

Daniel, J. S. 2019. “Open Universities: Old Concepts and Contemporary Challenges.” International Review of Research in Open and Distributed Learning 20 (4): 195–211. https://doi.org/10.19173/irrodl.v20i3.4035

Davis, N. 2016. January. “What Is the Fourth Industrial Revolution?” World Economic Forum. Accessed March 24, 2020. https://www.weforum.org/agenda/2016/01/what-is-the-fourth-industrial-revolution/?DAG=3&gclid=EAIaIQobChMI1tT0jq--ggMVUuLtCh0FMQdfEAAYASAAEgKZtfD_BwE

DeafSA (Deaf Federation of South Africa). 2009. “Deaf Education.” DeafSA. Accessed October 26, 2020. https://static.pmg.org.za/180912Deaf_Education.pdf

DeafSA (Deaf Federation of South Africa). 2016. “Portfolio Committee on Basic Education Deaf Education.” DeafSA. Accessed October 26, 2020. https://static.pmg.org.za/180912DeafSA.pdf

DHET (Department of Higher Education and Training). 2013. “White Paper for Post-School Education and Training.” https://www.dhet.gov.za/SiteAssets/Latest%20News/White%20paper%20for%20post-school%20education%20and%20training.pdf

DHET (Department of Higher Education and Training). 2018. “Strategic Disability Policy Framework on Disability for Post-School Education and Training System.” http://www.dhet.gov.za/SiteAssets/Gazettes/Approved Strategic Disability Policy Framework Layout220518.pdf

Department of Justice and Constitutional Development. 2022. “Government Gazette: Constitution Eighteenth Amendment Bill, 2022.” http://www.justice.gov.za

Department of Social Development. 2015. “The National Development Plan 2030: Persons with Disabilities as Equal Citizens.” https://www.un.org/development/desa/disabilities/wp-content/uploads/sites/15/2016/02/Disability-Analysis-of-the-National-Development-Plan-2030.pdf

Grant, C., and A. Osanloo. 2014. “Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your ‘House’.” *Administrative Issues Journal Education Practice and Research*, 12–26. https://doi.org/10.5929/2014.4.2.9

Gunawan, J. 2015. “Ensuring Trustworthiness in Qualitative Research.” *Belitung Nursing Journal* 1 (1): 10–11. https://doi.org/10.33546/bnj.4

Hall, M. C. 2019. “Critical Disability Theory.” *Stanford Encyclopedia of Philosophy*. https://plato.stanford.edu/entries/disability-critical/

Humphries, B., D. M. Mertens, and C. Truman. 2020. “Arguments for an ‘Emancipatory’ Research Paradigm.” In *Research and Inequality*, edited by B. Humphries, D. M. Mertens, and C. Truman, 3–23. Abingdon: Routledge. https://doi.org/10.1201/9781003071679-2

Kadam, K., R. Ganu, A. Bhosekar, and S. D. Joshi. 2012. “American Sign Language Interpreter.” In *2012 IEEE Fourth International Conference on Technology for Education*, 157–159. https://doi.org/10.1109/T4E.2012.45

Kivunja, C., and A. B. Kuyini. 2017. “Understanding and Applying Research Paradigms in Educational Contexts.” *International Journal of Higher Education* 6 (5): 26–41. https://doi.org/10.5430/ijhe.v6n5p26

Letseka, M., and V. J. Pitsoe. 2013. “Access to Higher Education through Open Distance Learning (ODL): Reflections on the University of South Africa (Unisa).” In *Alternative Access to Higher Education: Under-prepared Students or Under-prepared Institutions?*, edited by R. Dhunpath and R. Vithal, 219–34. Cape Town: Pearson.

Magongwa, L. 2010. “Deaf Education in South Africa.” *American Annals of the Deaf* 155 (4): 493–496. https://doi.org/10.1353/aad.2010.0042

Matjila, T. N. 2018. “A Phenomenological Study of the Lived Experiences and Meaning of Being a Student with a Physical Impairment at an Open Distance Learning University.” Master’s thesis, University of South Africa.

Matjila, T. N. 2023. “Evaluation of Student Support Services at an Open Distance and E-Learning University: Towards a Framework for Students Who Are Deaf and Hard of Hearing.” PhD diss., University of South Africa. https://hdl.handle.net/10500/30144

Mertens, D. M. 2010. “Philosophy in Mixed Methods Teaching: The Transformative Paradigm as Illustration.” *International Journal of Multiple Research Approaches* 4 (1): 9–18. https://doi.org/10.5172/mra.2010.4.1.009

Mertens, D. M. 2012. “Transformative Mixed Methods: Addressing Inequities.” *American Behavioral Scientist* 56 (6): 802–813. https://doi.org/10.1177/0002764211433797

Mertens, D. M. 2015. “Mixed Methods and Wicked Problems.” *Journal of Mixed Methods Research* 9 (1): 3–6. https://doi.org/10.1177/1558689814562944

Moore, E. A., and D. M. Mertens. 2015. “Deaf Culture and Youth Resilience in Diverse American Communities.” In *Youth Resilience and Culture: Commonalities and Complexities*, edited by L. Theron, L. Liebenberg and M. Ungar, 143–155. Dordrecht: Springer. https://doi.org/10.1007/978-94-017-9415-2_11

Mowes, D. L. 2005. “An Evaluation of Student Support Services in Open and Distance Learning at the University of Namibia.” PhD diss., University of Stellenbosch.

Mutanga, O. 2017. “Students with Disabilities’ Experience in South African Higher Education – a Synthesis of Literature.” *South African Journal of Higher Education* 31 (1): 135–154. https://doi.org/10.20853/31-1-1596

Napier, J. 2006. “Effectively Teaching Discourse to Sign Language Interpreting Students.” *Language, Culture and Curriculum* 19 (3): 251–265. https://doi.org/10.1080/07908310608668766

Nhamo, G. 2021. “Localisation of SDGs in Higher Education: Unisa’s Whole Institution, All Goals and Entire Sector Approach.” *Southern African Journal of Environmental Education* 37 (1): 63–85. https://doi.org/10.4314/sajee.v37i1.5

Nowell, L. S., J. M. Norris, D. E. White, and N. J. Moules. 2017. “Thematic Analysis: Striving to Meet the Trustworthiness Criteria.” *International Journal of Qualitative Methods* 16: 1–13. https://doi.org/10.1177/1609406917733847

Ntombela, S. S., and S. Mngomezulu. 2018. “Crossing Disciplinary Boundaries: Students’ Experiences of Facilitating a Learning Support Programme at a South African University.” *Journal for Transdisciplinary Research in Southern Africa* 14 (2): a487. https://doi.org/10.4102/td.v14i2.487

Peel, E. L. 2004. “Inclusive Practice in South Africa : A Deaf Education Perspective.” Master’s thesis, University of the Witwatersrand.

Peter, K. A. 2010. “The Interpretation and Use of Mixed Methods Research within Programme Evaluation Practice.” Master’s thesis, University of Stellenbosch.

Possi, M. K. 2018. “Gender and Education of People with Disabilities in Tanzania.” *Utafiti Journal* 3 (2).

Rembis, M. 2019. “Challenging the Impairment/Disability Divide.” In *Routledge Handbook of* Disability Studies, edited by N. Watson, A. Roulstone and C. Thomas, 377–390. 2nd ed. Abingdon: Routledge. https://doi.org/10.4324/9780429430817-27

Romm, N. R. A. 2018. *Responsible Research Practice: Revisiting Transformative Paradigm in Social Research*. Dordrecht: Springer.

RSA (Republic of South Africa). 1996. “Constitution of the Republic of South Africa Act No. 108 of 1996.” https://www.gov.za/sites/default/files/images/a108-96.pdf

RSA (Republic of South Africa). 2013. “Protection of Personal Information (POPI) Act 4 of 2013”. https://www.gov.za/documents/protection-personal-information-act

RSA (Republic of South Africa). 2021. “Constitution 18th Amendment Bill.” https://static.pmg.org.za/B1-2023_Constitution_18th.pdf

Schalk, S. 2017. “Interpreting Disability Metaphor and Race in Octavia Butler’s ‘The Evening and the Morning and the Night’.” *African American Review* 50 (2): 139–151. https://doi.org/10.1353/afa.2017.0018

Silvestri, J. A., and M. C. Hartman. 2022. “Inclusion and Deaf and Hard of Hearing Students: Finding Asylum in the LRE.” *Education Sciences* 12 (11). https://doi.org/10.3390/educsci12110773

Skrebneva, I. V. 2015. “Guidelines to Curriculum Adaptations to Support Deaf Learners in Inclusive Secondary Schools.” PhD diss., University of South Africa.

Tait, A. 2000. “Planning Student Support for Open and Distance Learning.” *Journal of Open, Distance and e-Learning* 15 (3): 287–299. https://doi.org/10.1080/713688410

Tsekeris, C. 2019. “Surviving and Thriving in the Fourth Industrial Revolution: Digital Skills for Education and Society.” *Homo Virtualis* 2 (1): 34–42. https://doi.org/10.12681/homvir.20192

Ukwoma, S. C., and P. Ngulube. 2021. “Trends and Patterns of Theory Use in Open and Distance Education Research Journals 2009–2018.” *Open Learning: The Journal of Open, Distance and e-Learning* 38 (3): 194–208. https://doi.org/10.1080/02680513.2021.1911793

Umalusi. 2018. “Sign of the Times: The Quality Assurance of the Teaching and Assessment of South African Sign Language.” https://www.umalusi.org.za/docs/reports/2018/sa_sign_language.pdf

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2002. “Open and Distance Learning Trends, Policy and Strategy Considerations.” Paris: UNESCO.

UN (United Nations). 2012. “Transforming Our World: The 2030 Agenda for Sustainable Development.” https://sdgs.un.org/2030agenda

UN (United Nations). 2015. “Paris Agreement.” https://unfccc.int/process-and-meetings/the-paris-agreement

Varpio, L., E. Paradis, S. Uijtdehaage, and M. Young. 2020. “The Distinctions between Theory, Theoretical Framework, and Conceptual Framework.” *Journal of the Association of American Medical Colleges* 95 (7): 989–994. https://doi.org/10.1097/ACM.0000000000003075

Waller, R. E., P. A. Lemoine, E. G. Mense, C. J. Garretson, and M. D. Richardson. 2019. “Global Higher Education in a VUCA World: Concerns and Projections.” *Journal of Education and Development* 3 (2): 73–83. https://doi.org/10.20849/jed.v3i2.613

Widianingsih, I., and D. M. Mertens. 2019. “Transformative Research and the Sustainable Development Goals: Challenges and a Vision from Bandung, West Java.” *International Journal for Transformative Research* 6 (1): 27–35. https://doi.org/10.1515/ijtr-2019-0005

Part III

Open Distance e-Learning Research in Africa

Chapter 4

Service Quality Satisfaction: Perceptions of Students Enrolled at a Ghanian Open Distance Institution

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Abstract

Assessing students' satisfaction with service quality is vital to educational service providers. This is even more important in the distance education environment where students are mostly more challenged than their counterparts studying at main campuses. Hence, this qualitative study employed the SERVQUAL model or scale to explore the perceptions of 30 distance education students on the quality of services provided at the University of Ghana learning centres. The participants were purposively selected and engaged in in-depth qualitative interviews through a researcher-designed semi-structured interview guide. The findings revealed varied satisfaction levels with the five dimensions of the quality of service, namely: reliability, assurance, responsiveness, tangibility, and empathy. Further, the findings revealed negative student perceptions of the tangibility and empathy dimensions. Thus, the authors advocate leveraging the three dimensions perceived to be satisfying among students while ensuring improvements in the two other dimensions that elicited no satisfaction. Consequently, the authors offer recommendations framed by the United Nations Educational, Scientific and Cultural Organization that may be of interest to providers and managers of sisstance education prgrammes in similar learning centres.

Keywords: higher education; learning centres; service quality; SERVQUAL model

Introduction

Recent studies on service quality in higher education (HE) have begun to explore student satisfaction regarding several factors. These include the quality of academic staff, infrastructure, support services, and other conditions which are fundamental and important aspects of educational excellence (Agyekum 2020; Lodesso et al. 2018). This study followed this stream of research by focusing on the quality of services provided by distance education (DE) institutions. The main goal of the study was to explore service provision in DE in a developing society and explore how it affects students' satisfaction. This topic has seldom been dealt with in fledgling economies and most existing research fails to connect the different service quality forms.

Service quality as a concept has been in the educational realm concerning the quality of education for a while (Lodesso et al. 2018). Some researchers have referred to the need for concerted efforts to infuse equitable service quality improvement initiatives to enhance quality in all aspects of DE programmes. In this regard, Malik, Danish and Usman (2010) define service quality in terms of stakeholders' or students' perceptions of service once exposed to a specific service, including academic or administrative services at the institution. Moreover, student satisfaction with services is a distributive approach to academic affairs that if positively evaluated, would mean those who are excluded from the needed support can feel the change in the academic environment. To prevent the feeling of exclusion, such students ought to be identified, supported, and included in the supporting architecture so that they can prosper and realise their full potential to aspire and positively contribute to every aspect of society.

The current study was also motivated by other key considerations. Firstly, the literature has established that although people have access to the internet and other resources in Ghana, the provision of DE in Ghanaian universities is bedevilled with myriad challenges. This situation leaves most students preferring traditional systems to DE (Amponsah 2021; Kotoua, Ilkan and Kilic 2015). Given the foregoing, the authors deemed the learning centres (LCs) of one of Ghana's pioneering DE universities an excellent context to assess whether this process actually occurs since enrolment in DE programmes has increased considerably in recent years.

Secondly, the nature of DE in developing countries is fraught with a number of challenges, such as a lack of infrastructure and support services (Adarkwah 2020). In the Ghanaian context, many students pursuing HE programmes through the DE mode face challenges including digital illiteracy, lack of digital tools, and weak or inaccessible Internet which makes it difficult to complete the four-year degree programmes on time (Amponsah, Ussher and Amoak 2019; Biney 2021). Lastly, the authors gleaned from the literature that there are relevant differences in the perception of quality support services and opportunities among Ghanaian DE students from different LCs and levels of study (Agyekum 2020). Given this context, the aims of the study were to: (1) define

DE students' perceptions of service quality; (2) investigate the DE students' satisfaction with the service quality improvements in the LCs; and (3) explore which dimensions of service quality are stronger and need to be promoted to improve the service quality among DE students in the LCs.

The above discussion has introduced the need for DE providers to ensure quality in the provision of their services to students. In doing so, the modified SERVQUAL model has been touted as a useful theoretical underpinning. The following section reviews the modified SERVQUAL model in detail. This is followed by the methodology of the study. Then comes the discussion of the study results which is wrapped up with the conclusion and recommendations for future research.

Framing Students' Perceptions of Service quality through the Modified SERVQUAL Model

Technological advancements have led to a knowledge explosion era. This has made organisational environments highly turbulent and competition fierce. It is in this light that Cheng and Rashid (2013) documented that organisations that fail to provide quality products and services might lose their customers to competitors. It is therefore imperative for institutions that seek to thrive in turbulent environments to find far-sighted ways of assessing and improving the quality of their services in order to satisfy their clients. To provide a theoretical grounding for service quality, Parasuraman, Zeithaml and Berry developed the SERVQUAL model in 1988, and modified it in 1991 as a multi-item or multi-dimensional scale for assessing customer perceptions of the quality of service organisations provide. The scale has been applied by many researchers notably in the banking sector (Al-Jazzazi and Sultan 2017; Cheng and Rashid 2013; George and Kumar 2014). Given that the philosophy of DE is to give access and provide lifelong learning opportunities to potential students who could not access main campuses, there is a need to ensure that those opportunities provided are satisfying. The authors, therefore, adopted the modified SERVQUAL model as the lens to understand students' perceptions of the service quality of the University of Ghana (UG) DE programme.

In providing a context for the SERVQUAL model, Rauch et al. (2015) define service quality as the way in which companies either meet or exceed customer expectations. From the perspective of customers, Mauri, Minazzi and Muccio (2013) indicate that consumers assess and perceive service quality according to the five essential constructs in Parasuraman, Zeithaml and Berry's (1991) modified SERVQUAL model, namely, reliability, assurance, responsiveness, tangibility, and empathy.

Firstly, Parasuraman, Zeithaml and Berry (1991) note that reliability depicts an institution's ability to perform required services dependably and accurately for the first

time. They also note that institutions should not only aim to do things right the first time. To the authors, doing the right thing should be intentional, calculated, and an intrinsic fibre of the organisational processes. Thus, institutions must strive to fulfil their promises to their clients and pay attention to results. Doing the above helps ensure the reliability of service quality which Ennew, Waite and Waite (2013) adduce could be regarded as the extent to which customers can rely on the service promised by the organisation. In essence, service quality should focus on the past, present, and future outcomes of their organisations in lieu of the quality of their service provision.

Secondly, assurance reflects the ability of the staff of institutions to provide friendly, confidential, courteous, and competent services to their clients. It is almost certain that these features have a positive impact on clients' [DE students in this study] knowledge, skills, attitudes, and behaviour. Pakurár et al. (2019) detail that listening to clients provides them with the assurance of getting their money and time's worth from service providers. Hence, the ability of staff to transfer confidence, trust, and satisfaction to their clients, regardless of their educational level, age, and nationality, is central to the element of assurance. Closely linked to the foregoing construct is responsiveness, which Parasuraman, Zeithaml and Berry (1994) highlight as the willingness of employees to give clients real-time information. Employees thus give clients their undivided attention, promote their institution's services and give personalized responses to clients. Similarly, Yarimoglu (2014) describes responsiveness as access to services, and further emphasises that there should be accessibility through real-time responses, and operation hours; further, the location of the institution should be conveniently accessible to clients. Consequently, Gonu and Agyepong (2016, 12) state that "this dimension emphasizes attentiveness and promptness in dealing with customer requests, questions, complaints, and problems".

The next essential construct of the modified SERVQUAL model is tangibles which Parasuraman, Zeithaml and Berry (1994) consider as the physical facilities of the institution. These facilities consist of (sophisticated) equipment, personnel, communications materials, and machines for enhancing the speed and efficiency of transactions (Ananth, Ramesh and Prabaharan 2010; Pakurár et al. 2019). Ananth, Ramesh and Prabaharan (2010) further identified the attractive ambience of institutions to have an impact on customer satisfaction. In the context of DE, Zhou et al. (2017) argue for a mix of digital and traditional media for enhancing tangibles to support teaching and optimize learning. Lastly, Parasuraman, Zeithaml and Berry (1994) reveal that giving clients the feeling of being unique and special is at the heart of empathy. Pakurár et al. (2019) identify paying personal attention to clients as important in the context of empathy as they will feel prioritised. For institutions to operate within the ambit of empathy, Parasuraman, Zeithaml and Berry (1991) call for the need to understand customer expectations better than competitors. The authors believe such understanding helps to provide tailor-made care and attention to increase clients' satisfaction levels. Consequently, Ananth, Ramesh and Prabaharan (2010) call for

individualised attention and a better understanding of customers' specific needs in this regard.

To sum up, the authors bring to the fore that the modified SERVQUAL model has been used extensively to measure service quality and satisfaction mainly in the banking sector (Pakurár et al. 2019) as an important and appropriate assessment tool for measuring clients' perceptions of service quality generally. However, a few studies on DE in the Ghanaian context have been cited to use the SERVQUAL model (Eshun, Badu and Korwu 2018; Gonu and Agyepong 2016). Given the gap identified and the fact that the modified SERVQUAL model has proven to be an effective tool for assessing service quality globally, the authors deemed it appropriate for exploring students' perceptions of the dimensions of the UGDE programme's service quality.

Methodology

The selection of the UGDE programme represents purposive sampling to understand students' perceptions of the service quality of the programme. The UG operates a blended mode in 11 LCs across the country (UG 2021). These centres are spread across the former 10 administrative regions of Ghana with an additional one in Tema. Purposive sampling was used to select the Accra and Tema LCs and also to recruit participants for the in-depth interviews. These LCs receive approximately 90% of DE students to the UG annually (UG 2020). Thus, roughly 10 800 out of the current registered population of 12 000. This number is significant enough to represent the views of the student population in this study. In-depth qualitative interviews were conducted with 30 participants of the UGDE programme who engage in face-to-face tutorials over weekends at the Accra and Tema LCs. The participants included 15 students at each LC (a total of 17 female and 13 male students). The recruitment period was from August to November 2020. A researcher-designed semi-structured interview guide was used for the interviews. The five essential constructs of the SERVQUAL model (Parasuraman, Zeithaml and Berry 1991) provided a framework for developing the interview questions. The semi-structured interview protocol provided an opportunity for interactive discussions that explored experiences and perceptions of service quality from the perspective of the participants using their meanings and interpretations. The interviews were conducted in English by both authors with each lasting approximately 35 minutes.

A hermeneutic interpretivist phenomenological approach was employed to inductively explore the participants' perceptions of service quality, which entailed the use of a hermeneutic circle to intersubjectively understand the many meanings involved (Newberry 2012). This process required numerous readings of the interview transcripts, both pre- and post-coding, and conducting an analysis that aimed to identify meaning units, condensed meaning units, and analytical (sub)themes (McAuley 2004). The interviews were transcribed and the data was coded and analysed from which descriptive

feedback reports were developed. To ensure the validity of the data, the transcripts were read several times by the authors while comparing them to the audio recordings. The transcripts and analysed data were also shared with the study participants as a member validation strategy (Creswell and Poth 2013). The authors also presented the findings purely from the perspective of the participants without recourse to their own beliefs and views as experts in the field of education. Lastly, the participants were assured of strict confidentiality and anonymity as all information about them was only accessible to the authors and caution was taken to ensure that their identities were not made known through discussion and dissemination of the field results.

Discussion of Findings

The study employed the modified SERVQUAL model to explore the dimensions of the UGDE service quality from students' perceptions. Through the exploration, the participants described their perceptions of the five categories of service quality, namely, reliability, assurance, responsiveness, tangibility and empathy. The rest of this section describes these categories in detail and provides excerpts from the participants' testimonies as appropriate. For DE students who attend classes at the LCs, securing quality services is often considered to be the most difficult challenge.

Reliability

Parasuraman, Zeithaml and Berry (1991) describe the reliability dimension of the SERVQUAL model as the institution's ability to provide sustained dependable, and effective services to its customers. Concerning the reliability dimension, the participants had mixed beliefs about the ease with which they could access support services in the LCs. On the one hand, the majority of the participants believed that their access to support services increased in the LCs:

> I think the university is doing its best and we are comfortable. This is because we are getting all the support we need from the university.
>
> Even though those of us in Tema do not have access to well-structured facilities, our management tries as much as possible to ensure that our needs are met halfway.

However, a number of participants expressed concern over the challenges associated with accessing certain types of physical facilities or services, such as poor infrastructure and tutors' commitment. For instance, some found it challenging to be active in the LCs, particularly for those who need regular assistance from tutors. This is evidenced in the following remark:

> There are times when tutors do not show up and there is also the indiscriminate cancellation of tutorials.

Although the participants expressed views on the issues concerning the UGDE programme that was consistent with previous studies (Agyekum 2020; Amponsah, Ussher and Amoak 2019), they did not necessarily translate these views into a decline in DE programmes. Although similar challenges for success in HE is reported in regular student populations (Kaatrakoski, Littlejohn and Hood 2017), the experiences of DE students are complicated by the dynamic interplay of HE challenges that play out in the distance mode of education. More could therefore be done to fulfil the promised and actual services (Ennew, Waite and Waite 2013; Parasuraman, Zeithaml and Berry 1991) provided by the UGDE to reduce the sources of vulnerability to HE that were rooted in challenges associated with DE programmes.

Assurance

It is interesting to note that when asked to identify factors that contribute to their educational status change (an improvement), none of the participants identified factors related to access to specific quality services. Students experience and engage LCs through a complicated layering of factors (privilege and marginalisation) shaped through their current circumstances, over the course of their study, and in relation to imaginaries of other learning places and opportunities with which they either identify or disidentify. Those participants who believed their education had improved attributed this positive change to what they perceived as a superior DE environment. These could also be attributed to the ability of the UGDE staff to provide friendly, confidential, courteous and competent services to the study participants (Parasuraman, Zeithaml and Berry 1991). Reflections on the above are shared in the quotes below:

> Distance education has given some of us voices to speak. Not only that but it is gradually building our self-esteem as well. DE has given equal opportunity and certificates to those of us who couldn't make it [to universities] after high school.

> I have gained the experience of being independent in terms of understanding the learning materials rather than depending on a tutor or lecturer. I am a worker and a single mother but distance learning has helped me organise my home on weekends and work during the weekdays.

Despite the participants' high rating of the UGDE programme on assurance, some participants had reservations. This had to do with the cost of enrolling in the programme which they identified as a factor that could have a potential negative impact on DE programmes. For instance, one participant crystallised the voices of all such students as:

> Distance education is very expensive, especially for those of us who are not working full-time and without support from our families. It's a full fee-paying programme with no financial support from the university.

These findings are also significant given the growing body of research on DE environments. These environments promote competence, confidence, and trust among students which invariably depict the positive work ethic of the DE employees at the LCs (Pakurár et al. 2019; Parasuraman, Zeithaml and Berry 1994). However, some participants discussed the costs of enrolment as challenging and a stressful part of the DE programme. The role of DE in promoting inclusion or exclusion in HE may thus be much more complex than what has been suggested in the HE literature.

Responsiveness

While Yarimoglu (2014) describes responsiveness as access to information, Gonu and Agyepong (2016) emphasise attentiveness and promptness in dealing with customer requests. Anything short of the above will only compound the challenges that most DE students go through. It is also worth putting across that the optimism of many of the participants to be successful in the UGDE programme seemed to be nurtured by the commitment of DE staff and officials to help them willingly, having in mind that a bit of support would help the students to succeed in their studies. It is in view of the foregoing that some of the participants shared the following:

> They [referring to the management and staff of the LC] are doing their best and it is enough for now. However, if additional support could be extended, we will be grateful.

> Our Centre Heads and their staff are ever ready to respond to any call for clarifications.

A participant held a view contrary to the above. This points to the fact that though a majority of the students appreciated the quality of responsiveness offered to them at their LCs there were still gaps that called for improvement. The view beneath typifies the perspective of the participants in that vein:

> They [referring to management and staff of the LC] may need to up their level of commitment. As compared to what happens at the main campus, our support staff lag behind. There is indeed more room for improvement on their part.

The preceding narratives largely show that service providers at the LCs are responsive to the needs of the students in line with what has been recorded in the literature given the responsiveness dimension (Gonu and Agyepong 2016; Parasuraman, Zeithaml and Berry 1994). Furthermore, these authors believe responsiveness contributes to the satisfaction of clients despite the shortfalls derived from the responses of the participants. Despite some negative perceptions relayed in the field data, the majority of the participants felt that the UGDE programme contributed positively to improving

their academic status. Similarly, the participants shared mixed views about the ease with which service providers willingly helped them but thought they could still improve their responsiveness.

Tangibility

According to Parasuraman, Zeithaml and Berry (1994), the tangibility dimension of service quality refers to the surroundings, physical facilities, and equipment used in the delivery of services (e.g., in the LCs) and the appearance of the personnel. DE students regard aspects of the tangibles in the LCs as insufficient and poor in quality. Though the UGDE programme commenced in 2007, there are still infrastructural deficits that serve as a major drawback in providing the quality of services expected by students. In view of this deficit, two of the study participants remarked:

> We aren't getting the full package of the DE programme. Our libraries and ICT labs are closed during lecture hours.
>
> Learning and teaching are not much effective for students due to the poor state of facilities at the Centre. We seem to compromise since we don't have access to the main lecturers except during revision periods.

Overall, the quality of support services is ideal for framing student success and persistence for under-represented students. Current research on satisfaction and quality of service (Rajabalee and Santally 2020) indicates a lack of attention to students from under-represented groups, particularly DE students. In this study, the kind of media for optimising teaching and learning (Zhou et al. 2017) seems absent from the LCs. The challenge with using quality of service as the ultimate measure for student satisfaction is that "satisfaction" can mean something completely different to student groups who have been historically marginalised in HE (Hurtado and Carter 1997).

Empathy

Empathy occurs when DE students are provided with the individualised special care and attention they need (Pakurár et al. 2019). This could also depict the provision of equitable access to learning and teaching services across all manner of students (Lodesso et al. 2018; Parasuraman, Zeithaml and Berry 1994). Ensuring the above will undoubtedly ameliorate the challenges that DE students go through. These are students who are mostly working and may have familial challenges as they go through school. Some people, including lecturers, often see them as second fiddle to students on the main campus. This often happens in dual-mode schools such as the UG which brings to the fore the need to pursue empathy with all the attention it deserves. It is, therefore, with little surprise that the participants reported feeling misunderstood, discriminated

against, and excluded from many aspects of the services and academic life at the UG. The participants' views expressed below attest to this:

> You do not get all services at the Centre, most at times you will be directed to the main campus. Currently, we are in level 300 and we have not gotten any explanation on what courses to choose or drop.

> Being a DE student is too stressful and exhausting in the sense that the institution does not put much effort or consideration into the needs of students on this programme.

From the foregoing, it would not be wrong to conclude that the accumulation of the highlighted burden together with limited services and resources to support DE students' academic life further diminishes their self-esteem and self-confidence (Vakoufari, Angelaki and Mavroidis 2014). This runs parallel to the call for identifying students' challenges and providing them with prompt tailor-made attention to increase their satisfaction (Pakurár et al. 2019). Consequently, it is of utmost importance to consider that ensuring empathy is a key pillar in service provision as the experiences of DE students are mostly complicated by the dynamic interplay of educational exclusion that plays out in the distance learning mode.

Conclusion and Recommendations

The UG is one of the pioneering DE providers in the country. It currently provides access to around 12 000 students across 11 LCs. This is commendable as many of the students could not have gained access to its main campus or could not have taken up such an opportunity due to career, familial or personal demands. However, there is still much to be desired as the UG has not given much recognition to DE students engaged in face-to-face tutorials as a unique student population requiring special structures of DE promotion strategies and special arrangements for DE support services. Thus, the authors recommend that DE authorities and policymakers responsible for developing DE support services investigate options for including the distance population among students who qualify for special services. These DE support services may adopt the guidelines proposed by UNESCO (2020) which suggest developing a systematic review or audit of existing institutional policies to take care of the needs of DE students. Strategic and bold initiatives are required to implement quality of service in more proactive ways that will ensure that all DE students will not experience poor quality services and will have genuine opportunities for success and satisfaction in the university environment.

As DE students continue to make up an increasing percentage of the UG population, it is essential to understand not only the extent to which their status changes with enrolment in DE programmes but also the factors that contribute to quality education. Of equal importance is the need to consider DE students' perceptions of the key services

that shape success in DE programmes. Our research has demonstrated the importance of key factors construed in the modified SERVQUAL model (Parasuraman, Zeithaml and Berry 1991). Though the study revealed that the study participants were fairly satisfied with the reliability, assurance, and responsiveness dimensions of the services provided to them, it also revealed how the tangibility and empathy dimensions had been overlooked. This gross deficit has both theoretical and practical dimensions as available studies have not included DE students' voices in their education and well-being which the study also concluded. It is within this context that an increased understanding of factors that either enhance or hinder the provision of service quality provides an applicable step to initiating research interest, scholarly discussions, and the development of fine-tuned mechanisms to reduce poor quality service and enhance satisfaction. In so doing, this study invites future studies that will employ mixed methods and quantitative designs to investigate larger students' voices on the phenomenon under study. The recommended studies could make up for a limitation of the current study (inability to generalise findings by virtue of the choice of the qualitative design and fewer samples) which will give greater impetus for policy directives followed by actions from all stakeholders.

References

Adarkwah, M. A. 2021. "'I'm Not against Online Teaching, but What about Us?': ICT in Ghana Post Covid-19." *Education and Information Technologies* 26 (2): 1665–1685. https://doi.org/10.1007/s10639-020-10331-z

Agyekum, B. 2020. "There Is always This Feelings of Otherness: Exploring the Learning Experience of Distance Education Students in Ghana." *International Journal of Higher Education and Research* 10 (2): 153–166. https://doi.org/10.7755/ijher170720.08

Al-Jazzazi, A., and P. Sultan. 2017. "Demographic Differences in Jordanian Bank Service Quality Perceptions." *International Journal of Bank Marketing* 35 (2): 275–297. https://doi.org/10.1108/IJBM-07-2016-0091

Amponsah, S. 2021. "Echoing the Voices of SWVIs under Covid-19 Inspired Online Learning." *Education and Information Technologies* 26: 6607–6627 https://doi.org/10.1007/s10639-021-10479-2

Amponsah, S., Y. A. A. Ussher, and B. K. Amoak. 2021. "Availability and Access to Support Services in a Blended Learning Environment." *International Journal of Information and Communication Technology Education* 17 (1): 57–71. https://doi.org/10.4018/IJICTE.2021010104

Ananth, A. A., R. Ramesh, and B. Prabaharan. 2010. "Service Quality Gap Analysis in Private Sector Bank – a Customer Perspective." *Indian Journal of Commercial Management Studies* 11 (1): 245–252.

Biney, I. K. 2021. "McClusky's Theory of Margin and Its Implications on Adult Learners in Higher Education Institutions." *Journal of Adult and Continuing Education* 28 (1): 98–118. https://doi.org/10.1177/1477971421989337

Cheng, B. L., and M. Z. A. Rashid. 2013. "Service Quality and the Mediating Effect of Corporate Image on the Relationship between Customer Satisfaction and Customer Loyalty in the Malaysian Hotel Industry." *Gadjah Mada International Journal of Business* 15 (2): 99–112. https://doi.org/10.22146/gamaijb.5474

Creswell, J., and C. Poth. 2013. *Qualitative Inquiry and Research Design: Choosing among Five Approaches*. 4th ed. Los Angeles: Sage.

Ennew, C., N. Waite, and R. Waite. 2013. "Financial Services Marketing: An International Guide to Principles and Practice." 2nd ed. London: Routledge. https://doi.org/10.4324/9780203521649

Eshun, E. F., A. K. Badu, and P. Korwu. 2018. "Impact of Service Quality on Students' Satisfaction in a Ghanaian Public Tertiary Institution." *International Journal of Learning and Development* 8 (3): 97–112. https://doi.org/10.5296/ijld.v8i3.13447

George, A., and G. G. Kumar. 2014. "Impact of Service Quality Dimensions in Internet Banking on Customer Satisfaction." *Decision* 41 (1): 73–85. https://doi.org/10.1007/s40622-014-0028-2

Gonu, E., and G. K. Q. Agyepong. 2016. "Students' Perception about Quality of Distance Education at the University of Cape Coast, Ghana." *European Journal of Business and Management* 8 (15): 9–20.

Hurtado, S., and D. Carter. 1997. "Effects of College Transition and Perceptions of the Campus Racial Climate on Latino College Students' Sense of Belonging." *Sociology of Education* 70 (4): 324–345. https://doi.org/10.2307/2673270

Kaatrakoski, H., A. Littlejohn, and N. Hood. 2017. "Learning Challenges in Higher Education: An Analysis of Contradictions within Open Educational Practice." *Higher Education* 74: 599–615. https://doi.org/10.1007/s10734-016-0067-z

Kotoua, S., M. Ilkan, and H. Kilic. 2015. "The Growing of Online Education in Sub-Saharan Africa: Case Study, Ghana." *Procedia – Social and Behavioural Science* 191: 2406–2411. https://doi.org/10.1016/j.sbs.pro.2015.04.670

Lodesso, L. S., J. E. van Niekerk, A. C. Jansen, and H. Müller. 2018. "Student Satisfaction regarding Service Quality at Ethiopian Public Higher Education Institutions: A Case Study." *Journal of Student Affairs in Africa* 6 (2): 51–64. https://doi.org/10.24085/jsaa.v6i2.3309

Malik, M. E., R. Q. Danish, and A. Usman. 2010. "The Impact of Service Quality on Students' Satisfaction in Higher Education Institutes of Punjab." *Journal of Management Research* 2 (2): E10. https://doi.org/10.5296/jmr.v2i2.418

Mauri, A. G., R. Minazzi, and S. Muccio. 2013. "A Review of Literature on the Gaps Model on Service Quality: A 3-Decades Period: 1985–2013." *International Business Research* 6 (12): 134. https://doi.org/10.5539/ibr.v6n12p134

McAuley, J. 2004. "Essential Guide to Qualitative Methods in Organisational Research." In *Hermeneutic Understanding*, edited by C. Cassell and G. Symon, 191–202. London: Sage. https://doi.org/10.4135/9781446280119.n16

Newberry, A. M. 2012. "Social Work and Hermeneutic Phenomenology." *Journal of Applied Hermeneutics* 14: 1–18. https://doi.org/10.11575/jah.v0i0.53219

Pakurár, M., H. Haddad, J. Nagy, J. Popp, and J. Oláh. 2019. "The Service Quality Dimensions that Affect Customer Satisfaction in the Jordanian Banking Sector." *Sustainability* 11 (4): 1113. https://doi.org/10.3390/su11041113

Parasuraman, A., V. A. Zeithaml, and L. L. Berry. 1991. "Refinement and Reassessment of the SERVQUAL Scale." *Journal of Retailing* 67 (4): 420–450.

Parasuraman, A., V. A. Zeithaml, and L. L. Berry. 1994. “Reassessment of Expectations as a Comparison Standard in Measuring Service Quality: Implications for Further Research.” *Journal of Marketing* 58 (1): 111–124. https://doi.org/10.1177/002224299405800109

Rajabalee, Y. B., and M. I. Santally. 2020. “Learner Satisfaction, Engagement and Performances in an Online Module: Implications for Institutional E-Learning Policy.” *Education and Information Technologies*. https://doi.org/10.1007/s10639-020-10375-1

Rauch, D. A., M. D. Collins, R. D. Nale, and P. B. Barr. 2015. “Measuring Service Quality in Mid-Scale Hotels.” *International Journal of Contemporary Hospitality Management* 27: 87–106. https://doi.org/10.1108/IJCHM-06-2013-0254

UG (University of Ghana). 2020. “Opening Ceremony for Online Teaching and Learning Training Programme Held.” https://www.ug.edu.gh/news/opening-ceremony-online-teaching-and-learning-training-programme-held

UG (University of Ghana). 2021. “Commissioning of George Benneh Graduate Reading Room.” https://www.ug.edu.gh/news/commissioning-george-benneh-graduate-reading-room

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2020. “Distance Learning Solutions.” https://en.unesco.org/covid19/educationresponse/solutions

Vakoufari, M., C. Angelaki, and I. Mavroidis. 2014. “Self-Esteem and Loneliness as Factors Affecting Distance Learning Students.” *European Journal of Open, Distance and E-Learning* 17 (2): 66–79. https://doi.org/10.2478/eurodl-2014-0022

Yarimoglu, E. K. 2014. “A Review on Dimensions of Service Quality Models.” *Journal of Marketing Management* 2 (2): 79–93.

Zhou, F., C. Zhao, Z. Jiang, and L. Wang. 2017. “A Study on the Learning Support Service of Blended Learning under the Environment of Online Open Courses.” *International Symposium on Educational Technology (ISET)*, 272–276. https://doi.org/10.1109/ISET.2017.67

Part IV

Disability Perspectives in Open Distance e-Learning

Chapter 5

A Lack of Psychological and Disability Perspectives in the Framework for the Rational Analysis of Mobile Education: A Literature Review Analysis

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Abstract

This chapter reports on a literature-based study. The purpose of the study was to investigate how psychological and disability perspectives, in a South African context, can be accommodated in the Framework for the Rational Analysis of Mobile Education (FRAME) model to promote inclusive approaches in mobile learning. The FRAME model aims to guide how learning materials are designed to facilitate mobile learning effectively. This is important because mobile learning can enhance interaction in teaching and learning. The literature suggests that since psychological and disability perspectives are not adequately addressed in the FRAME model, two components should be added to the model so that inclusivity, particularly in relation to students with different abilities, can be accommodated. Further research regarding disabilities and the use of mobile learning will help educators and higher education institutions to expand their capacity towards adopting these technologies.

Keywords: activity theory; disability; mobile learning; inclusive learning

Introduction

It is notable that the current trend in all contexts of education, especially higher education (HE), engendered by technological advances revolves around mobile learning or e-learning allowing for discussions and sharing of e-resources between learner and

teacher. Although there have been several studies regarding e-learning, this chapter focuses on the Framework for the Rational Analysis of Mobile Education (FRAME) model which looks at mobile learning in the acquisition of learning. The FRAME model aims to guide the design of learning materials that facilitate mobile learning. In that regard, this chapter attempts to share the findings of a literature review on the FRAME model, in search of the incorporation of psychological and disability issues in the model. According to Koole (2009), the FRAME model allows learners the flexibility of learning while in physical and virtual locations; thus, facilitating their interaction with other individuals and systems. The main benefit of these interactions is access to available information and creation of new information to contribute towards personal and other kinds of development. The literature review focused on articles written only about the FRAME model by Kool and others (see Table 1).

The FRAME model describes mobile learning as a process resulting from the convergence of mobile technologies, human learning capacities, and social interaction. It posits the interaction between the device (mobile phone), the human (student) and social interacton (context) in which mobile learning takes place (see Figure 2). According to Koole (2009), this model would be applicable for informing the development of future mobile devices, teaching and learning (T&L) materials, and the design of teaching and learning strategies for mobile education. The "learner aspect" of the model adopts the assumption that all students can learn and manipulate mobile phones for optimal academic success. However, the students' negative psychological variables, such as anxiety, fear, competency, confidence and mastery, are not adequately addressed. This is even more acute in ODL institutions where students are already physically separated from the institution. Various theoretical approaches such as medical, bio-social and social and human rights models posit important multidimensional considerations, towards understanding students with disabilities.

ODL institutions tend to attract more students with disabilities, hence it is important that they are inclusive, and accommodative of the already marginalised student populations. The context in which students find themselves in South Africa and, especially in an open distance e-learning (ODeL) environment, poses several considerable questions regarding inclusion considerations in the FRAME model. It needs to be acknowledged that some of mobile learning constraints, such as the learning management systems (LMS) integration issues, plague HEIs complemented by data challenges, and the complexity of adaptive systems. In previous studies, it was shown that the literature on adaptive learning is typically fragmented or presented via certain lenses thus creating an untenable loop (Muñoz and Arias-Gonzales 2022).

Inclusive learning is not an easy concept to unpack, because there is no one understanding of what it means to be inclusive. (Mutanga 2015, 25) confirms that "the concept of inclusion is not straightforward". Equally, the White Paper for Post-School Education and Training (DHET 2013) states that regardless of "strong legislative and policy framework for addressing disability in the education sector, access and support

for people with disabilities remains limited". Considering the paucity of a clear definition, the author understands inclusive learning to be flexible, responsive and accessible to all students. Students with disabilities should be able to learn in their preferred styles; receive study materials in their chosen formats; and have their learning and assessment facilitated in accessible formats. To this end, Slater et al. (2015) argue that distance learning is supposed to enhance accessibility and improve the learning experiences of students.

In this regard, Ainscow (2005) identifies key elements for inclusion in education. Firstly, inclusion is a never-ending process of finding better ways to respond to diversity. Secondly, inclusion aims at identifying and removing barriers. Thirdly, it is concerned about teaching presence, participation and achievement of learning objectives for all students. Finally, inclusion is about ways in which groups of students who may be at risk of marginalisation, exclusion or underachievement can be supported to succeed. According to Czerniewicz and Brown (2009), inclusion requires a deeper conception of access, one that incorporates the full range of resources which inform required understanding of access and value in learning. It also means informed understanding of the factors which enable and constrain mobile learning or general information communication technology (ICT) take-up within HE. Therefore, there is a need for a deeper understanding of what access entails towards understanding the challenges that students encounter. Latest research by Wilson and Berge (2023) posits that educational e-learning experience should encompass three elements, namely, cognitive presence, teaching presence, and social presence. These are crucial concepts delineating psychological imperatives for effective and optimal e-learning, especially for students with disabilities for inclusivity in the community (social-collaborative) learning process. Accordingly, Fiock (2020) and Kozan and Caskurlu (2018) opine that the cognitive aspect (Subject-FRAME) relates to the ability to which students construct knowledge, solve problems and engage in critical reflections. The teaching presence would relate to the manipulation of the learning aspect (Object-FRAME) and as a purposeful foundation for the learning (e-learning/mobile learning) environment.

It appears that e-learning and mobile learning are the fastest-growing drivers of formal and informal education, and training as well as immersive learning environments. Students are expected to adapt to these changing learning environments and especially in open distance contexts (Castellanos-Reyes 2020; Fiock, Maeda and Richardson 2021). This requires detailed planning and implementation of the learning activity, which can be rightly guided by activity theory. Amory (2014) opines that activity theory should guide the careful process of thinking about how technology links with the object to user-friendly learning experiences. The use of mobile learning, for example, requires understanding of students' specific needs, knowledge and skill-set so that learning can be mediated efficiently. It is worth noting, though, that Brown and Mbati (2015) caution that mobile learning is not about the use of mobile devices for T&L, rather that it requires effective pedagogical practices. Ng'ambi (2013) also stresses the importance of using mobile learning with the requisite teaching practices to effect meaningful

learning. Furthermore, Brown and Mbati (2015) point to the significance of (re)designing T&L to mediate effective learning through mobile learning.

The current study utilised a strategic search approach based on research emphasis, and adaptive techniques and technology, research methodological components as well as published articles by Koole. Accordingly, in the comprehensive and systematic past five years, Koole's peer-reviewed articles addressed and focused on different dimensions of this important learning arena. Nevertheless, there is a lack of narrative which can portray a review of studies and literature on this pertinent and topical subject. This chapter is an attempt to review the existing literature on evolving mobile learning in HE.

Inclusive mobile learning, therefore, requires that the learning content be designed and presented through the guidance of appropriate pedagogy, including the use of the universal design for learning (UDL). UDL forms an important approach and implementation of the rules that guide the provision of accessible learning to students with disabilities. UDL does what Engeström (2001) advocates, namely, "bridges between imagined, simulated and real situations that require personal engagement with material objects and artefacts that follow the logic of an anticipated or designed future model of the activity." Thus, UDL provides three principles that ensure that all stduents can access learning content and platforms equitably, namely, various means of representation; means of action and expression; and means of engagement (Ralabate 2011). Various means of representation involve providing information in different formats; definition of complicated vocabulary and symbols used; and clarification of key concepts. Various means of action and expression ensure that the learning environment and learning tool are navigable; the students understand the means of communication used; and they can solve their own problems as part of learning. Various means of engagement avail the students' different ways of engaging to achieve their set learning outcomes. Successful inclusion takes place through accepting, understanding, and attending to student differences and diversity. This could include physical, cognitive, academic, social and emotional. Evidence supports that to be effective, teachers need an understanding of best practices in teaching and of adapted instruction for students with disabilities, but positive attitudes toward inclusion are also among the most important aspects for creating functional inclusive classroom (Savage and Erten 2015).

As much as the FRAME model has been accepted as adequate for mobile learning, conversely this study critiques this framework including the following three problems. Firstly, the lack of psychological factors as this requires individuals to rely on interpretation of the literature with little or no instructional design. Secondly, the framework does not include disability issues with inherent problems regarding assessment and evaluation procedures or processes. The author, in parallel with Martin, Bollinger and Flowers (2021), deems this to be an important and essential aspect for online learning for both learners and instructors to measure overall effectiveness of mobile/e-learning.

The purpose of this study was to present the findings of an investigation of how psychological and disability perspectives, in a South African context, can be accommodated in the FRAME model to promote inclusive mobile learning. This was done through the analysis and critique of the three essential aspects of mobile learning, namely, the device usability, the learner aspect, and the social aspect.

Theoretical Background

Activity Theory

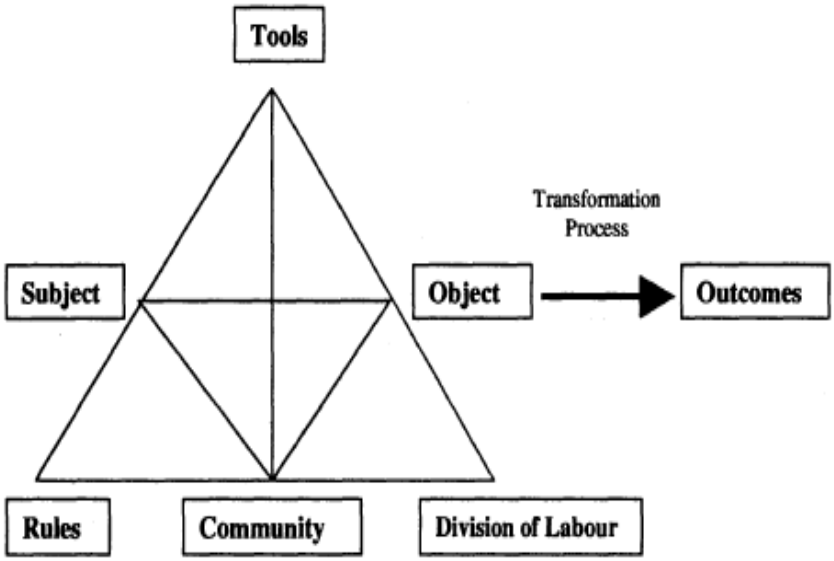

Figure 1: Structure of human activity system
Source: Engeström (2001)

Although mobile learning has found expression in T&L as well as research spaces, there seems to be under-theorisation about the nature, processes and outcomes of mobile learning (Sharples, Taylor, and Vavoula 2005; 2007; Wali, Winters and Oliver 2008) Several studies have grounded and conceptualised mobile learning applications to learning in the framework of activity theory (Gedera and Williams 2016; Liaw, Hatala and Huang 2010). Activity theory is a cross-disciplinary framework for studying different forms of human practices for developing individuals and social levels at the same time (Kuutti 1996). Accordingly, the basic unit of analysis is an activity which is

defined as a form of doing by a subject directed at an object using tools to transform it into an outcome. Kaptelinin (1996) views the activity theory in terms of human computer interaction in context. This view is considered pertinent for this chapter as it speaks directly to students interacting with technology, of whatever make and type, in the context of student support and counselling. According to Frederickson, Reed and Clifford (2005) and Engeström (2001), activity theory represents the activity systems in terms of the relationships between an individual (subject), and the object in the environment and the community. It is imperative to acknowledge that these relationships are mediated in different ways.

Further, and in relation to the activity theory, mobile learning should allow each student to get the instruction and practice faster and mastery to their capability. Due to the scaffolding technique involved, students receive individualized instruction which help them develop their personal potential in and out of the classroom. Besides, according to Castro (2019), mobile learning encourages personalized learning methods based on each student's current skills and performance and as such feedback is based on each student's strengths and weaknesses.

Notwithstanding the above, Becker et al. (2017) state that learning needs to use a blended and online learning environment, to provide a personalized adaptive learning experience. Further, such an HE environment should be is equipped with technological innovations such as learning analytics and machine learning, or systems that monitor learner progress and use data to continuously modify the teaching content according to the needs of individual learners. A recent study by Debattista (2018) is considered relevant for e-learning contexts like the University of South Africa (Unisa) as it suggets a comprehensive rubric for instructional design in e-learning which could inform optimal outcomes for the e-learning academic project.

As much as there has been an increase in the popularity of adaptive learning technology/mobile learning, however, literature suggests that extensive implementation still remains a challenge for learning environments (McCullough, Patrick and Boni 2022). This position is shared by other studies (Martin, Bollinger and Flowers 2021; Wilson and Berge 2023) regarding e-learning isntructional design-evaluation-assessment, educational experiences and effectiveness. The author considers these e-learning research critiques pertinent in HE contexts and especially Unisa as an ODeL environment.

Cultural artefacts or tools, as espoused by the theory, mediate the relationship between the subject and object. Frederickson, Reed and Clifford (2005) posit that these cultural artefacts can be material objects or symbol systems or procedures – anything that is used in the transformation process (Kozan and Caskurlu 2018; Martin, Wang and Sadaf 2020). The relationship between a subject and a community is mediated by rules such as norms and conventions while the relationship between an object and a community is mediated by the division of labour. The division of labour describes formal and informal

ways in which the community is organised in relation to the transformation process. However, Activity systems are typically in flux as contradictions result from the operation of external influences (Engeström 2001).

Figure 1 has been adopted in order to climax the similarities in the theory and practice-based counselling (psychological) process. The basic assumptions are that, just as a student follows the learning in a learning situation, so does a client in a therapeutic situation. The learning process is like the manipulation of a tool to reach a desired outcome.

The roles within this therapeutic (student support) coalition are also deemed like that of an instructor, as the therapist works according to the pace and presenting information, mastery of the interaction-online whilst mobile language speaks to the rules of communication and the counsellor's (therapist) steering of appropriate language usage for the client's benefit and understanding the (AC-C-BC) according to the FRAME model, such as the symbolic representations of communication by the student. Thus, networked learning is active and social with an aim of mediating technologies such as mobile learning provides an infrastructure for social activity. The visual images we choose to signify ourselves, the style of language we use, and the degree to which we are open ourselves within these spaces, give a collective picture of how we are perceived.

The envisioned outcome by all stakeholders, is a positive resolution or empowerment of the student in the counselling process. The counsellor's sensitivity to the client's culture and social/community aspects informs the pace and language complexity used for different clients at different levels of any therapeutic alliance (A–B–AB) in line with the FRAME model. Accordingly, the FRAME model assumes that the pace at which the client engages in the process determines how, what and when the counsellor can intervene; thus, always ensuring that the client eventually develops a sense of agency in the whole process. In accordance with the FRAME model, this would speak to the advantages of online/mobile counselling as espoused by many researchers (Marks, Cavanagh and Gega 2007; Ng'ambi 2013; Speyer and Zack 2011). The methodology aims to shift teacher practice from an inherent and belief-based approach to one that is explicit and design-based. The aspiration is that such an approach will guide teacher design practice and help make the learning design process more explicit and hence inclusive. Accordingly, as reiterated by Chun, Kern and Smith (2016), methodology includes a range of conceptual visual design tools, as well as approaches for fostering the sharing and discussing of T&L designs, through structured real events and via specialised social networking tools (Kebritchi, Lipschuetz and Santiague 2017; Martin, Bollinger and Flowers 2021).

The FRAME Model

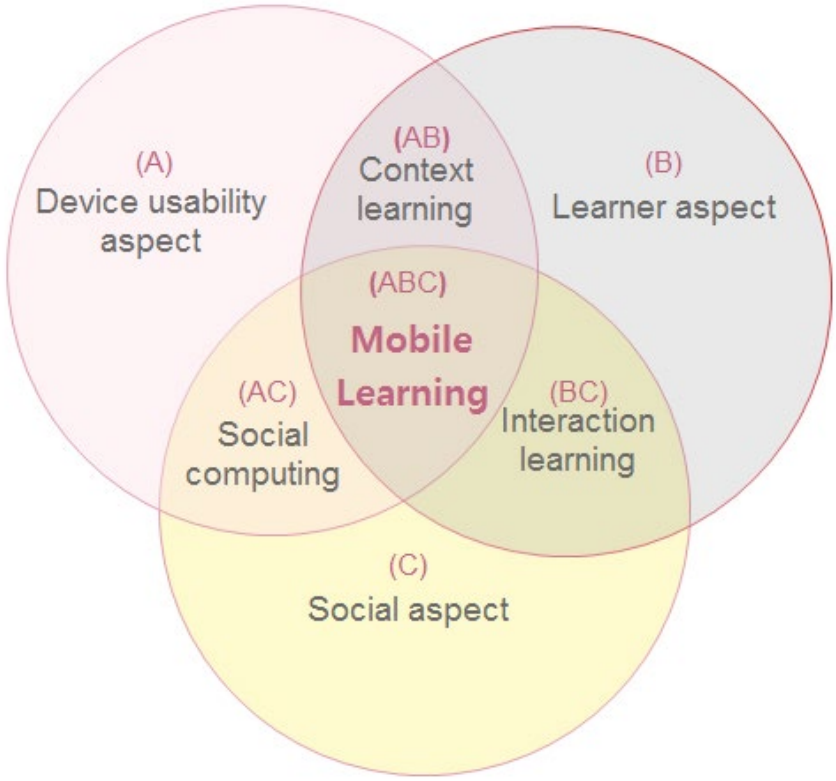

Figure 2: The FRAME model
Source: Koole and Ally (2006)

The FRAME model describes mobile learning as the convergence of mobile technologies, human learning capacities, and social interaction. It posits the interaction between the device (mobile phone), the human (student) and social interaction (context) in which mobile learning takes place. The model is the focus of this current investigation. The author has made a systematic in-depth review of the key proponents of the FRAME model contextualised to the South African mobile learning context, considering psychological and disability perspectives. It is notable that each aspect of the FRAME model suggests independence; however, it requires interdependence to function optimally. Hence, it is necessary for all the elements in the FRAME model to work together for effective learning to take place in all environments. The authors posits the crucial importance of the foregoing in an HE landscape, specifically Unisa that is an ODeL environment with inherent connectivity, resource allocation and student educator distance implications. The findings are envisaged to assist those involved in mobile

learning in identifying devices and learning designs which could be beneficial for the section of students presenting with psychological and disability characteristics.

Research Methodology (Procedure)

This chapter derives from a document analysis that was conducted through the literature review of articles that were written and published by Koole (2009) on the FRAME model. The aim was to explore ways of incorporating psychological and disability perspectives in the FRAME model. Several literature reviews about mobile learning were searched and it was found that a detailed review of all publications by Koole was essential to combine all the results of these studies to enhance conclusions about possible ambiguities and misunderstandings regarding the study area, especially in respect of disability and inclusiveness in HE. Accordingly, these studies were classified and aggregated as per the recommendations (Cooper and Koenka 2012) of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

The current study used activity theory to determine how psychological and disability perspectives can be better accommodated in the FRAME model to promote inclusive mobile learning. Hence, the study examined the following research questions:

- How does the FRAME model promote psychological perspectives in mobile learning?
- How does the FRAME model promote disability perspectives through mobile learning?
- Does the FRAME model support the inclusive learning agenda?
- What are the barriers and opportunities for advancing inclusivity using the FRAME model for psychological and disability issues?

Desktop Data of the FRAME publication: Koole

The primary focus of the selected articles should be on FRAME and mobile learning technology in education and written in English. The articles were screened again to ensure and increase the authenticity of the research objectives. The search process was performed on educational databases for all published articles by Koole. The authors focused on research in education and its characteristics in the development of adaptation for learning. The eligibility of articles for this review depended on the inclusion and exclusion criteria selected for this study, namely, the articles had to be specific to mobile learning and the FRAME model. Table 1 presents the articles analysed and reviewed in this chapter.

Table 1: Articles analysed and reviewed

Year	Author/s	Article title
2006	Koole	*The Framework for the Rational Analysis of Mobile Education (FRAME) Model: An Evaluation of Mobile Devices for Distance Education*
2009	Koole	*The Framework for the Rational Analysis of Mobile Education (FRAME)*
2010	Koole, McQuilkin and Ally	*Mobile Learning in Distance Education: Utility or Futility?*
2017	Koole	*Design of Technology-Enhanced Learning: Integrating Research and Practice*
2018	Koole, Buck, Anderson and Laj	*A Comparison of the Uptake of Two Research Models in Mobile Learning: The FRAME Model and the 3-Level Evaluation Framework*
2018	Koole and Morrison	*Learning On-the-Go: Older Adults' Use of Mobile Devices to Enhance Self-Directed, Informal Learning*

Critique of the FRAME Model

Lack of Psychological Factors

The FRAME model has used mobile learning devices to reinforce stimulated motivation and enhance engagement, as well as a content-delivery tool (Sung, Chang and Liua 2016). As posited by Martin et al. (2022) and Sadaf, Wu and Martin (2021), this is the cognitive presence of the learner in the e-learning process. Accordingly, Martin et al. (2022) considered cognitive presence of the learner as receiving minimal attention in e-learning research, however, an important measure of the quality of the e-learning experience. The unique features of mobile devices can enhance the essential functionalities of certain teaching methods and, thus, promote educational outcomes. Another feature that empowers the T&L process is the portability and context awareness of mobile devices. The FRAME model assumes that mobile learning is effective because the learnesr can manipulate and engage with educational activities at their own pace and space. However, according to Sung, Chang and Liua (2016), few projects have used mobile devices to assist with constructive thinking or reflection.

Though the FRAME model postulates learner–device usability–social aspects, it falls short in addressing pertinent psychological attributes of the learner in the learning space. Mobile learning devices, according to activity theory, are designed to meet learning needs of acquisition of knowledge and performance support. Acquisition of knowledge presupposes "when wanting to learn" given the requisite and "holistic" support is not adequately addressed (Akayogtu et al. 2020). The model supposes that once a learner has been given training in manipulating the device, then that learner has "acquired" the

requisite skills to learn through the device. The findings of the study by Al-Bashayreh et al. (2022) confirmed that perceived usefulness and perceived ease of use are significantly influenced by self-efficacy and perceived compatibility. Further, the study posits that perceived usefulness of the device is significantly influenced by perceived convenience and perceived ease of use (Al-Bashayreh et al. 2022). This would support the important psychological factor of inherent self-efficacy in engaging with and mastery of the mobile device.

The FRAME model does not seem to accommodate aspects of "community-based learning" which differs from the "social aspect" that is at the individual level (Dempsey and Zhang 2019; Fiock, Maeda and Richardson 2021). The psychological situatedness or agency, that is, the psychological factors involved in the interaction between student and device, are missing. The FRAME model positions the integration of mobile technology to learning environments to achieve more effective learning, however, not how these technologies become beneficial for the student (Sharples 2000). The following factors are pertinent psychological factors for consideration in the FRAME model.

Inconclusive Multimodality and Mastery of the Digital World

The FRAME model presupposes that once a student has been exposed to the mobile device and oriented to its use (A + B = AB), then the student has been given the ability to master same. The psychological impact of students who experience difficulty in manipulating the device is not holistically addressed. From an activity theory perspective, Engeström (2001) depicts the importance of the interplay between the "subject" here student and the "object" here device to meet learning "transformation" outcomes, reiterated by (Owston, York and Malhotra 2018; Sadaf, Wu and Martin 2021). Further, it is important that the interface between the student and the device should be user-friendly for all mobile devices and available platforms, especially for smartphone that has limited view and buttons that are not easy to manipulate. The FRAME model fails to highlight this pertinent psychological aspect in mobile learning by seemingly undermining (not acknowledging) the framework of attributes of learning that students grapple with or bring into the learning space.

Minimising Discomfort in the Learning Experience – "Psychological Digital Story"

Anxiety, irritability, excessive worry, competency, confidence and mastery or fear as psychological concepts and behavioural outcomes are important for practitioners to consider in a learning space. Students exhibit reactions or responses to anxiety provoking situations in various ways. Some may withdraw from the activity, while others may perform dismally in the activity. These exhibited behavioural outcomes may be missed or misinterpreted by an unknowing educator. Said discomfort may also be articulated by studnets in terms of the incompatibility of the device for learning experiences. In a sense, their "psychological digital stories" may be misdiagnosed as an

indication of a learning disorder, digital illiteracy, or cultural variables, for example, first versus third world exposure.

Missing Psychological Catharsis in a Digital Space – "Socially Constructed Narrative"

The concept of psychological catharsis is considered clinically significant in the learning space of students. As much as the learning outcomes are objectively structured, in most academic instances said module construction misses the "socially constructed narratives" that students bring into the learning space. Mobile learning is constructed in such a way that students are expected to manipulate the device for expected learning outcomes devoid of the background. According to Anderson (2008), online learning should display learner-centeredness, which includes an awareness of the unique cognitive structures and understanding that students bring into the learning context. The FRAME model articulates the social aspect in mobile learning and misses the community fabric (co-construction) that weaves contextual understanding in the learning space. This assertion is parallel to the study by Lachney and Yadav (2023, 401) where they argue that "critical scholars of technology across disciplines argue that technological devices and socio-technical systems reproduce white supremacy and racism". This is an important psychological perspective that demands unpacking for contextual knowledge creation.

Normalising Trauma (Psychological)

The negative digital experiences of students may be severe enough to be considered psychological trauma. The FRAME model seems to normalise this aspect of psychological trauma. According to the FRAME model, the learner aspect (B); interaction learning aspect (BC); and social aspect (C) do not seem to effectively address this psychological aspect in the learning space. The assumption from the FRAME analysis suggests that the instructional and learning theories are adequate for learner assimilation and mastery. Social constructivism suggests that learning processes are interpreted and understood from a similar social framework or meaning. This similar social framework alleviates possible and plausible underlying psychological trauma, not articulated in the FRAME, symptomatic of anxiety and withdrawal in the learning space. ODL students, by presenting cultural and generational disparities, bring to the learning space disparate cognitive meanings and understandings as experienced in the South African context.

Obstacles

In terms of psychology, within the FRAME, mobile learning poses obstacles related to the following: The teacher, with minimal learner-centred projects in existence (Sung, Chang and Liua 2016) has control over most learning activities using mobile devices

and learners need time for familiarisation with mobile learning activities to enhance intellectual elaboration processes and outcomes.

Mobile learning may also pose obstacles in relation to mastery of anxieties regarding effective manipulation and mastery of mobile device applications and processes. For example, this might adversely affect students from rural-based schools, some presenting with disabilities and with no prior exposure to technologies, such as computers and other devices such as iPads. Such anxiety provoking situations may have an adverse outcome in the learning space. Since HE students vary in age and experience, mobile learning may pose unintended exclusionary processes or outcomes. Self-directed learning and self-efficacy in mobile learning environments depend on several psychological variables to be effective, such as, confidence in the use and manipulation of the device (cognitive presence); belief in the envisaged teacher and environment support; as well as the ability to learn in a conducive collaborative approach.

However, Cooper and Scriven (2017) consider it important to acknowledge that not all students are inclined to participate socially in all learning environments. Therefore, elaborate designs of learning scenarios, such as mechanisms for prompting questioning and explanatory strategies specifically related with the learning content, may need to be incorporated into the mobile device-based activities to enhance students' intellectual elaboration processes and outcomes.

Further, mobile-based cooperative learning programmes need to be long enough to produce positive effects (Byun, Lee and Cerreto 2014). The e-learning design aspect is elaborated on in recent studies (Fiock, Maeda and Richardson 2021; Martin, Bollinger and Flowers 2021; Martin et al. 2022) and relates to effective assessment and evaluation of learning outcomes. The authors consider this a critical problem, especially, in contexts such as Unisa as an ODeL environment.

Disability Perspectives

All students need the opportunity to have learning experiences in line with the same learning goals. This necessitates thinking about what support each student with disabilities needs, while overall strategies are making sure that all students hear the instructions; that they do indeed start activities; that they participate in large group instruction; and that they transition in and out of the classroom at the same time. According to Savage and Erten (2015), these include multiple ways of representing content to students and for students to represent learning back, such as modelling, images, objectives and manipulatives, graphic organisers, oral and written responses, and technology. These can also be adapted as modifications for students with disabilities where they can adapt the learning content to large print or text-to-speech; are allowed to have a peer write their dictated response; draw a picture instead; use calculators, or have extra time within which to complete their tasks. The literature review revealed that

the FRAME model guides the use of mobile devices, usability, learner characteristics and interactivity; yet, in the case of students with disabilities, the model can be enhanced by embracing elements of inclusion.

It is the assertion of the authors that important disability issues need to be acknowledged in this regard as these also negatively impact on the students' academic success, especially when learning institutions have inaccessible learning platforms (Mokiwa and Phasha 2012; Ngubane-Mokiwa 2013). These inaccessible platforms also exclude students with disabilities whose assistive technologies are not always compatible with the mainstream information and emerging ICT tools. This stresses the importance of having a beneficial interplay between the "subject" and the "object" (Engeström 2001) for the mobile device to effectively enable inclusive learning.

Obstacles

In terms of disability, within the FRAME, mobile learning poses obstacles, such as: financial challenges; limited range of accessible mobile learning tools; the available mobile learning approaches do not fulfil holistic learning experiences; and unavailability of relevant mobile learning tools for certain courses. In South Africa, there are some financial provisions made by the Department of Labour in the form of disability bursaries, which are administered by the National Student Financial Aid Scheme (NSFAS). Research by Ngubane-Mokiwa (2013) reveals that most students with disabilities expressed their challenge with accessing the already available funding due to exclusionary administrative systems. Chataika et al. (2012) also attest to the presence of financial constraints in the provision of support to people with disabilities in Africa. Another obstacle illuminated by the literature is the limited range of accessible mobile learning tools. A study conducted by Ngubane-Mokiwa (2013) on ICT as a learning tool indicates that though students with disabilities relied on different ICT tools, these tools did not provide adequate academic support due to not matching their learning needs. This difficulty is also present in the use of mobile learning. As Elias (2011) points out, mobile learning can be exclusionary because of slow download and limited internet access; small screen sizes with poor resolution, colour and contrast; awkward text input; and limited memory. These limitations can further exclude the already excluded students with disabilities. The FRAME model aspect of looking at the social aspect of mobile learning is missing in that the current mobile design does not allow for students with disabilities to co-construct knowledge in order to enhance contextual and authentic learning. The learner aspect (B); the interaction learning aspect (BC); and the social aspect (C) in the FRAME model need to take cognisance of the competencies of students with disabilities in order to enhance the inclusive and collaborative mobile learning.

Conducting the literature review assisted the author in identifying the potential that mobile learning provides for enhancement of T&L in ODL contexts.

The FRAME Model: Exploring beyond Koole

The author posits that as much as the learner's psychological perspectives are not adequately addressed in the FRAME model and in parallel with current studies, these critiques should not be taken as definitive. Numerous studies utilising the FRAME model adapted the conceptual framework consisting of: the learner aspect (B); the device usability aspect (A); and the social aspect (C) used. Current researchers posit that the FRAME model is more complicated than the universally accepted diagram (see Figure 2).

In the study by Isa, Zulkiph and Mustapa (2017), they opine that despite the factors for adopting mobile learning revolving around HE contexts, however, different cultural aspects and contexts (social) for mobile learning are not fully explored. Thus, the convergence of the three aspects needs to be reviewed for blended learning, such as Unisa adopts, for self-directed learners from the different cultural and community settings (Shaharanee and Kaharuddin 2021)

The FRAME model assumes learner aspects for self-directed learning and overlooks disability and social-cultural aspects brought into the learning context. Unisa as an ODeL institution attracts students from the aforementioned settings and with different social and schooling backgrounds and disabilities which inherently impact on effective mobile learning. In this instance, device usability aspects, namely, screen size, technology and portability, need to be considered for suitability for students from different backgrounds (e.g., disabled, elderly). The study by Ioncica, Dona and Militaru (2016) questions the assumed benefits of mobile learning, especially how technology disadvantages the cognitive presence in regulating learning. Unisa's drive towards e-learning with existential technological constraints, is a case for extensive review of e-learning design methodologies in the context of prevailing social, cultural and educational disparities. With the advance of technology comes the disadvantages of cognitive development in changing how information is accessed in that the rise of the internet is strengthening people's ability to scan information rapidly and efficiently (Taylor 2012), whilst impacting on concentration span and memory. The emotional (social) aspect is compromised in that learners' ability to empathise is negatively impacted (DeLoatch 2015).The literature beyond Koole suggests that several aspects in the original model need review and consideration as multidimensional and not merely hierarchical and to embrace the lack of psychological, cultural, social and community dispositions in the mobile learning setting. The author considers the foregoing as critical for Unisa in the realisation of optimal academic outputs.

Opportunities: Individualised Learning Provision

Corresponding to the FRAME model, the gradual introduction of mobile learning in the educational context over the past two decades has led to people carrying their individual mobile devices that contain exceptional computing powers in these learning spaces. In

addition to promoting innovation in education via technology, mobile learning seems to provide both traditional face-to-face teaching and sharing through promoting innovative technology teaching methods. According to Lan et al. (2010) and Rochelle et al. (2010), mobile learning facilitates individual exploratory learning and game-based learning outside the traditional classroom. The FRAME model suggests that because each student has their own mobile device, this "individuality" combined with wireless communication enables more accessible self-paced and self-directed study. Therefore, the author avers that mobile technologies have great potential for facilitating innovative educational methods espouse it. However, despite these proposed advantages of mobile learning and accessibility, and diverse teaching styles, current researchers found mixed results regarding the effects of mobile learning (Zheng, Warschauer and Farkas 2013).

Flexibility and Spontaneity

As Traxler (2007) and Looi and Toh (2014) suggest, proper use of mobile learning can make learning more flexible, accessible and spontaneous. As much as both studies do not refer to students with disabilities and psychological barriers, the flexibility and spontaneity have the potential of equally benefitting them. For this to happen the learning should be designed and delivered in an accessible manner. Mobile learning designers should take caution and understand the students' emotional and social needs, so that they design learning that responds to the students. Hsu and Ching (2012) argue that mobile learning heightens the chances of learning "anytime and anywhere". They term this seamless and ubiquitous learning in mobile and e-learning environments and, according to the current study, also relates to the FRAME model.

Collaborative Learning

Motiwalla (2007) highlights the potential of mobile learning for improving communication and enhancing collaborative learning. In the case of students with disabilities and those with psychological barriers, appropriate use of mobile learning could encourage them to participate in learning at times and in formats that are suitable to them. The FRAME model does not address this pertinent element in the learning setting and only assumes that manipulation of the mobile device in response to learning activities equates to this concept. There is a shift from individual efforts to group work for problem solving. Learners with different abilities/disabilities are not adequately accommodated in the FRAME model. Studies by Dempsey and Zhang (2019) and Kozan and Caskurlu (2018) posit that collaborative learning has an emotional trace to allow for interaction between learner, teacher and other learners. This is an important psychological element that the author deems important for consideration in the original FRAME model.

Conclusion

Although there are several models that are related to mobile learning, this chapter only examined the FRAME model. The author, who is a researcher and practitioner, engaged in an extensive literature review exercise, which involved the FRAME model. Smaili et al. (2020) designed a pathway of adaptation which can now receive more attention to this topical issue. The author states that adaptive learning should be the focus of a future study, both individually and collectively, to facilitate individual learning and customised academic progress. Furthermore, there should be an abundance of infrastructure, including the appropriate hardware and software, internet connectivity, and internet quality, for optimal mobile learning outcomes.

Relating to the FRAME model, the gradual introduction of mobile learning in the educational context over the past two decades has led to people carrying their individual mobile devices wherever they go. These devices contain exceptional computing powers in these learning spaces. In as much as mobile learning provides opportunities for accessible learning "anytime and anywhere", there is a need to consider the learning needs of marginalised students during the design process. The FRAME model was analysed and found to be lacking in accommodating psychological and disability needs. This necessitates thinking about what kind of support individual students with disabilities need. Overall strategies ensure that all students understand instructions and that they do indeed begin their learning activities in their chosen format. It is notable that mobile learning can be beneficial for learning; however, it is important that the learning environment is defined for purpose and holistically enhances cohesive support for optimal learning. Inclusive mobile learning will also ensure that students participate in collaborative group learning, and that they transition in and out of the learning environment at the same time. This chapter, therefore, proposes the consideration of the abovementioned student needs in the FRAME model to ensure inclusive mobile learning.

The author proposes that these critical global and pervasive concerns in mobile learning environments be considered for further research. Educators, especially in HEIs like Unisa, need to display student--centred approaches, encompassing equitable socially constructed (racial) learning spaces and not neutrality in online curriculum design. This is the neutrality that the FRAME model assumes, but it misses the psycho-social aspect, disparate educational backgrounds, pertaining in an ODeL context, Unisa. The author further proposes that additional research be conducted on how improved communication (learner-social) might increase students' cognitive presence and teaching aspects for optimal learning and envisaged academic advancements in an ODeL context.

References

Ainscow, M. 2005. "Developing Inclusive Education Systems: What Are the Levels for Change?" *Journal of Educational Change* 6 (2): 109–124. https://doi.org/10.1007/s10833-005-1298-4

Akayogtu, S., H. M. Satar, K. Dikilitas, N. C. Cirit, and S. Korkmazgil. 2020. "Digital Literacy Practices of Turkish Pre-Service EFL Teachers." *Australasian Journal of Educational Technology* 36 (1): 85–97. https://doi.org/10.14742/ajet.4711

Al-Bashayreh, M., D. Almajali, A. Altamimi, R. Masa'deh, and M. Al-Okaily. 2022. "An Empirical Investigation of Reasons Influencing Student Acceptance and Rejection of Mobile Learning Apps Usage." *Sustainability* 14 (7): 4325. https://doi.org/10.3390/su14074325

Amory, A. 2014. "Tool-Mediated Authentic Learning in an Educational Technology Course: A Design-Based Innovation." *Interactive Learning Environment* 22 (4): 497–513. https://doi.org/10.1080/10494820.2012.682584

Anderson, T., ed. 2008. *The Theory and Practice of Online Learning*. 2nd ed. Athabasca: Athabasca University Press.

Becker, S. A., M. Cummins, A. Davis, A., Freeman, C. G. Hall, and V. Ananthanarayanan. 2017. "NMC Horizon Report: 2017 Higher Education Edition." Accessed March 25, 2020. https://www.learntechlib.org/p/174879/

Brown, T. H., and L. S. Mbati. 2015. "Mobile Learning: Moving Past the Myths and Embracing the Opportunities." *International Review of Research in Open and Distributed Learning* 16 (2): 115–135. https://doi.org/10.19173/irrodl.v16i2.2071

Byun, H., J. Lee, and F. A. Cerreto. 2014. "Relative Effects of Three Questioning Strategies in Ill-Structured, Small Group Problem Solving." *Instructional Science* 42 (2): 229–250. https://doi.org/10.1007/s11251-013-9278-1

Castellanos-Reyes, D. 2020. "20 Years of the Community of Inquiry Framework." *TechTrends* 64: 557–560. https://doi.org/10.1007/s11528-020-00491-7

Castro, R. 2019. "Blended Learning in Higher Education: Trends and Capabilities." *Education* 24 (4): 2523–2546. https://doi.org/10.1007/s10639-019-09886-3

Chataika, T., J. A. Mckenzie, E. Swart, and M. Lyner-Cleophas. 2012. "Access to Education in Africa: Responding to the United Nations Convention on the Rights of Persons with Disabilities." *Disability & Society* 27 (3): 385–398. https://doi.org/10.1080/09687599.2012.654989

Chun, D., R. Kern, and B. Smith. 2016. "Technology in Language Use, Language Teaching, and Language Learning." *Modern Language Journal* 100 (S1): 64–80. https://doi.org/10.1111/modl.12302

Cooper, H., and A. Koenka. 2012. "The Overview of Reviews: Unique Challenges and Opportunities when Research Syntheses Are the Principal Elements of New Integrative Scholarship." *American Psychologist* 67 (6): 446–462. https://doi.org/10.1037/a0027119

Cooper, T., and R. Scriven. 2017. "Communities of Inquiry in Curriculum Approach to Online Learning: Strengths and Limitations in Context." *Australasian Journal of Educational Technology* 33 (4): 22–37. https://doi.org/10.14742/ajet.3026

Czerniewicz, L., and C. Brown. 2009. "A Study of the Relationship between Institutional Policy, Organisational Culture and E-Learning Use in Four South African Universities." *Computers & Education* 53 (1): 121–131. https://doi.org/10.1016/j.compedu.2009.01.006

Debattista, M. 2018. “A Comprehensive Rubric for Instructional Design in E-Learning.” *International Journal of Information and Learning Technology* 35 (2): 93–104. https://doi.org/10.1108/IJILT-09-2017-0092

DeLoatch, P. 2015. “The Four Negative Sides of Technology.” Accessed March 25, 2020. http://www.edudemic.com/the-4-negative-side-effects-of-technology/

Dempsey, P. R., and J. Zhang. 2019. “Re-examining the Construct Validity and Causal Relationships of Teaching, Cognitive, and Social Presence in Community of Inquiry Framework.” *Online Learning* 23 (1): 62–79. https://doi.org/10.24059/olj.v23i1.1419

DHET (Department of Higher Education and Training). 2013. “White Paper for Post-School Education and Training.” https://www.dhet.gov.za/SiteAssets/Latest%20News/White%20paper%20for%20post-school%20education%20and%20training.pdf

Elias, T. 2011. “Universal Instructional Design Principles for Mobile Learning.” *International Review of Research in Open and Distance Learning* 12 (2): 143–156. https://doi.org/10.19173/irrodl.v12i2.965

Engeström, Y. 2001. “Expansive Learning at Work: Toward an Activity Theoretical Reconceptualization.” *Journal of Education and Work* 14 (1): 133–156. https://doi.org/10.1080/13639080020028747

Fiock, H. 2020. “Designing a Community of Inquiry in Online Courses.” *International Review of Research in Open and Distributed Learning* 21 (1): 135–153. https://doi.org/10.19173/irrodl.v20i5.3985

Fiock, H., Y. Maeda, and J. Richardson. 2021. “Instructor Impact on Differences in Teaching Presence Scores in Online Courses.” *International Review of Research in Open and Distributed Learning* 22 (3): 55–76. https://doi.org/10.19173/irrodl.v22i3.5456

Frederickson, N., P. Reed, and V. Clifford. 2005. “Evaluating Web-Supported Learning versus Lecture Based Training: Qualitative Perspectives.” *High Education* 50 (4): 645–664. https://doi.org/10.1007/s10734-004-6370-0

Gedera, D. S., and P. J. Williams. 2016. *Activity Theory in Education: Research and Practice.* Rotterdam: Sense. https://doi.org/10.1007/978-94-6300-387-2

Hsu, Y. C., and Y. H. Ching. 2012. “Mobile Microblogging: Using Twitter and Mobile Devices in an Online Course to Promote Learning in Authentic Contexts.” *International Review of Research in Open and Distribution Learning* 13 (4): 211–227. https://doi.org/10.19173/irrodl.v13i4.1222

Hsu, Y. C., and Y. H. Ching. 2015. “A Review of Models and Frameworks for Designing Mobile Learning Experiences and Environments.” *Canadian Journal of Learning and Technology* 41 (3): 1–22. https://doi.org/10.21432/T2V616

Ioncica, D., D. Dona, and M. Militaru. 2016. “What Is Lost when Technology Wins? A Study on the Benefits and Drawbacks of a Technology-Centered Approach to Learning.” Paper presented at the 5th International Conference: Synergies in Communication, Bucharest, November 10–11. Accessed March 25, 2020. file://C:/Users/aknowles/AppData/Local/Microsoft/Windows/INetCache/Content.Outlook/VQA9B25F/WHAT%20IS%20LOST%20WHEN%20TECHNOLOGY%20WINS.pdf

Isa, W., Z. Zulkiph, and M. Mustapa. 2017. “A Conceptual Framework of Blended Learning for Self-Directed Learners in the Social Context: Case of Mobile Learning.” *Social and Management Research Journal* 14 (1): 51–65. https://doi.org/10.24191/smrj.v14i1.5279

Kaptelinin, V. 1996. “Activity Theory: Implications for Human-Computer Interaction.” In *Context and Consciousness: Activity Theory and Human-Computer Interaction*, edited by B. Nardi, 103–116. Cambridge: MIT Press.

Kebritchi, M., A. Lipschuetz, and L. Santiague. 2017. “Issues and Challenges for Teaching Successful Online Courses in Higher Education: A Literature Review.” *Journal of Educational Technology Systems* 46 (1): 4–29. https://doi.org/10.1177%2F0047239516661713

Koole, M. L. 2009. “A Model for Framing Mobile Learning.” *Transforming the Delivery of Education and Training* 1 (2): 25–47.

Koole, M. L., and M. Ally. 2006. “Framework for the Rational Analysis of Mobile Education (FRAME) Model: Revising the ABCs of Educational Practices.” Accessed March 25, 2020. https://auspace.athabascau.ca/bitstream/handle/2149/612/01628461.pdf;jsessionid=1C364B348E2CD39E7645172CE8131236?sequence=1

Kozan, K., and S. Caskurlu. 2018. “On the Nth Presence for the Community of Inquiry Framework.” *Computers & Education* 122: 104–118. https://doi.org/10.1016/j.compedu.2018.03.010

Kuutti, K. 1996. “Activity Theory as a Potential Framework for Human-Computer Interaction Research.” In *Context and Consciousness: Activity Theory and Human-Computer Interaction*, edited by B. Nardi, 17–44. Boston: MIT Press.

Lachney, M., and A. Yadav. 2023. “Introduction to Special Section on Race and Racism in Educational Technology.” *TechTrends* 67: 404–406. https://doi.org/10.1007/s11528-023-00853-x

Lan, Y. J., Y. T. Sung, N. C. Tan, C. P. Lin, and K. E. Chang. 2010. “Mobile-Device-Supported Problem-Based Computational Estimation Instruction for Elementary School Students.” *Educational Technology & Society* 13: 55–69.

Liaw, S. S., M. Hatala, and H. M. Huang. 2010. “Investigating Acceptance toward Mobile Learning to Assist Individual Knowledge Management: Bases on Activity Theory Approach.” *Computers & Education* 54 (2): 446–454. https://doi.org/10.1016/j.compedu.2009.08.029

Looi, C. K., and Y. To. 2014. “Orchestrating the Flexible Mobile Learning Classroom. In *Increasing Access through Mobile Learning*, edited by M. Ally and A. Tsinakos, 161–174. Vancouver: Commonwealth of Learning and Athabasca University.

Marks, I. M., K. Cavanagh, and L. Gega. 2007. *Hands-on-Help: Computer-Aided Psychotherapy.* London: Psychology Press. https://doi.org/10.4324/9780203962152

Martin, F., D. U. Bollinger, and C. Flowers. 2021. “Design Matters: Development and Validation of the Online Course Design Elements (OCDE) Instrument.” *International Review of Research in Open and Distributed Learning* 22 (2): 46–71. https://doi.org/10.19173/irrodl.v22i2.5187

Martin, F., C. Wang, and A. Sadaf. 2020. “Facilitation Matters: Instructor Perception of Helpfulness of Facilitation Strategies in Online Courses.” *Online Learning* 24 (1): 28–49. https;//doi.org/10.24059/olj.v24i1.1980

Martin, F., T. Wu, L. Wan, and K. Xie. 2022. “A Meta-Analysis on the Community of Inquiry Presences and Learning Outcomes in Online and Blended Learning Environments.” *Online Learning* 26 (1). https://doi.org/10.24059/olj.v26i1.2604

McCullough, A., K. Patrick, and A. Boni. 2022. “New Clinical and Commercial Opportunities in Digital Health: A Special Issue of *Journal of Commercial Biotechnology*.” *Journal of Commercial Biotechnology* 27 (1): 4–6. https://doi.org/10.5912/jcb1022

Mokiwa, S. A., and T. N. Phasha. 2012. “Using ICT at an Open Distance Learning (ODL) Institution in South Africa: The Learning Experience of Students with Visual Impairments.” *Africa Education Review* 9 (Supp1): 136–151. https://doi.org/10.1080/18146627.2012.755286

Motiwalla, L. F. 2007. “Mobile Learning: A Framework and Evaluation.” *Computers & Education* 49 (3): 581–591. https://doi.org/10.1016/j.compdu.2005.10.011

Muñoz, J., and J. Arias-Gonzales. 2022. “Systematic Review of Adaptive Learning Technology for Higher Education.” *Eurasian Journal of Educational Research* 98: 221–233. https://doi.org/10.14689/ejer.2022.98.014

Mutanga, O. 2015. “Experiences of Disabled Students at Two South African Universities: A Capabilities Approach.” PhD diss., University of the Free State.

Ng’ambi, D. 2013. “Effective and Ineffective Use of Emerging Technologies: Towards a Transformative Pedagogical Model.” *British Journal of Educational Technology* 44 (4): 652–661. https://doi.org/10.1111/bjet.12053

Ng’ambi, D., and V. Bozalek. 2013. “Leveraging Informal Leadership in Higher Education Institutions: A Case of Diffusion of Emerging Technologies in a Southern Context.” *British Journal of Educational Technology* 44 (6): 940–950. https://doi.org/10.1111/bjet.12108

Ngubane-Mokiwa, S. 2013. “Information and Communication Technology as a Learning Tool: Experience of Students with Blindness.” PhD diss., University of South Africa.

Owston, R., D. N. York, and T. Malhotra. 2018. “Blended Learning in Large Enrollment Courses: Student Perceptions across Four Different Instructional Models.” *Australasian Journal of Educational Technology* 35 (5): 29–45. https://doi.org/10.14742/ajet.4310

Ralabate, P. K. 2011. “Universal Design for Learning: Meeting the Needs of All Students.” *Asha Leader* 16 (10). https://doi.org/10.1044/leader.FTR2.16102011.14

Rochelle, J., K. Rafanan, R. Bhanot, G. Estrella, B. Penuel, and M. Nussbaum. 2010. “Scaffolding Group Explanation and Feedback with Handheld Technology: Impact on Students’ Mathematics Learning.” *Educational Technology Research and Development* 58 (4): 399–419. https://doi.org/10.1007/s11423-009-9142-9

Sadaf, A., T. Wu, and F. Martin. 2021. “Cognitive Presence in Online Learning: A Systematic Review of Empirical Research from 2000 to 2019.” *Computers and Education Open* 2: 100050. https://doi.org/10.1016/j.caeo.2021.100050

Savage, R. S., and S. Erten. 2015. “Teaching in Inclusive Classrooms: The Link between Teachers’ Attitudes–Practices and Student Outcomes.” *Journal of Psychology and Psychotherapy* 5 (6): 1000219. https://doi.org/10.4172/2161-0487.1000219

Shaharanee, I., and N. Kaharuddin. 2021. “Title of aritcle/paper.” In *Proceedings of the International University Carnival on e-Learning (IUCEL) 2021.* Pusat Pengajaran Pembelajaran Universiti.

Sharples, M. 2000. “The Design of Personal Mobile Technologies for Lifelong Learning.” *Computers & Education* 34 (3–4): 177–193. https://doi.org/10.1016/S0360-1315(99)00044-5

Sharples, M., J. Taylor, and G. Vavoula. 2005. “Towards a Theory of Mobile Learning.” In *Mobile Technology: The Future of Learning in Your Hands*. *Book of Abstracts, 4th World Conference on mLearning*, edited by H. van der Merwe and T. Brown, 58. Cape Town: mLearn.

Sharples, M., J. Taylor, and G. Vavouls. 2007. “A Theory of Learning for the Mobile Age.” In *The SAGE Handbook of E-Learning Research*, edited by R. A. Haythornthwaite, 63–81. London: Sage. https://doi.org/10.4135/9781529716696.n4

Slater, R., V. K. Pearson, J. P. Warren, and T. Forbes. 2015. “Institutional Change for Improving Accessibility in the Design and Delivery of Distance Learning – the Role of Faculty Accessibility Specialists at The Open University.” *Journal of Open, Distance and E-Learning* 30 (1): 6–20. https://doi.org/10.1080/02680513.2015.1013528

Smaili, E. M., C. Khoudda, S. Sraidi, and M. Charaf. 2020. “An Optimized Method for Adaptive Learning Based on PSO Algorithm.” In *2020 IEEE 2nd International Conference on Electronics, Control, Optimization and Computer Science (ICECOCS)*, 1–5. https://doi.org/10.1109/ICECOCS24.2020.9314617

Speyer, C., and J. Zack. 2011. “Online Counselling: Beyond the Pros and Cons. In *Online Counselling: A Handbook for Mental Health Professionals*, edited by R. Kraus, G. Sticker and C. Speyer, 67–84. San Diego: Elsevier Academic Press.

Sung, Y., K. Chang, and Y. Liua. 2016. “The Effects of Integrating Mobile Devices with Teaching and Learning on Students’ Learning Performance: A Meta-Analysis and Research Synthesis.” *Computers & Education* 94: 252–275. https://doi.org/10.1016/j.compedu.2015.11.008

Traxler, J. 2007. “Defining, Discussing, and Evaluating Mobile Learning: The Moving Finger Writes and Having Writ ...” *International Review of Research in Open and Distance Learning* 8 (2): 1–12. https://doi.org/10.19173/irrodl.v8i2.346

Wali, E., N. Winters, and M. Oliver. 2008. “Maintaining, Changing and Crossing Contexts: An Activity Theoretic Reinterpretation of Mobile Learning.” *ALT-J: Research in Learning Technology* 16 (1): 41–57. https://doi.org/10.1080/09687760701850190

Wilson, E., and Z. Berge. 2023. “Educational Experience and Enstructional Design Effectiveness within the Community of Inquiry Framework.” *International Review of Research in Open and Distributed Learning* 24 (1): 159–174. https://doi.org/10.19173/irrodl.v24i1.6751

Zheng, B., M. Warschauer, and G. Farkas. 2013. “Digital Writing and Diversity: The Effects of School Laptop Programs on Literacy Processes and Outcomes.” *Journal of Educational Computing Research* 48 (3): 267–299. https://doi.org/10.2190/EC.48.3.a

Part V

Teaching/Learning and Student Support in Open Distance e-Learning

Chapter 6

Implementing Continuous Assessment in an Academic Programme for More Effective Learning

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Abstract

Many higher education institutions, including open distance e-learning institutions, are currently investigating the introduction of a continuous assessment framework. When introducing continuous assessment in an academic department, it is necessary to ensure that all participants understand all concepts related to such a framework and the implications of introducing a continuous assessment framework. This chapter investigates studies on continuous assessment in the literature to identify the advantages and disadvantages of such a framework. Using the lessons learnt, guidelines are identified regarding the importance of feedback, and a model is developed that can be used to plan and introduce continuous assessment, considering all the different environmental factors that will affect the introduction.

Keywords: continuous assessment; assessment for learning; assessment of learning; assessment as learning; feedback; feed-forward

Introduction

A continuous assessment (CA) system implies that students are assessed regularly throughout the learning period (Sanz-Pérez 2019). CA provides the opportunity to receive feedback on students' progress regarding their learning goals, and to change their behaviour, if necessary (Peytcheva-Forsyth and Mellar 2020). Prior to the introduction of CA, students' final mark was usually based on a year mark or semester mark that counted a smaller percentage of the final mark, and a final examination that

contributed the majority of the final mark. CA provides much more freedom regarding the design of the assessment plan.

To ensure that the introduction of CA will still meet all assessment requirements, while also contributing to more effective learning, it is necessary to carefully consider the reasons for, and advantages of, implementing CA, as well as the potential challenges and disadvantages related to the implementation of CA. Two important themes identified in the literature on CA, namely the reasons for implementing CA and the role of feedback in CA, are discussed in the literature review. Studies on the implementation of CA are reviewed and potential challenges when employing CA are identified. Considering the information that has been gathered, a model for the introduction of CA in an academic department is developed. Based on the model a checklist for planning the implementation of CA is proposed, as well as a checklist for training, design, and implementation of CA.

Literature Review

Literature on the implementation of CA in higher education (HE) was reviewed from the perspective of introducing CA in an open distance e-learning (ODeL) environment. Two main themes were identified. The first has to do with the reasons for implementing CA, while the second concerns the important role that feedback plays in a CA framework. An overview of the literature on good practice with regard to feedback in general, and the use of feedback in the automated online environment are provided.

Reasons for Implementing Continuous Assessment

To understand the reasons for implementing CA, the authors first had to understand the reasons for having assessment. Then they could proceed to discuss the potential advantages of using a CA framework and how and why it can be expected to contribute to more effective learning.

Reasons for Assessment

Hatt (2019, 221) distinguishes between “assessment for learning” and “assessment of learning”. “Assessment for learning” refers to formative assessment tasks that help students to actively assess what they have learnt; to determine what they know and can do; and to determine where there are gaps in their learning that must be addressed (Russell et al. 2006). “Assessment of learning” is usually associated with summative assessment and measures what students have learnt. Summative assessment can also contribute to learning, as it provides motivation to students to ensure that they accomplish learning (Baird et al. 2017).

In a CA system, assessment can also form part of the learning process, so we can also refer to "assessment as learning" (Bjælde and Lindberg 2018, 53). Given the fast pace of technological advancement, students need to learn the skills and knowledge required for a specific study field, but they also need to be able to identify the sources to learn such skills and knowledge; consider information critically; think creatively and collaboratively how such skills and knowledge can be used; and use technology to communicate their learning (Lase 2019). Such skills can be taught by providing students with carefully designed assessment tasks that require them to engage in these activities, and then providing constructive feedback on performance. Technology tools enable the use of CA, but also facilitate the learning of technological skills as students are working on their submissions for assessment (Dienga 2021). Assessment as learning forms part of formative assessment, as indicated in Figure 1.

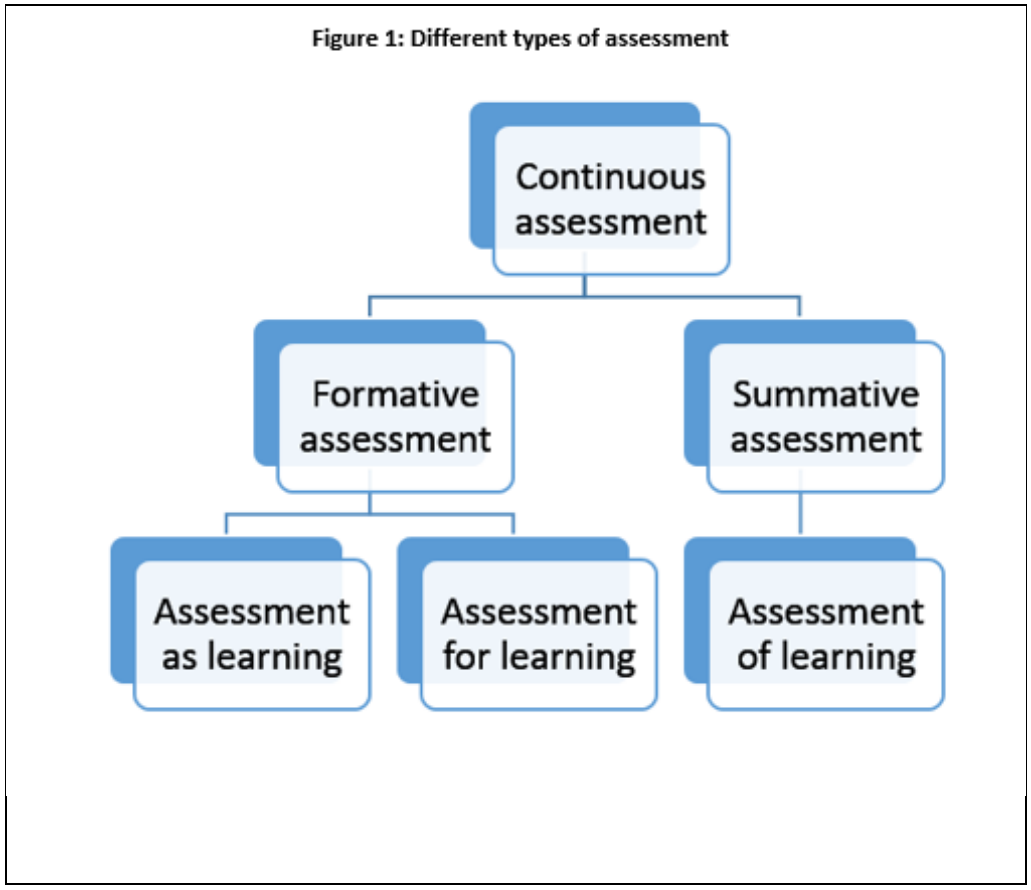

Figure 1: Different types of assessment

Potential Advantages of Implementing Continuous Assessment

Pocock (2012, 7) investigated the reason why students do not complete their qualifications at an Engineering faculty in South Africa. He found that 26% of students indicated that they found the workload too hard or the material too difficult, and 15% indicated that the left due to the uncaring attitude of lecturers or a lack of interaction. This implies that more effective teaching methods and engagement with students can contribute to higher retention rates at higher education institutions (HEIs).

Students only become aware of whether they have achieved the objectives of their studies when they start doing an assessment (Thorpe 1998). A CA framework implies that students are assessed on a regular basis, and this can help to identify at-risk students early in a study period and address learning gaps quickly (Bjælde and Lindberg 2018).

Cook, Butler and Jordan (2013) found that the introduction of a CA system resulted in earlier engagement with study material. If assessment mainly consists of a final summative assessment opportunity, students are inclined to cram their studies into a short period before the assessment takes place (Lovatt, Finlayson and James 2007), resulting in superficial learning. Deep learning depends not on the student, but on the situation (Ramsden 2003). If opportunities are created and the student engages in such opportunities, deep learning will take place, and therefore well-designed CA can contribute to more effective learning.

In a CA framework, there is room for students to provide feedback on their own work (self-assessment) and on the work of fellow students (peer assessment). Self-assessment and peer assessment contribute to develop students to become self-reflective learners and foster the ability to provide and receive constructive criticism, all of which are important skills in most professions (Friess and Goupee 2020).

CA may reduce the anxiety that results from once-off summative assessments. A well-designed CA system that places less importance on individual assessments may even assist students to learn to handle stressful situations better, as smaller assessment tasks may give them the confidence to succeed (Bjælde, Jørgensen and Lindberg 2017).

Given the industrial revolution and the fact that graduates are expected to be technologically literate, students should no longer only engage with the study material that is provided to them but should be taught to use technology to find relative information, connect information from different sources, and create new knowledge that can be shared (Siemens 2005). CA allows lecturers and students to engage with each other regularly, and this process can create an environment where students learn the cognitive skills to create knowledge through collaboration with other students and with lecturers, and where they learn that knowledge creation is an iterative process that also depend on reflection (Yang et al. 2020). Such engagement teaches students how the

world now works and will prepare them for their future professions in a way that one final summative assessment definitely cannot do.

Finally, a CA framework also provides information that lecturers can use to adjust and improve their teaching timeously, and in this way contribute to more effective learning by students (Wallace et al. 2022; Zhan 2020).

The Importance of Feedback for More Effective Learning

Martin et al. (2019) distinguish the following functions of assessment with regard to learning:

- Improve the students' learning by focusing their attention on significant learning outcomes that must be attained (feed-forward).
- Make informed judgement and provide feedback on the students' performance regarding the specified learning outcomes.
- Provide feedback to the students on how they can address identified gaps in their knowledge and skills.

Formative assessment or assessment for learning will include all three these functions, while summative assessment will mainly focus on the first and second functions. Since feedback is only provided once an assessment task has been submitted, effective feed-forward, which can include information on how grading will be done, can play a large role to improve students' performance in assessment. Hendry, White and Herbert (2016) investigated how feed-forward can be provided effectively and conclude that an exemplar-based approach can affect learning and students' attitude towards assessment positively.

It is necessary to distinguish between grading and feedback. Grading and feedback are intertwined and will often be the result of the same process, namely the evaluation of assessment, but it is important to note that feedback plays a larger role when it comes to the facilitation of learning (Hattie and Clarke 2019; Winstone and Boud 2020). Grading is backward looking as it considers past achievement while feedback is forward looking, as its purpose is to affect future achievement (Dawson et al. 2019; Winstone and Boud 2020).

Hatt (2019) indicates that assessment can only be formative when feedback is provided that clearly indicates corrective action. Therefore, formative assessment is also referred to as assessment for learning. Timely information on how students can improve their performance should motivate students to engage more effectively with their learning (Bjælde et al. 2017), contributing to deeper learning.

Students can also be asked to evaluate each other's work and to provide feedback. Such a system enables students to put themselves in the shoes of the markers who must do the grading, and to develop a deeper understanding of what they are expected to do (Bjælde and Lindberg 2018). This improves learning and teaches students the valuable skill of providing constructive criticism (Russell et al. 2006).

Several studies on the practice of feedback have been done to determine the requirements to ensure that feedback will support learning and student satisfaction. Students require feedback that is personalised, non-generic and contains adequate and precise detail (Dawson et al. 2019). They also prefer that feedback contains positive aspects, and not only points out weaknesses (Henderson, Ryan and Phillips 2019). Students' perception of the person providing the feedback may also affect their attitude toward feedback (Winstone et al. 2017), indicating the importance of the social presence of a lecturer, especially in the case of distance education (DE) (Cole et al. 2017). Several studies indicate the importance of feedback literacy of students to ensure that they will be able to use feedback constructively (Carless and Boud 2018; Malecka, Boud and Carless 2020; Molloy, Boud and Henderson 2020; Winstone et al. 2017). A more recent study by Boud and Dawson (2023) also points to the requirement that lecturers have to understand how to design and implement an effective feedback framework. Boud and Dawson (2023) identify various competencies required by lecturers, indicating that except for subject knowledge, lecturers also need certain pedagogic competencies, including an understanding of how feedback can affect learning and how to design a feedback framework that will ensure regular dialogue and mutual trust. They recommend actions that will ensure an increase in lecturers' feedback literacy and competency.

Feedback in the Automated Online Assessment Environment

Online automated assessment has been proposed as a solution to provide quick, efficient feedback for graded and non-graded assessment (Belcadhi 2016; Gulwani, Radiček and Zuleger 2014; Marin et al. 2017). There is evidence that suggests that regular quizzes with feedback are useful as part of formative assessment to indicate to students whether they have mastered (a) specific section(s) of work before they proceed to a next step, and contribute to more effective learning (Domenech et al. 2015; Peterson and Siadat 2009; Rezaei 2015; Sartain 2018). However, Morris, Perry and Wardle (2021) found that more research is required to determine how automated online assessment affect learning, and the role that feedback plays in such an assessment framework.

The possibility of using automated online assessment that incorporates individualised feedback and the type of scoring feedback that can be provided to students and lecturers is dependent on the technology employed by an institution, and the extent to which lecturers have the skill to make use of the technology (Ntereke et al. 2021). It is important that such a system should be easy to navigate for both lecturers and students

and should not involve computer coding in order to design effective feedback (Hatt 2019). Therefore, the choice of learning management system is an important factor to consider when CA is introduced at an institution. Effective support to lecturers to assist them when they experience problems with such a system is another important issue to consider when introducing automated online assessment (Itasanmi et al. 2022; Mallinson and Krull 2013). The sudden shift to online assessment during the Covid-19 pandemic caused anxiety for many online lecturers and teachers who felt that they were not sufficiently trained to use online assessment tools and did not receive the institutional support they required (Forbes 2022; Pathiranage and Karunarathne 2022).

Methodology

To develop an action plan for the implementation of CA in an ODeL environment, the literature on the implementation of CA were reviewed. Considering the experiences of other institutions and the challenges that were identified, the factors that need to be considered when developing an action plan to ensure the effective implementation of CA in an academic department at an ODeL institution were identified. A model for the implementation of CA is proposed that takes these factors into consideration. Since a lack of planning is identified as a major reason for the failure of a CA framework, an action list for planning the introduction of CA in an academic department is developed. A second action list for training, design and implementation of CA in an academic department is also proposed.

Overview of Studies Regarding the Implementation of Continuous Assessment

The environment in which each institution operate is unique, and will affect the successful implementation of CA. Hernández (2012) investigated the views and perceptions of students and lecturers regarding CA at eight universities in Dublin, Ireland, and identified poor feedback practice by lecturers as one of the reasons why students may feel that feedback does not support their learning, while lecturers identify a lack of time as a reason why feedback may be inadequate. Solutions to this problem that are proposed include the use of automated online assessment where feedback is generated immediately upon submission, ensuring that students are feedback literate and understand the purpose and role of feedback, and the use of "forward" feedback. Forward feedback or "feed-forward" implies that students understand exactly what will be expected from them during assessment and increases students' motivation for learning.

CA was introduced in HE in Denmark in 2016. Bjælde et al. (2017) found that the introduction of CA in a first-year module with several feedback loops (see Figure 2)

that allowed students to submit multiple times and improve their submission for assessment based on the feedback that they received, resulted in a substantial increase in the number of students who were successful and also an increase in the number of students obtaining high grades. Bjælde and Lindberg (2018) are of the opinion that this is also due to gaps in learning and learning problems being identified early in the learning period and that students could make use of feedback to improve their submissions. They stress the fact that the feedback was based on specific guidelines resulting in high-quality feedback. The feedback loops created data and feedback that made progression visible to students and academics, enabling them to make informed changes and improvements where required.

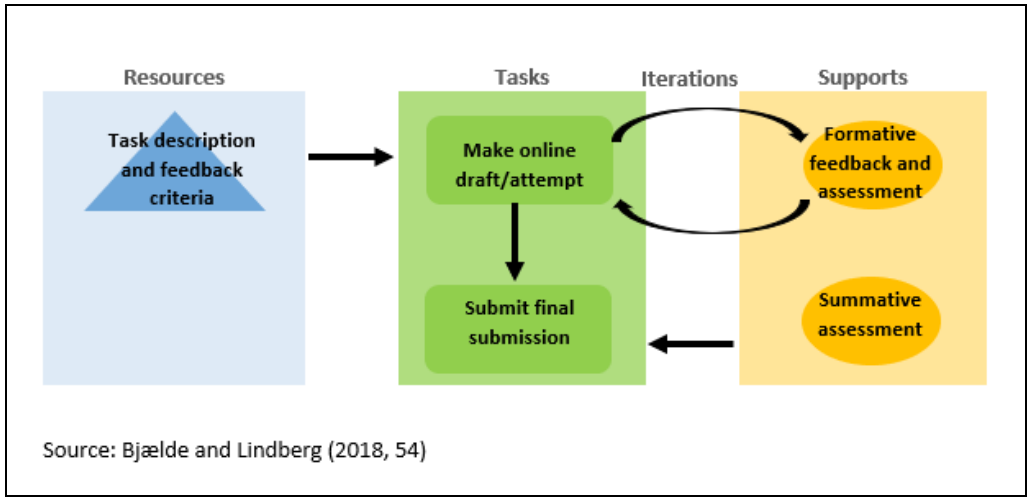

Figure 2: Generic design combining feedback loop(s) with CA
Source: Bjaelde and Lindberg (2018, 54)

For most academics and institutions, the transfer to CA is a (steep) learning curve and this is reflected in the literature. A lack of knowledge of the principles of CA and lack of proper planning invariably leads to failure, as highlighted by Holcroft (2014) in his investigation of the (failed) implementation of CA by the Gauteng Department of Education and Abera, Kedir and Beyabeyin (2017) in their research on the implementation of CA in public universities in Eastern Ethiopia. It is possible to hear the desperation in the words of Walde (2016, 542–543) when he laments the state of CA at METTU University, Ethiopia:

> There is also no systems to control its implementation, both instructors and students do not clearly understand the basic concepts of CA, due to this … students … cheat … to score good marks on written tests and also on group and individual assignments and hence it is difficult for instructors to know the students' difficulty. Some instructors have

> no positive attitude towards the implementation of CA due to lack of training, support and encouragement from university management ...

Abera et al. (2017) recommend that CA practice can be improved if lecturers design the assessment framework not only for the purpose of evaluating students' knowledge and skills, but also with the aim of facilitating specific learning skills.

Coll et al. (2007) discuss the lessons learnt and value added by introducing CA, using Moodle as the delivery platform. By organising and sequencing assessment activities around thematic blocks, they found that CA enhances learning and is "a well-suited instrument for fostering the attainment of learning" (Coll et al. 2007, 799). However, this positive outcome comes at the cost of an increased workload for staff members. The introduction of CA is a time-consuming and costly exercise where the bulk of the workload falls on academic staff and may require a re-visit of the working conditions of academic staff (Coll et al. 2007).

Dejene and Chen (2019) found that students perceived the introduction of CA at Ethiopian higher institutions as continuous testing with little or no feedback, and that this was due to large student numbers, and a shortage of time. They suggest that large class size should not be a factor that affects learning negatively, but that both lecturers and students should understand how to use the opportunities presented by CA effectively. They indicate that the success of the introduction of CA was "undermined by the dominance of traditional lecture-based instruction and continuous testing" (Dejene and Chen 2019). Lecturers should be trained to understand how CA can be used, but should also be willing to identify and use innovative strategies aimed at enhancing students' learning, and should also be willing to evaluate what works best for each particular subject and topic. Garba and Yusuf (2019) found that lecturers' competence with the use of CA had a significant effect on students' academic performance, indicating the importance of improving the competency of lecturers with regard to the implementation of CA.

Senouci (2022) evaluated how lecturers experienced the implementation of CA at a university in Algeria and found the most important challenges experienced by lecturers to be the large size of classes; time constraints; a lack of appropriate training; and work overload. They also found that lecturers did not experience negative attitudes by students towards CA or lack of appropriate feedback to be important challenges. However, there are studies that have identified this as an important challenge (Abera et al. 2017; Kugamoorthy and Weerakoon 2018).

When investigating students' beliefs about CA at a Chinese University, Zhan (2020) found that based on students' experience of the country's education system and examination culture and their understanding of the university's assessment policy, students believed that CA was an external factor that motivated them to learn. However, they did not understand how CA can benefit their learning and how they should engage

with feedback to improve their learning experience. This implies that students should be educated to appreciate the advantages of CA and how to use the different components of CA to enhance learning.

Tarekegne (2019) investigated the implementation of CA at Jimma University in Ehtiopia. The study found that lecturers had a positive attitude towards CA techniques and perceived it to enhance learning. However, they employed few CA techniques. The reasons that are provided for the lack of CA techniques include a lack of time, large class sizes and high workload of lecturers. In addition, they are of the opinion that students lack the resources that will enable them to complete CA tasks on a regular basis away from class and they also feel that students prefer lecturer-centred teaching, as they have not been prepared for student-centred learning. Tarekegne (2019) recommends that HEIs should introduce development programmes to train lecturers how to make effective use of CA methods and that students should be supported to participate in active learning by providing study material and technology.

The studies referred to here were used to identify important issues that affect the successful implementation of CA, which will be addressed in the following sections. Several of the studies mentioned that inadequate training of lecturers with regard to CA may be an important factor that hindered success. An analysis of studies on the use of online assessment in HEIs during Covid-19 by Montenegro-Rueda et al. (2021) identifies a lack of training and a lack of support with technical issues as important challenges experienced by both lecturers and students in the online learning environment.

Potential Challenges when Employing Continuous Assessment in a Distance Education Framework

The first important challenge is the cost and time that need to go into the design and implementation of a CA system (Abera et al. 2017; Bjælde and Lindberg 2018; Coll et al. 2007; Dejene and Chen 2019; Hatt 2019; Senouci 2022; Tarekegne 2019). Designing assessment with complete feedback so that students will be able to use their results and the feedback to improve their learning, is time-consuming.

It is important to note that studies on how students make use of feedback are not conclusive (Bjælde and Lindberg 2018; Johansson et al. 2022). Since the design and provision of high-quality feedback are time-consuming and expensive, this is an area that requires more research so that exact guidelines with regard to the requirements for feedback that will enhance learning can be formulated. Assessment and planning need to be carefully designed to ensure that maximum benefit in the form of learning can be effected with minimum cost and effort by both lecturers and students (Hatt 2019). As indicated above, self-assessment and peer-assessment may also form part of a CA

assessment framework. However, this should be combined with clear guidelines, which may also be time-consuming to compile.

In a CA system, authentication of DE students can become an important challenge. If there is only one main examination it is possible to have venue-based or online assessments that take place at a certain time, and where students' identities are authenticated. This becomes more difficult when there is a larger number of assessment tasks. Tools that can be used to monitor possible dishonest behaviour include applications that allow students participating in online assessment to be monitored using video or sound, as well as platforms that test for plagiarism (Montenegro-Rueda et al. 2021). During Covid-19 when online assessment was introduced on a large scale, this monitoring was mainly done by lecturers, who felt that they were not qualified or trained to do this (Montenegro-Rueda et al. 2021). When implementing a CA framework in an ODeL environment, decisions have to be taken on the way in which such tools will be incorporated and who will take responsibility for this task.

Both the challenge regarding the cost and time that it takes to design and implement CA and the authentication of students are important factors to take into account when taking decisions on how CA will be implemented in an academic environment. However, these factors do not really affect learning, so let us turn now to the challenges of CA regarding learning.

An important reason for using CA is that assessment that is mainly based on one final examination may cause stress and anxiety for students, due to the high stakes related to this one assessment. However, if students feel that they are constantly assessed, this may also cause stress. Several studies indicate that students may perceive CA negatively due to the perception that it increases their workload (Coll et al. 2007; Johannson et al. 2022). The number of assessments and the complexity of assessment tasks should be balanced with the time that is available for learning and assessment and students should be made aware of the benefit of participating in the assessment and engaging with the feedback (Abera et al. 2017; Bjælde et al. 2017; Dejene and Chen 2019; Johannson et al. 2022).

In the case of DE, the pacing of CA can become an important issue. A reason why students choose to engage in DE is that it provides the freedom to pace your own studies (Ilonga, Ashipala and Tomas 2020). CA may inhibit this freedom. It is therefore important that distance educators ensure that there is still adequate flexibility to satisfy students who choose the medium of DE for this reason.

Students' attitudes, and their understanding of how CA works, will also determine how effective CA will be to facilitate more effective learning (Dejene and Chen 2019; Hernández 2012; Montenegro-Rueda et al. 2021; Zhan 2020). Sambell, Brown and Race (2019) highlight the importance of feedback literacy. Academics have a small window of opportunity at the beginning of the tuition period to familiarize students with their

new academic environment. Lessons learnt and literacies gained during this period have a direct impact on students' perceptions of CA.

Institutional support may also present a challenge for the implementation of CA. Belay and Tesfaye (2017) found that deficient teaching-learning facilities was a significant challenge that affected the effectiveness of CA at Dire Dawa University in Ethiopia. Such facilities can include a lack of access to the internet, downtime of the learning management system, inadequate access to library resources, inadequate access to laboratory facilities, and other institutional factors that may hinder students to complete assessment tasks, submit assessment and receive feedback.

It is important to take note of potential challenges related to CA and to plan the introduction of CA so that possible problems may be avoided. It is also important that the time and cost to implement CA are carefully considered prior to introducing it, as well as the potential problems regarding the authentication of students.

Results: A Model for Introducing a Continuous Assessment Model/Framework in an Academic Programme

Aspects to Consider when Introducing a Continuous Assessment Framework in an Academic Department

The discussion above indicates that there are several factors that should be considered when a CA framework is introduced in an academic department or programme. The following important aspects have been identified in the literature:

- Provide training to academic and support personnel
- Choose/design an appropriate CA framework
- Mangement decisions that need to be considered:
    - Cost and time of design and implementation of CA
    - Cost and time involved with provision of feedback
    - Adequate support personnel
- Support from educational experts
- Provide information on the assessment system to students

A Proposed Model to Introduce a Continuous Assessment Framework in an Academic Department

Smit (2008) indicates that the most important obstacle to the successful implementation of CA in an academic institution is inadequate management of the process, which can result in "work overload for both staff and students" and inadequate administrative support, both from the institution and in the department. It is, therefore, necessary to have a workable model in place to ensure that CA can be introduced effectively, and that the advantages of CA for more effective learning can come to pass.

Figure 3 illustrates a model that can be helpful to plan the introduction of CA, while Table 1 summarises all the factors that can affect each of the environments shown in the model in Figure 3. When CA is introduced in an academic environment, we can assume that government regulation and appropriate institutional policy allow for the introduction of such a framework. However, before CA is implemented it may be necessary to take cognisance of the requirements of any external regulating bodies, such as professional bodies, that may have certain requirements regarding assessment of modules or programmes.

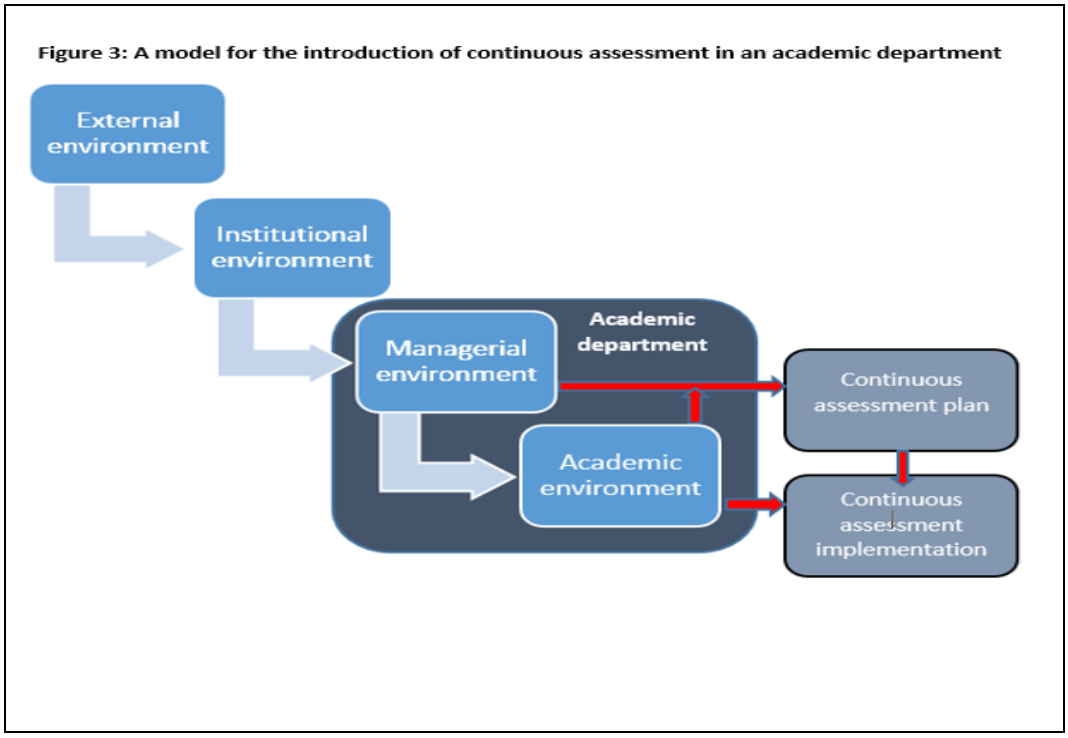

Figure 3: A model for the introduction of CA in an academic department

Table 1: Factors affecting environments that affect the implementation of CA

External environment	**Institutional environment**	**Departmental environment**	
		Managerial and support environment	**Academic environment**
Government regulation	Institutional policy	Departmental culture	Characteristics of lecturers
External regulating bodies	Institutional planning and funding procedures	Characteristics of support staff in the department	Characteristics of learners
	Learning management system	Quality assurance procedures	Programme content and design
	ICT support expertise support	Planning and funding procedures	Module content and module design
	Instructional design/educational	Performance management	Time allocated to module

When the introduction of CA is driven by academics in a specific department or departments, it may be necessary to first investigate if institutional planning, the learning management system and the ICT system, educational support and the available financial resources can support the introduction of such a framework. If the institution is driving the introduction of a CA framework in an institution as a whole (thus a top-down process), it may still be necessary to determine exactly how all these elements will support the introduction of CA.

The managerial and support environment in an academic department can play a determining role in the successful implementation of a CA framework. That upward arrow in Figure 3, from the academic environment toward the arrow that runs from departmental management towards the CA plan, illustrates that planning by departmental management in an academic department should be done in consultation with academics.

Quality assurance procedures, such as moderation of assessment, play an important role in any assessment system. The departmental management will have to consider that since CA implies more regular assessment activity, it may also imply more regular moderation activity.

Finally, there are several academic factors that will affect the introduction of a CA framework. Academic personnel should have an interest to learn about CA, how it can improve learning and should be enthusiastic about the implementation. The characteristics of the learners also have to be taken into account. A CA framework may require students to have regular access to the internet as it will usually be implemented via an online learning management system.

Programme and module content, and the way in which programmes and/or modules are designed are important factors to consider in the design of a CA system. Related to this issue is the matter of time management. Academic programmes and modules are designed to be completed in a certain limited number of hours, meaning that additional assessment activities cannot just be added to the programme or module.

Finally, Figure 3 illustrates that CA is implemented by academics. Despite all the other factors that may play a role and affect the implementation of a CA framework, the successful implementation mainly depends on the inputs, interest, and didactic understanding of the lecturing team.

Table 2 provides an action list, based on the model discussed here, which can be used to *plan* the introduction of a CA framework in an academic department.

Table 2: Action list for planning the introduction of CA in an academic department

Item #	Description
1	Set up a steering committee responsible for introducing CA
2	Determine the external environment that affects the introduction of CA
2.1	Government regulation
2.2	Regulation by relevant external bodies
3	Determine the institutional environment that affects the introduction of CA
3.1	Relevant institutional policy, e.g., assessment policy, tuition policy, etc.
3.2	Determine relevant institutional planning and funding procedures, and determine contact persons to arrange for planning and funding
3.3	Relevant aspects regarding the learning management system (LMS), e.g., which types of assessment can be accommodated, record keeping in the LMS, etc.
3.4	Determine available ICT support and contact persons
3.5	Determine available instructional design/educational expertise support and contact persons
4	Determine departmental managerial and support environment, establish which steps are needed to enable the successful introduction of CA and how these will be implemented
4.1	Determine departmental culture regarding tuition and introduction of new academic frameworks
4.2	Determine characteristics of support staff regarding ability and willingness to assist with the support of CA framework
4.3	Determine quality assurance procedures and whether these will support CA
4.4	Determine planning and funding procedures, and how these will accommodate the introduction of a CA framework
4.5	Determine performance management procedures, and how this can accommodate the introduction of a CA framework
5	Determine the current academic environment, and the steps that are required to enable the successful implementation of a CA framework
5.1	Determine characteristics of lecturers, and the training that may be required to enable lecturers to introduce CA in academic modules and programmes to enable more effective learning

5.2	Determine characteristics of learners, and the steps that will be taken to inform learners how a CA framework will work, what the advantages of such a framework is and what is expected from them regarding CA to enable more effective learning.
5.3	Evaluate current programme content and design, including the time available to complete a programme, to determine if and how these must be adjusted to use CA for more effective learning.
5.4	Evaluate module content and design, including the time available to complete a module, to determine if and how these must be adjusted to use CA for more effective learning.

The action list for the training, design and implementation of a CA framework in an academic department is provided in Table 3.

Table 3: Action list for the training, design and implementation of CA in an academic department

Item #	**Description**
1	Workshop/meeting to discuss the introduction of CA in the academic department
1.1	Ensure all personnel understand terminology and principles to CA, and the implications of the introduction of CA
2	Draw up schedule that allows adequate time for training of relevant personnel, and design and implementation of CA
3	Recruit and appoint personnel that may be required to assist with training, design and implementation of CA
4	Training
4.1	Training of support personnel
4.2	Training of academic personnel
5	Design of CA framework for department
5.1	Adjustment of design of academic programme to include CA (if required)
5.2	Adjustment of design of academic modules to include CA that will ensure more effective learning (if required)
5.3	Design of CA plan for each module
5.4	Design of quality assurance procedures to accommodate CA
6	Implementation of CA framework
6.1	Set up assessment activities for each module that will enable more effective learning, including appropriate feedback and marking guidelines
6.2	Do quality assurance of assessment activities and assessment plan
6.3	Compile guidelines to inform students how the CA will operate; why it is being introduced; and what is expected from them
7	Evaluate and improve the CA framework for each department and the department as a whole

Conclusions and Suggestions for Further Research

Introducing a CA framework in an academic department can be expected to contribute to more effective learning and ensure higher student success rates and retention rates. However, it is a time-consuming and costly exercise, and the literature overview helped us to identify many factors that may hinder successful implementation. Therefore, it is necessary to do a thorough investigation of the environment in which it will be implemented and plan the implementation carefully. The action lists provided in tables 2 and 3 should ensure that all factors that need to be investigated and planned, are considered. It is important to note that although CA does not necessarily imply that summative assessment is excluded, it may require a complete overhaul of the assessment system in an academic department and a different way of thinking about the reasons for assessment. More research is necessary to determine how the advantages of CA can be measured, and how quality assurance may be implemented in a CA framework. It should be noted that although the study was conducted from an ODeL perspective, the model and checklists that were developed are appropriate to be used in any tertiary education environment. It was also determined that more research is required to determine students' engagement with feedback to ensure the effective design of feedback mechanisms.

References

Abera, G., M. Kedir, and M. Beyabeyin 2017. "The Implementations and Challenges of Continuous Assessment in Public Universities of Eastern Ethiopia." *International Journal of Instruction* 10 (4): 109–128. https://doi.org/10.12973/iji.2017.1047a

Baird, J., D. N. Andrich, T. N. Hopfenbeck, and G. Stobart. 2017. "Assessment and Learning: Fields Apart?" *Assessment in Education: Principles, Policy and Practice* 24 (3): 317–350. https://doi.org/10.1080/0969594X.2017.1319337

Belay, S., and A. Tesfaye. 2017. "The Impending Challenges of Continuous Assessment Implementation at Dire Dawa University, Ethiopia." *International Journal of African and Asian Studies* 35: 59–68. https://www.researchgate.net/profile/SintayehuBelay/publication/318491592_The_Impending_Challenges_of_Continuous_Assessment_Implementation_at_Dire_Dawa_University_Ethiopia/links/596da9d40f7e9b81444168c5/The-Impending-Challenges-of-Continuous-Assessment-Implementation-at-Dire-Dawa-University-Ethiopia.pdf

Belcadhi, L. C. 2016. "Personalized Feedback for Self Assessment in Lifelong Learning Environments Based on Semantic Web." *Computers in Human Behavior* 55: 562–570. Accessed March 25, 2020. https://doi.org/10.1016/j.chb.2015.07.042

Bjælde, O. E., T. V. Jørgensen, and A. B. Lindberg. 2017. "Continuous Assessment in Higher Education in Denmark: Early Experiences from Two Science Courses." *Dansk Universitetspædagogisk Tidsskrift* 12 (23): 1–10. https://doi.org/10.7146/dut.v12i23.25634

Bjælde, O. E., and A. B. Lindberg. 2018. “Using Continuous Assessment with Feedback Loops to Generate Useful Data for Learning Analytics.” *Open Oceans: Learning Without Borders* 53. https://researchrepository.murdoch.edu.au/id/eprint/59155/1/ASCILITE-2018-Proceedings-Final.pdf#page=55

Boud, D., and P. Dawson. 2023. “What Feedback Literate Teachers Do: An Empirically-Derived Competency Framework.” *Assessment & Evaluation in Higher Education* 48 (2): 158–171. https://doi.org/10.1080/02602938.2021.1910928

Carless, D., and D. Boud. 2018. “The Development of Student Feedback Literacy: Enabling Uptake of Feedback.” *Assessment & Evaluation in Higher Education* 43 (8): 1315–1325. https://doi.org/10.1080/02602938.2018.1463354

Cole, A. W., C. Anderson, T. Bunton, M. R. Cherney, V. C. Fisher, R. Draeger, M. Featherston, L. Motel, K. M. Nicolini, B. Peck, and M. Allen. 2017. “Student Predisposition to Instructor Feedback and Perceptions of Teaching Presence Predict Motivation toward Online Courses.” *Online Learning Journal* 21 (4): 245–262. https://doi.org/10.24059/olj.v21i4.966

Coll, C., M. Rochera, R. Mayordomo, and M. Naranjo. 2007. “Continuous Assessment and Support for Learning: An Experience in Educational Innovation with ICT Support in Higher Education.” *Electronic Journal of Research in Educational Psychology* 5. https://www.researchgate.net/publication/228682597_Continuous_assessment_and_support_for_learning_An_experience_in_educational_innovation_with_ICT_support_in_higher_education

Cook, L., D. Butler, and S. Jordan. 2013. “Student Engagement in Formative Assessment.” Exploring the Frontiers of STEM Education. https://www.open.ac.uk/about/teaching-and-learning/esteem/sites/www.open.ac.uk.about.teaching-and-learning.esteem/files/files/ecms/web-content/2013-06-Sally-Jordan-AHEC-poster.pdf

Dawson, P., M. Henderson, P. Mahoney, M. Phillips, Y. Ryan, D. Boud, and E. Molloy. 2019. “What Makes for Effective Feedback: Staff and Student Perspectives.” *Assessment & Evaluation in Higher Education* 44 (1): 25–36. https://doi.org/10.1080/02602938.2018.1467877

Dejene, W., and D. Chen. 2019. “The Practice of Modularized Curriculum in Higher Education Institution: Active Learning and Continuous Assessment in Focus.” *Cogent Education* 6 (1). https://doi.org/10.1080/2331186X.2019.1611052

Dienga, M. A. 2021. “Ensuring the Expertise to Grow South Africa. Impact of the Fourth Industrial Revolution on Engineering Educational Outcomes.” ECSA. Accessed March 25, 2020. https://www.ecsa.co.za/ECSADocuments/Shared%20Documents/Impact%20of%20the%20Fourth%20Industrial%20Revolution%20on%20educational%20outcomes.pdf

Domenech, J., D. Blazquez, E. De la Poza, and A. Munoz-Miquel. 2015. “Exploring the Impact of Cumulative Testing on Academic Performance of Undergraduate Students in Spain.” *Educational Assessment, Evaluation and Accountability* 27 (2): 153–169. https://doi.org/10.1007/s11092-014-9208-z

Forbes, A. 2022. “Teacher Development for Online Teaching in African Universities: A Proposed Model.” In *Teaching and Learning with Digital Technologies in Higher Education Institutions in Africa: Case Studies from a Pandemic Context*, edited by A. Mare, E. Woyo and E. M. Amadhila, 228–242. London: Routledge.

Friess, W. A., and A. J. Goupee. 2020. “Using Continuous Peer Evaluation in Team-Based Engineering Capstone Projects: A Case Study.” *IEEE Transactions on Education* 63 (2): 82–87. https://doi.org/10.1109/TE.2020.2970549

Garba, A. M., and Y. Usuf. 2019. “Teachers’ Competence in Implementation of Continuous Assessment as Correlates of Academic Performance of Undergraduates in Sule Lamido University, Kafin Hausa Jigawa State.” *Kano Journal of Educational Psychology* 1 (1): 40–49. https://www.kjnisepjournal.com/pdfs/Article%206.pdf

Gulwani, S., I. Radiček, and F. Zuleger. 2014. “Feedback Generation for Performance Problems in Introductory Programming Assignments.” In *Proceedings of the 22nd ACM SIGSOFT International Symposium on Foundations of Software Engineering*, 41–51. https://doi.org/10.1145/2635868.2635912

Hatt, J. 2019. “Dynamic, Online, Objective Assessment for Continuous Assessment.” In *Handbook of Research on E-Assessment in Higher Education*, edited by A. Azevedo and J. Azevedo, 220–242. Hershey: IGI Global. https://doi.org/10.4018/978-1-5225-5936-8.ch009

Hattie, J., and S. Clarke. 2019. Visible Learning: Feedback. Abingdon: Routledge. https://doi.org/10.4324/9781003024477

Henderson, M., T. Ryan, and M. Phillips. 2019. “The Challenges of Feedback in Higher Education.” *Assessment & Evaluation in Higher Education* 44 (8): 1237–1252. https://doi.org/10.1080/02602938.2019.1599815

Hendry, G. D., P. White, and C. Herbert. 2016. “Providing Exemplar-Based ‘Feedforward’ Before an Assessment: The Role of Teacher Explanation.” *Active Learning in Higher Education* 17 (2): 99–109. https://doi.org/10.1177/1469787416637479

Hernández, R. 2012. “Does Continuous Assessment in Higher Education Support Student Learning?” *Higher Education* 64: 489–502. https://doi.org/10.1007/s10734-012-9506-7

Holcroft, E. O. 2014. “Theory and Practice in Continuous Assessment: A Discussion of an Exemplar of CASS Practice in a Johannesburg Secondary School, in the Light of a Paradigm Shift in the Official Perspective on Assessment.” Master’s thesis, University of the Witwatersrand. http://wiredspace.wits.ac.za/jspui/bitstream/10539/14525/1/Holcroft%20E%20O%201999-001.pdf

Ilonga, A., D. O. Ashipala, N. and Tomas. 2020. “Challenges Experienced by Students Studying through Open and Distance Learning at a Higher Education Institution in Namibia: Implications for Strategic Planning.” *International Journal of Higher Education* 9 (4): 116–127. https://doi.org/10.5430/ijhe.v9n4p116

Itasanmi, S. A., M. T. Oni, V. O. Ekpenyong, O. A. Ajani, and O. G. Omorinkoba. 2022. “Academic Staff’s Motivation for Online Teaching in Nigerian Universities: Empirical Evidence from the University of Ibadan.” *International Journal of Learning, Teaching and Educational Research* 21 (7): 345–365. https://doi.org/10.26803/ijlter.21.7.18

Johansson, E., S. Kanapathippillai, A. Khan, and S. Dellaportas. 2022. “Formative Assessment in Accounting: Student Perceptions and Implications of Continuous Assessment.” *Accounting Education*. https://doi.org/10.1080/09639284.2022.2091411

Kugamoorthy, S., and W. M. Weerakoon. 2018. “Continuous Assessment Methods: Critical Review for Quality Improvement of the Post Graduate Diploma in Education Program of the Open University of Sri Lanka.” *International Research Journal of Human Resources and Social Sciences* 5 (10): 55–71. https://www.researchgate.net/publication/322675936_A_STUDY_ON_STUDENT_TEACHERS%27_PERCEPTION_ON_THE_CONTINUOUS_ASSESSMENT_METHODS_OF_THE_POSTGRADUATE_DIPLOMA_IN_EDUCATION_PROGRAMME

Lase, D. 2019. “Education and Industrial Revolution 4.0.” *Jurnal Handayani* 10 (1): 48–62. https://doi.org/10.24114/jh.v10i1.14138

Lovatt, J., O. E. Finlayson, and P. James. 2007. “Evaluation of Student Engagement with Two Learning Supports in the Teaching of 1st Year Undergraduate Chemistry.” *Chemistry Education Research and Practice* 8 (4): 390–402. https://doi.org/10.1039/B6RP90038K

Malecka, B., D. Boud, and D. Carless. 2020. “Eliciting, Processing and Enacting Feedback: Mechanisms for Embedding Student Feedback Literacy within the Curriculum.” *Teaching in Higher Education* 27 (7): 908–922. https://doi.org/10.1080/13562517.2020.1754784

Mallinson, B., and G. Krull. 2013. “Building Academic Staff Capacity to Support Online Learning in Developing Countries.” *Journal of Asynchronous Learning Networks* 17 (2): 63–72. https://doi.org/10.24059/olj.v17i2.343

Marin, V. J., T. Pereira, S. Sridharan, and C. R. Rivero. 2017. “Automated Personalized Feedback in Introductory Java Programming MOOCS.” In *Proceedings of IEEE 33rd International Conference on Data Engineering*, 1259–1270. https://doi.org/10.1109/ICDE.2017.169

Martin, F., A. Ritzhaupt, S. Kumar, and K. Budhrani. 2019. “Award-Winning Faculty Online Teaching Practices: Course Design, Assessment and Evaluation, and Facilitation.” *The Internet and Higher Education* 42: 34–43. https://doi.org/10.1016/j.iheduc.2019.04.001

Molloy, E., D. Boud, and M. Henderson. 2020. “Developing a Learner-Centred Framework for Feedback Literacy.” *Assessment & Evaluation in Higher Education* 45 (4): 527–540. https://doi.org/10.1080/02602938.2019.1667955

Montenegro-Rueda, M. M., A. Luque-de la Rosa, J. L. S. Sánchez-Serrano, and J. Fernández-Cerero. 2021. “Assessment in Higher Education during the COVID-19 Pandemic: A Systematic Review.” *Sustainability* 13 (19): 10509. https://doi.org/10.3390/su131910509

Morris, R., T. Perry, and L. Wardle. 2021. “Formative Assessment and Feedback for Learning in Higher Education: A Systematic Review.” *Review of Education* 9: e3292. https://doi.org/10.1002/rev3.3292

Ntereke, B. B., B. C. Conteh, B. T. Ramoroka, and K. B. Tlhobogang. 2021. “Teaching and Learning Online during the Pandemic: Lecturers’ Perceptions and Experiences.” *Mosenodi Journal* 24 (2): 22–47. https://journals.ub.bw/index.php/mosenodi/article/view/1983

Pathiranage, A., and T. Karunarathne. 2022. “Investigating Teachers’ Transition from Traditional to Online: A Case Study on Accounting Teacher Perspectives.” *European Conference on E-Learning* 21 (1): 348–356. https://doi.org/10.34190/ecel.21.1.615

Peterson, E., and M. V. Siadat. 2009. “Combination of Formative and Summative Assessment Instruments in Elementary Algebra Classes: A Prescription for Success.” *Journal of Applied Research in the Community College* 16 (2): 92–102. https://docs.wixstatic.com/ugd/6310f4_17b9fa83245444f68bd5e01446a5602d.pdf

Peytcheva-Forsyth, R., and H. Mellar. 2020. “Design and Execution of Large-Scale Pilots.” In *Engineering Data-Driven Adaptive Trust-Based E-Assessment Systems*, edited by D. Baneres, M. Rodriguez and A. Guerrero-Roldan, 159–188. Cham: Springer. https://doi.org/10.1007/978-3-030-29326-0_8

Pocock, J. 2012. “Leaving Rates and Reasons for Leaving in an Engineering Faculty in South Africa: A Case Study.” *South African Journal of Science* 18 (3/4): 1–8. https://doi.org/10.4102/sajs.v108i3/4.634

Ramsden, P. 2003. *Learning to Teach in Higher Education.* Abingdon: Routledge. https://doi.org/10.4324/9780203507711

Rezaei, A. R. 2015. “Frequent Collaborative Quiz Taking and Conceptual Learning.” *Active Learning in Higher Education* 16 (3): 187–196. https://doi.org/10.1177/1469787415589627

Russell, R., L. Elton, D. Swinglehurst, and T. Greenhalgh. 2006. “Using the Online Environment in Assessment for Learning: A Case-study of a Web-based Course in Primary Care.” *Assessment and Evaluation in Higher Education* 31 (4): 465–478. https://doi.org/10.1080/02602930600679209

Sambell, K., S. Brown, and P. Race. 2019. “Assessment as a Locus for Engagement: Priorities and Practicalities.” *Italian Journal of Educational Research* 45–62. https://ojs.pensamultimedia.it/index.php/sird/article/view/3268

Sartain, A. F. 2018. “The Frequency of Testing and Its Effects on Exam Scores in a Fundamental Level Baccalaureate Nursing Course.” PhD diss., University of Alabama. https://ir.ua.edu/bitstream/handle/123456789/5405/file_1.pdf?sequence=1&isAllowed=y

Senouci, M. 2022. “Continuous Assessment in Higher Education: EFL Teachers’ Practices and Challenges.” *Aleph* 9 (3): 359–377. https://www.asjp.cerist.dz/en/article/198105

Siemens, G. 2005. “Connectivism: A Learning Theory for the Digital Age.” *International Journal of Instructional Technology and Distance Learning* 2 (1): 3–10. https://lidtfoundations.pressbooks.com/chapter/connectivism-a-learning-theory-for-the-digital-age/

Smit, J. J. A. C. 2008. “A Conceptual Model for the Management of the Implementation of a Continuous Assessment Plan at a University of Technology.” PhD diss., North-West University (Vaal Triangle Campus). http://repository.nwu.ac.za/handle/10394/1781

Tarekegne, W. M. 2019. “Higher Education Instructors’ Perception and Practice of Active Learning and Continuous Assessment Techniques: The Case of Jimma University.” *Bulgarian Journal of Science and Education Policy* 13 (1): 50–70. http://bjsep.org/getfile.php?id=284

Thorpe, M. 1998. “Assessment and ‘Third Generation’ Distance Education.” Distance Education 19 (2): 265–286. https://doi.org/10.1080/0158791980190206

Walde, G. S. 2016. “Assessment of the Implementation of Continuous Assessment: The Case of METTU University.” *European Journal of Science and Mathematics Education* 4 (4): 534–544. https://doi.org/10.30935/scimath/9492

Wallace, M. T., M. L. Gloria, and H. W. Munetsi. 2022. “Continuous Assessment Learning Activity: An Overdue Progressive Assessment Approach Compromisingly Implemented.” *International Journal of All Research Writings* 4 (1): 57–68.

Winstone, N. E., and D. Boud. 2020. “The Need to Disentangle Assessment and Feedback in Higher Education.” *Studies in Higher Education* 47 (3). https://doi.org/10.1080wintone/03075079.2020.1779687

Winstone, N. E., R. A. Nash, M. Parker, and J. Rowntree. 2017. “Supporting Learners’ Agentic Engagement with Feedback: A Systematic Review and a Taxonomy of Recipience Processes.” *Educational Psychologist* 52 (1): 17–37. https://doi.org/10.1080/00461520.2016.1207538

Yang, Y., Q. Chen, Y. Yu, X. Feng, and J. Van Aalst. 2020. “Collective Reflective Assessment for Shared Epistemic Agency by Undergraduates in Knowledge Building.” *British Journal of Educational Technology* 41 (4): 1136–1154. https://doi.org/10.1111/bjet.12909

Zhan, Y. 2020. “Motivated or informed? Chinese Undergraduates’ Beliefs about the Functions of Continuous Assessment in Their College English Course.” *Higher Education Research & Development* 39 (5): 1055–1069. https://doi.org/10.1080/07294360.2019.1699029

Chapter 7

Improved Student Success and Learning with e-Portfolios in Economics: An Empirical Review from the University of South Africa

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Abstract

Due to the outbreak of Covid-19, which was declared a global pandemic in March 2020, more education is being conducted online worldwide. Problem-solving initiates alternative assessments such as electronic portfolios (e-portfolios) and continuous assessment. The Public Economics module for third-year students at the University of South Africa has been fully online with e-portfolios since 2021. This strategy has been implemented as a follow-up to the author's research findings which suggested that the final marks for Microeconomics had a significant impact on the results of the final-year students in Economics. Other factors, such as assignment marks and module repeats, also played a role. The study results reaffirmed the importance and influence of Microeconomics as base knowledge for undergraduate and future postgraduate work. In addition, the findings indicated that the more the students tend to repeat or qualify for supplementary examinations, the higher the probability of them not progressing. The conclusion reaffirmed the importance of assignments and the use of continuous assessment, including e-portfolios in Economics. Future research should entail further econometric and empirical work on the impact of the e-portfolios on third-year student success in Economics. E-portfolios are beneficial – if kept simple, they can provide students with continuous learning. However, e-portfolios need more lecturer feedback and self-directed learning in order for students to succeed.

Keywords: open distance e-learning; e-portfolios; economics

Introduction

The main aim of the current study was to revisit and follow up on empirical research that had been conducted in the Department of Economics at the University of South Africa (Unisa). Low success rates at higher education institutions (HEIs) instigated renewed interest in the predictors of academic achievement (Keeve, Naude and Esterhuyse 2012). This was also the case for the Economics module as discussed in this chapter. Empirical research has been conducted in the Department of Economics at Unisa, with the earliest example from Pretorius, Prinsloo and Uys (2009) and more recent research from Robinson (2018).

Firstly, the study pictured the open distance e-learning (ODeL) environment within the theory of connectivism and self-directed learning. Secondly, it attempted to investigate the student success in the Public Economics third-year level module, with the success rate as the dependent variable. The study tested the impact of expertise, such as first-year and second-year Macroeconomics and Microeconomics, as prerequisites for student success in Public Economics. The possibility of repeated candidates progressing to the next level intensifies. Lastly, the study captured the pedagogic intervention as an e-portfolio as part of continuous assessment (CA) undertaken in Public Economics in an ODeL environment from 2021.

Conceptual Background of Open Distance e-Learning

In the wake of the Covid-19 pandemic, going more online worldwide will make ODeL crucial in years to come. It was not so long ago that distance education (DE) correspondence was delivered primarily and extensively through the physical mail delivery system for both study materials and feedback. However, this has changed in recent years, which can be attributed to DE becoming open and "most industrialised education" (Peters 2010). In economics, this change is attributed to the division of labour, mechanisation, capital-intensive techniques, specialisation, economies of scale, and mass production and distribution.

DE is being increasingly advanced through technological improvements, leading to improvements in ODeL. On the African continent and in other developing countries, internet connection issues have historically been a challenge, resulting in problems with the delivery and submission of material online. However, increased mobile presence, together with advances in technology, have improved the delivery and submission of material online. Open access resources and massive open online courses have further broadened educational horizons (open distance learning (ODL)). Technology continues to advance in all spheres, with its use in communication in all forms exceeding expectations. Technological applications reach beyond this, necessitating that quality, security, and other aspects keep pace, thereby providing a strong and secure foundation

for users and developers. DE needs to be in sync with these processes to ensure that the sharing and collaboration of knowledge, innovation in processes, and the practices of transfer and communication will benefit both learners and society in general.

ODeL employs concepts and methodologies similar to those practised by contact learning institutions, with the social interaction largely absent. Teachers, lecturers, and other instructors should provide learners with procedures and designs that represent the best practice to help them excel through perseverance, ambition, and aptitude. More research, feedback, analyses, and redesign might be required to build a system that moves this process forward, although many of the seeds are already sown. As people vary across the world, their ideas, methodologies and structures also vary. However, many will also be very comparable, if not the same, across the divide. The Open University in the United Kingdom (UK) refers to open as open to people, open to places, and open to ideas, to mention a few. Higher education (HE) has become more open: more than 250 universities have become part of the open educational resource movement (D'Oliveira and Lerman 2009). The internet in the twenty-first century has opened various possibilities but also has challenges of access, quality, and cost. The principles of technology such as division of labour, specialisation, and economies of scale again become paramount. Various South African residential universities have adopted the principle of open access, although to a limited extent. The degree of openness is therefore visible and includes the way in which the content is received and utilised by the student. Unisa prides itself on bringing education to the underprivileged and can therefore be regarded as a truly open institution. In contrast to working adults, the young population of students that is not yet in full-time employment, poses additional challenges and opportunities, where they enjoy participating in group discussions or online chats (Letseka and Pitsoe 2013).

Connectivism and Self-Directed Learning

The theory of connectivism is a recent addition, with online learning becoming a self-directed activity. Heutagogy (knowing how and where to learn) explains self-determined learning, expanding on andragogy, in which the learner decides the path of learning (Hase and Kenyon 2000). In a heutagogical approach to teaching and learning, learners are highly autonomous and self-determined and emphasis is placed on the development of learner capacity and capability to produce learners who are well-prepared for the complexities of today's workplace. Learning occurs as a result of creating environments or networks (Siemens 2005). However, lecturers and instructors still need to place the needs of the students first, as many may not yet be prepared for self-directed learning. Greater empathy and instant feedback from the instructors will ensure students remain inspired and focused. Connectivism, especially at the graduate level, brings most things together, although the role of behaviourism, cognitivism and constructivism should not be ignored (Siemens 2005).

Conradie (2014) explored whether self-directed learning takes place through connectivism in personal learning environments. Although andragogy, behaviourism, cognitivism and constructivism all rely on the learner's know-how, connectivism goes a step further and involves an active learner engaging in learning through systems and networks and the know-where. Self-directed learning thus refers to an active learner designing their learning path through e-learning or Web 2.0 participation and collaboration between learner and lecturer or tutor. As part of the methodological analyses, 76 participants in an Information and Communication Technology class were included. Interviews were conducted with open- and closed-ended questions in terms of motivation, engagement, collaboration and self-actualisation. The main idea was to establish whether connectivism leads to more motivated learners, higher engagement by learners, facilitating more collaboration between learners and more encouraged learners. The main findings showed that learners were motivated and engaged supported by collaboration and self-actualisation. The learners did, however, find the self-direction challenging – especially in the beginning when more training became essential. Self-direction can thus become a factor that predicts student success although not always measurable without questionnaires.

In the current study, the author deemed it fitting to explore, firstly, the factors that best explain the success rate of students. The closest example relating to the current context is student performance in Economics and the effect of expertise in related subjects (Wagemans, Valcke and Dochy 1991). Concerning the influence of prior knowledge on the acquisition of subject-oriented knowledge, their regression analysis revealed that expertise accounted for 37 to 42% of the variance in post-test scores. This relates to the focus in the current study where the influence of second-year modules as prerequisites was also tested. Du Plessis, Müller and Prinsloo (2005) first investigated the profile of first-year Accounting students and the factors that influenced the performance of these students in the ODL context. Another close comparison is that of the study of the first-year Economics students by Pretorius, Prinsloo and Uys (2009) in an ODL environment, where the researchers found that the successful passing of assignments had the greatest influence on student success, with language and age also playing a role. Some attention has been given to academic development and pedagogic intervention as tools to improve results.

Smith and Edwards (2007) suggest that an academic development preparation course has a major influence on students' performance in first- and second-year Microeconomics, matriculation results, mathematics, English as home language, physical science and gender were all important determinants of success. Smith (2009) further found that pedagogic interventions have a positive influence on the success of Economics students. The key variables that may explain the relative success of such intervention in the academic development course were economics, language and communication tutorials, essay writing, the module designed to develop students' quantitative and graphical skills, and smaller class sizes. Improved performance by the mainstream cohort may be ascribed, among other things, to a more intensive tutorial

system. Keeve, Naude and Esterhuyse (2012) found that for three-year curriculum students, academic factors such as Grade 12 performance and language proficiency, provided a significant explanation. These factors did not apply to four-year curriculum students, where psychosocial factors may have played a role. Smith and Ranchhod (2012) later concluded that educational interventions in the first year of Economics had a positive influence on academic performance. Their results further suggested that educational interventions introduced later, in the form of voluntary workshops, improved academic performance further.

Further international studies have been conducted on student success in Economics. Athey et al. (2007) investigated graduate economics education and student outcomes. They found that first-year grades in required core courses were a strong predictor of Economics graduate students' job placements. First-year Macroeconomics and Microeconomics grades were statistically significant predictors of student job placement. One explanation is that these courses directly help to prepare students to be successful researchers. Students could also gain self-confidence or create positive "first impressions" with faculty members. Foreign-trained and male students achieved higher first-year grades on average than their female counterparts. Further international research investigated the "historically disadvantaged or undeserved student" success and found a significant impact of reading motivation, math and critical thinking skills on macro-economics student success (Brown-Robertson, Ntembe and Tawah 2015). This correlates with research from the World Economic Forum (WEF) on necessary skills for the Fourth Industrial Revolution (4IR). It also relates well with the Unisa environment where these students might have fewer resources than their peers at residential universities. The Department of Economics has done extensive research to improve also its professional qualification mix over time (Robinson 2020). The necessity for mathematical and critical thinking skills as part of the curriculum became evident.

Unisa can be regarded as a truly open institution, taking pride in bringing education to the many underprivileged people in society, who cannot afford either the cost or the time to attend a contact institution. The institution's vision and mission statements relate to its African character, with lifelong learning catered for through a high-quality open learning environment. Social justice is naturally encouraged, but also the development of underprivileged people. Unisa is fortunate to have a growing student population, although the associated cost implications and constraints require careful and forward-looking management. In 2020, venue-based examinations were changed to an online platform, with authentication through invigilator applications. Unisa has also adopted a policy of CA, which makes formative assessment 100%, with a variation of e-portfolios as a summative assessment. Unisa has transformed from the traditional and predominantly paper-based medium to the digital medium with reliance on the internet for its e-learning.

Many citizens of the developing world have not had the opportunity of reaching their full potential through the opportunities that tertiary education provides. Generations of talent have been lost and continue to be lost, either through infrastructure or through economic constraints. Although historic injustices are attributed to many constraints, ODeL institutions such as Unisa continue to deal with these challenges and opportunities, especially concerning South Africa and other countries on the African continent. Availability and access to funds will continue to pose a challenge, with ODeL being driven by both needs and necessity to fully adopt and exploit quality education through state-of-the-art technology. Different institutions in various continents will cater for the demands, needs and opportunities in their specific geographic locale, influencing not only the curriculum offered but also the students seeking admission.

Research Methodology and Data: Public Economics at Unisa

Public Economics at BCom final-year level in Economics is offered as a compulsory module. Microeconomics at the second-year level serves as a prerequisite for Public Economics (Robinson 2018). The data for the empirical analysis drew on the first- and second-semester registrations for 2016 and 2017. These samples consisted of approximately 500 to 1 000 students.

The subject matter of Public Economics at third-year level is challenging to students. It is an applied microeconomics discipline and students sometimes struggle because their knowledge and comprehension of second-year Microeconomics may not suffice. The students need to progress gradually to the next level through the successful understanding and mastering of earlier material. With a low pass rate, research and understanding of contributing factors, together with potential solutions for assistance and improvement, have become critical.

Profile of Students

The group comprised mainly male students (see Table 1) with a mean age of approximately 31, and they mostly did not study in their home language. The home language was included in the analysis as a reliable indicator of student success. Students who were unemployed or not economically active were regarded as full-time students. Those who were not classified were included as part-time students. Within the ODeL tuition and delivery framework, students only need to submit two assignments during the semester. For the current study, the handing in and passing of the two assignments were taken as showing effort and commitment on the part of the student.

Table 1: Descriptive statistics in Public Economics for 2016 and 2017

Variable	Sample	Mean	Standard deviation	Minimum	Maximum
FINALMRK	1 582	49.06	17.08	6	85
FINMRK_MICRO_1	1 582	63.66	11.75	50	95
FINMRK_MICRO_2	1 582	59.99	8.89	50	88
DUM_FULL	1 582	0.33	0.47	0	1
DUM_HL	1 582	0.39	0.49	0	1
DUM_MALE	1 582	0.49	0.50	0	1
AGE	1 582	30	7.39	20	57
ASS 1	1 582	47.50	18.97	10	100
ASS 2	1 582	47.74	22.55	10	100

Empirical Methodology and Model Specifics

To assist the students, the lecturers needed to understand the determining factors in terms of student performance. The model was designed according to previous studies (Pretorius, Prinsloo and Uys 2009), but additional variables were also chosen to support the discussion behind the success rate of Public Economics students at the third-year level, namely: OUTPUT Final_mark_Public_Ecn_3 = f (Age, N_Ass_1, Ass_1, Dum_fulltime, Dum_HL, Dum_male, Final_mark_Micro 1, Final_mark_Micro_2). The dependent variable was effectively the final mark reached, while using a dummy variable to indicate pass or failure (see Table 2).

The coefficients, or explanatory variables (see Table 2), consisted of the following: Age, assignment marks, dummy time variable ("Dum_fulltime", with a value of 1 if full-time study, else 0); dummy language variable ("Dum_HL", with a value of 1 if studying in home language, else 0); dummy gender variable ("Dum_male", with a value of 1 if male, else 0 if female); final mark reached in micro 1; final mark reached in micro 2 (see Table 3).

Table 2: Description of variables for Public Economics

Dependent variables	
Finalmark_Public_Ecn_3	Final mark scored by the student in Public Economics 3
Dum_Final	Taking a value of 1 if passed and 0 if failed
Explanatory variables	
Age	Age of the student
Assignment_1	Mark of assignment 1
Assignment_2	Mark of assignment 2
Finalmark_Micro_1	Final mark in Microeconomics 1
Finalmark_Micro_2	Final mark in Microeconomics 2

Repeats	Number of times repeated Public Economics 3
Repeat_Micro_1	Number of times repeated Microeconomics 1
Repeat_Micro_2	Number of times repeated Microeconomics 2
Dum_HL	Taking a value of 1 for studying in home language and 0 if not
Dum_male	Taking a value of 1 for male students and 0 for females
Dum_fulltime	Taking a value of 1 for full-time students and 0 for part-time

Table 3: Ordinary least squares with final mark Public Economics as dependent variable

Variables	**Coefficient (2016)**	**Prob.**	**Coefficient (2017)**	**Prob.**
C	−4.830956	0.6342	−1.170508	0.9321
FINMRK_MICRO_1	0.261136	0.0296	0.261455	0.0694
FINMRK_MICRO_2	0.527615	0.0007	0.287709	0.1225
DUM_FULL	−2.278547	0.4174	1.641492	0.6293
DUM_HL	−2.463564	0.3083	−5.570142	0.0709
DUM_MALE	−2.131487	0.3603	2.562213	0.3958
AGE	0.131861	0.4507	0.084011	0.7273
ASS 1	0.128275	0.0399	0.123274	0.0689
ASS 2	−0.033888	0.5252	0.048321	0.5297
R-squared	0.181943		0.117993	
Observations	582		392	

The low predictive power or R-squared values of the regressions can be explained by the fact that the study focused on student-specific factors only, and thus ignored the characteristics of the specific institution; the impact of curriculum choices; and the impact of the characteristics of the staff involved in teaching, including e-learning solutions, that may almost certainly also have had an impact on student success (Pretorius, Prinsloo and Uys 2009).

The results suggest that the final marks of first- and second-year Microeconomics had a significant impact on the final mark of Public Economics (see Table 3). This was to be expected as Public Economics is microeconomic based. The first-year level result coincides with the findings of Athey et al. (2007), in the sense that it is the core course or module for an economics graduate student. The better the student performs in the assignments, especially assignment 1 which is compulsory for examination entrance, the better the student's final mark. Although home language can be considered a contributor, it is not consistent year on year, because third-year students are senior and more mature students in their studies. Indeed, many of the students can be regarded as

studying part-time, and they may be active in an environment in which English is the main language of communication. Whereas age and the status of the student, full-time or part-time previously were factors, the results tended to show insignificant outcomes. Thus, it can be concluded that each group of students are unique and their results need to be interpreted separately for different periods.

Binary Logit Results

OUTPUT Dum_final = f (Repeats, Repeat_Micro_1, Repeat_Micro_2, Age, N_Ass_1, Ass_1, Dum_fulltime, Dum_HL, Dum_male)

For Public Economics, the dependent variable was the dummy final mark, which took a value of 1 when Public Economics was passed and 0 when it was failed. Table 4 shows the binary logit results. The results of the binary logit models were interpreted differently from the ordinary least squares results. It was found that the more the students repeated Public Economics in previous years of study, the more their probability of passing Public Economics decreased. The more they repeated second-year Microeconomics, the more their probability of passing Public Economics decreased. The assignments were important and the better the students performed in the assignments, the better their chances of passing Public Economics were. Although inconsistent year on year, home language could still be considered a factor which tends to affect the students' chances of passing Public Economics.

Table 4: Binary logit results with dummy final of Public Economics as the dependent variable

Variables	**Coefficient (2016)**	**Prob.**	**Coefficient (2017)**	**Prob.**
C	0.698377	0.0667	−0.312897	0.4915
REPEATS_PUBLIC_ECN_3	−0.704585	0.0000	−0.385772	0.0003
REPTS_MICRO_1	0.272720	0.0326	−0.074959	0.6011
REPTS_MICRO_2	−0.050736	0.6112	0.049351	0.6755
DUM_HL	0.405600	0.0690	−0.076426	0.7749
DUM_MALE	−0.287058	0.1581	0.037640	0.8710
DUM_FULLTIME	−0.469520	0.0358	−0.102650	0.6708
ASS1_	0.011021	0.0528	0.012691	0.0229
ASS2	0.011145	0.0229	0.010231	0.0850
MacFadden R-Squared	0.151876		0.062255	
Observations	582		392	

To verify the regression results, the lecturers explained the repeats in terms of a binary logit method. They found that the more the students repeated the Public Economics, the more the probability to pass the module decreased. The repeats include candidates for

supplementary examinations. The causal effects are not always clear-cut but the author does know that some candidates become constant "repeaters" and that these candidates do not normally register again for the modules and then do not qualify for student support. However, academic progression rules should place a cap on the tendency of constant repetition in the longer run. It became obvious that in order to improve the students' results in the future, it would be necessary to move to a different system where the students also have more assignments that count, working towards an e-portfolio.

E-Portfolios as a Strategy for Improved Student Success and Learning

An e-portfolio can be defined as:

> a collection of electronic evidence assembled and managed by a user, usually on the Web. Such electronic evidence may include input text, electronic files, images, multimedia, blog entries, and hyperlinks. E-portfolios are both demonstrations of the user's abilities and platforms for self-expression. If they are online, users can maintain them dynamically over time. One can regard an e-portfolio as a type of learning record that provides actual evidence of achievement. (https://en.wikipedia.org/wiki/Electronic_portfolio)

E-portfolios represent alternative assessments to formative or continuous assessments. Some challenges exist and Beckers et al. (2019) found that students needed extra support and feedback from their lecturers regarding the use of e-portfolios. The lecturers also found that the imbalance between autonomy and support hampered self-directed learning and motivation. Developing an e-portfolio can also offer numerous benefits as an assessment tool, allowing assessment to be a continuous process, developmental, and performance-based (Lambe, McNair and Smith 2013). A Facebook-based e-portfolio had a positive impact on students' writing practices, making it a viable tool for e-portfolio assessment (Barrot 2016). The students' perceptions in the e-portfolio group reflected that they benefited from and enjoyed keeping a portfolio (Baturay and Daloğlu 2010). The portfolio project helped students to better understand learning goals; think about what they have learnt in college; and reflect on the knowledge and skills they have developed. In addition to the surveys, rubrics used to assess the student portfolios were collected and reviewed to evaluate the efficacy of e-portfolios as an assessment measure with positive findings revealed (Buzzetto-More 2010). According to Sung et al. (2009), digital portfolios with numerous aids are beneficial to teacher reflection and professional development.

From the e-portfolio data analysis, it appeared that self-directed learning occurs through self-appraisal by student teachers reflecting on their values, learning styles, and learning strategies to enhance self-efficacy. The bricolage of evidence produced by student teachers indicated that e-portfolios as an empowering tool enhanced students' self-

directed development into competent teachers who are well-grounded in the knowledge, skills, values, principles, methods, and procedures relevant to the teaching of Economics in the Further Education and Training phase. Moreover, HEIs must implement mentorship to support students in building good relationships as part of e-portfolio development (Van Wyk 2017). The Department of Economics at Unisa chooses to base its programmatic assessment on the Hansen proficiencies or something similar and should gain much from the insights. The real winners of a serious approach and implementation of programmatic assessment are the students and those that later benefit from their analytical talents (Myers, Nelson and Stratton 2009). Another critical issue that needs to be dealt with is invigilation and the numerous views against online proctoring, making ethical issues more visible (Selwyn et al. 2021). The use of software tools such as Turnitin should also assist in authenticating assignment results.

The Department of Economics has switched to a fully online module with an e-portfolio as a summative assessment. Because this is an online module, four assignments are given in the study material as they become due during the module and should entail more effort as part of CA than only two assignments previously. The students can see them when they go online four weeks before the due date. The e-portfolio can be done on Google sites, Mahara and WordPress. It consists of the student's biography and photo; a reflective journal that consists of a summary of all the research done on activities throughout the semester; artefacts; and all the assignments. As the module progresses, this will be expanded to include PowerPoint presentations. In this way, the students' work is also authenticated because online authentication is complex. The students need to research each activity of each lesson fortnightly. The activity should be 100 words, and it is included in the e-portfolio.

Assignment 1 is an online assessment with multiple-choice questions and is a challenging question bank with random questions selected for the students. Assignment 2 is a group discussion that is done online on Kialo at https://www.kialo-edu.com/my. A total of 15 groups of 30 students in each group are invited via email to participate in the discussion. The students need to post their discussion threads and review them. The appointed leader then posts the summary in the Dropbox function on myUnisa. Marks are awarded to the different groups. Assignment 3 consists of one essay type of question that follows up on the group discussion claim, for example: "Government could have gained more revenue through higher excise duties, rather than banning the trade of tobacco products during the Covid-19 pandemic." The student's argument should consider whether health should be a private or public good.

The student should also explain who bears the burden of an ad valorem excise duty on tobacco products levied on sellers if there is perfect competition and relatively inelastic demand. If the demand is relatively inelastic, could the Ramsey rule be applicable? The student should use diagrams as part of the answer and should consult lessons 2, 8, and 9. For research purposes, the student should use Google Scholar to find relevant accredited academic articles. The student should also use the Palgrave Dictionary of

Economics for definitions available online in the library. The student needs to use the Harvard referencing method in citations and reference lists (see the library guides). Grammarly is an online tool that can be used to check spelling and grammar. A maximum number of 2 000 words is allowed. The student can submit the written assignment as a pdf file on myUnisa after ensuring that the language is correct and the assignment makes sense. The marked assignment will be returned to the student, and an extensive rubric serves as a guide in doing the assignment.

The lecturers expect that the learning will become much more self-directed, and lecturer feedback will have to be given frequently. They have developed this as part of an improvement plan for the module as a better option than online examinations and venue-based examinations. To evaluate whether the e-portfolio meets the requirements for the curriculum set, Hansen's proficiencies, which are similar to Bloom's taxonomy, are used. The applied knowledge with critical thinking and writing skills thus become important. The lecturers would like to teach the third-year students how to report and write in order to become better workplace employees. The students build up an essay; they first have to analyse data from newspapers and journals and discuss claims set in Kialo.

Although the lecturers only started using the e-portfolios in 2021, they hope to get feedback from Public Economics students through a survey conducted in future and report these results as soon as possible. At this stage, an e-portfolio seems to be the best alternative to venue-based examinations and online examinations. Evidence already exists, and most of the views of teachers and students in Economics can be summarised (Van Wyk 2017). The e-portfolios help teachers to become confident in their teaching and self-directed in their learning. Reflective journals help to capture their feelings and thoughts and to implement pedagogy in teacher practices.

Conclusion

This chapter has explained the use of e-portfolios in the third-year Public Economics module as a strategy to improve student success and learning. Firstly, ODeL was described and explained within connectivism and self-directed learning. The literature review discovered that extra student support and immediate feedback from the lecturer were needed. The benefits of an e-portfolio include an effective assessment that could be continuous, self-directed learning, and motivation. From the description of using e-portfolios in the Public Economics module, it became clear that more assignments including the e-portfolio with continuous feedback throughout the semester should deal with concerns from previous empirical findings in Robinson's (2018) research. The improvement of third-year students' writing and critical thinking skills should prepare them to be better employees and for the 4IR. In the future, a survey will be conducted in the Public Economics module to get students' views about the new e-portfolio format

and assessment. Further econometric and empirical work will investigate the impact of e-portfolios on student success in third-year Economics.

References

Athey, S., L. E. Katz, A. B. Krueger, S. Levitt, and J. Poterba. 2007. "What Does Performance in Graduate School Predict? Graduate Economics Education and Student Outcomes." *AEA Papers and Proceedings* 97 (2): 512–518. https://doi.org/10.1257/aer.97.2.512

Barrot, J. S. 2016. "Using Facebook-based E-Portfolio in ESL Writing Classrooms: Impact and Challenges." *Language, Culture and Curriculum* 29 (3): 286–301. https://doi.org/10.1080/07908318.2016.1143481

Baturay, M. H., and A. Daloğlu. 2010. "E-Portfolio Assessment in an Online English Language Course." *Computer Assisted Language Learning* 23 (5): 413–428. https://doi.org/10.1080/09588221.2010.520671

Beckers, J., D. H. J. M. Dolmans, M. M. H. Knapen, and J. J. G. van Merriënboer. 2019. "Walking the Tightrope with an E-Portfolio: Imbalance between Support and Autonomy Hampers Self-directed Learning." *Journal of Vocational Education and Training* 71 (2): 260–288. https://doi.org/10.1080/13636820.2018.1481448

Brown-Robertson, L. N., A. Ntembe, and R. Tawah. 2015. "Evaluating the 'Underserved Student' Success in Economics Principles Courses." *Journal of Economics and Economic Education Research* 16 (3): 13–24.

Buzzetto-More, N. A. 2010. "Assessing the Efficacy and Effectiveness of an E-Portfolio Used for Summative Assessment." *Interdisciplinary Journal of E-Skills and Lifelong Learning* 6: 61–85. https://doi.org/10.28945/1164

Conradie, P. W. 2014. "Supporting Self-directed Learning by Connectivism and Personal Learning Environments." *International Journal of Information and Education Technology* 4 (3): 254–259. http://doi.org/10.7763/IJIET.2014.V4.408

Du Plessis, A., H. Müller, and P. Prinsloo. 2005. "Determining the Profile of a Successful First-Year Accounting Student." *South African Journal of Higher Education* 19 (4): 684–698. https://doi.org/10.4314/sajhe.v19i4.25656

D'Oliveira, C., and S. Lerman. 2009. "OCW: Working Through Financial Challenges." MIT. Accessed May 4, 2020. http://web.mit.edu/fnl/volume/221/d%27oliveira_lerman.html

Hase, S., and C. Kenyon. 2001. "From Andragogy to Heutagogy." Accessed May 4, 2020. https://www.researchgate.net/publication/301339522_From_andragogy_to_heutagogy

Keeve, A., L. Naude, and K. Esterhuyse. 2012. "Some Predictors of Academic Performance of First-Year Students in Three- and Four-Year Curricula." *Acta Academica* 44 (1): 121–158.

Lambe, J., V. McNair, and R. Smith. 2013. "Special Educational Needs, E-Learning and the Reflective E-Portfolio: Implications for Developing and Assessing Competence in Pre-Service Education." *Journal of Education for Teaching* 39 (2): 181–196. https://doi.org/10.1080/02607476.2013.765191

Letseka, M., and V. Pitsoe. 2013. "The Challenges and Prospects of Access to Higher Education at UNISA." *Studies in Higher Education* 39 (10): 1942–1954. https://doi.org/10.1080/03075079.2013.823933

Myers, S. C., M. A. Nelson, and R. W. Stratton. 2009. "Assessing an Economics Programme: Hansen Proficiencies, E-Portfolio, and Undergraduate Research." *International Review of Economics Education* 8 (1): 87–105. https://doi.org/10.1016/S1477-3880(15)30077-3

Peters, O. 2010. *Distance Education in Transition, Developments and Issues*. 5th ed. Oldenburg: University of Oldenburg Press.
Pretorius, A. M., P. Prinsloo, and M. D. Uys. 2009. "Student Performance in Introductory Microeconomics at an African Open Distance Learning Institution." *Africa Education Review* 6 (1): 140–158. https://doi.org/10.1080/18146620902857574
Robinson, Z. 2018. "Predicting Student Success in Public Economics." *International Journal of Economics and Finance Studies* 10 (2): 55–72. http://www.sobiad.org/eJOURNALS/journal_IJEF/archieves/IJEF_2018_2/z-robinson.pdf
Robinson, Z. 2020. "Curriculum Review in Economics: Re-thinking Pedagogy." MEd Mini dissertation. Unisa: Pretoria.
Selwyn, N., C. O'Neill, G. Smith, M. Andrejevic, and X. Gu. 2021. "A Necessary Evil? The Rise of Online Exam Proctoring in Australian Universities." *Media International Australia* 186 (1): 149–164. https://doi.org/10.1177/1329878X211005862
Siemens, G. 2005. "Connectivism: A Learning Theory for the Digital Age." *International Journal of Instructional Technology and Distance Learning* 2 (1): 3–10. https://lidtfoundations.pressbooks.com/chapter/connectivism-a-learning-theory-for-the-digital-age/
Smith, L. C. 2009. "An Analysis of the Impact of Pedagogic Interventions in First-Year Academic Development and Mainstream Courses in Microeconomics." *South African Journal of Economics* 77 (1): 162–a78. https://doi.org/10.1111/j.1813-6982.2009.01195.x
Smith, L., and L. Edwards. 2007. "A Multivariate Evaluation of Mainstream and Academic Development Courses in First-Year Microeconomics." *South African Journal of Economics* 75 (1): 990150117. https://doi.org/10.1111/j.1813-6982.2007.00102.x
Smith, L.C., and V. Ranchhod. 2012. "Measuring the Impact of Educational Interventions on the Academic Performance of Academic Students in Second-year Microeconomics." *South African Journal of Economics* 80 (3): 431–448.
Sung, Y. T., K. E. Chang, W. C. Yu, and T. H. Chang. 2009. "Supporting Teachers' Reflection and Learning through Structured Digital Teaching Portfolios." *Journal of Computer Assisted Learning* 25 (4): 375–385. https://doi.org/10.1111/j.1365-2729.2009.00312.x
Van Wyk, M. M. 2017. "Exploring Student Teachers' Views on ePortfolios as an Empowering Tool to Enhance Self-Directed Learning in an Online Teacher Education Course." *Australian Journal of Teacher Education* 42 (6): 1–21. https://doi.org/10.14221/ajte.2017v42n6.1
Wagemans, L. J., M. Valcke, and F. Dochy. 1991. "Learning Economics at a Distance: Quality and Impact of Expertise. A Study with Open University Students." *Distance Education* 12 (2): 232–251. https://doi.org/10.1080/0158791910120207

Chapter 8

Reflections on Post-Conference Feedback as a Developmental Teacher Training Strategy: Teaching Practice Supervisors' Experiences in an Open Distance e-Learning Institution

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Abstract

Nationally and internationally, higher education institutions offer to teach practice as one of the teacher training support strategies to develop pre-service teachers' pedagogical knowledge and skills. The University of South Africa is one of the higher education institutions that offer open distance e-learning and has a high number of pre-service teachers. Unisa's teaching practice is supervised by experts and culminates in a post-conference session in which the supervisor provides feedback on various aspects of the teaching practice. This chapter reports on a study that explored the teaching practice supervisors' reflections on post-conference feedback as a developmental approach toward reinforcing assessment for learning. The qualitative approach was used as the authors interpreted these supervisors' reflections on post-conference feedback as a developmental approach. Through purposive sampling, supervisors who had supervised pre-service teachers for three or more years were selected. The study findings showed that post-conference feedback was developmental to pre-service teachers and supervisors. The findings further illuminated the way in which supervisors assessed pre-service teachers' teaching skills to understand their strengths and weaknesses. In addition, the study identified pitfalls such as time and the supervisor-to-pre-service-teacher ratio as 1:10 per week, which was unsustainable. Therefore, the study suggests that there is a need to set clear and specific outcomes for assessment; to provide a self-assessment rubric for pre-service teachers to avoid conflicts during the post-conference feedback; and to arrange professional development workshops to be conducted with the teaching practice supervisors.

Keywords: teaching practice; post-conference feedback; student support; pre-service teachers; practicum

Introduction

Higher education institutions (HEIs), nationally and internationally, offer teaching practice (TP) as one of the teacher training support strategies to develop pre-service teachers' pedagogical knowledge and skills they require to teach. TP is of great importance for teacher training institutions to develop in-service teachers' pedagogical skills. Abdulla and Mirza (2020) argue that TP provides pre-service teachers with a set of opportunities designed to help them to become good professional teachers. Gürsoy (2013) concurs that TP is vital for both the TP supervisor and pre-service teacher. Moreover, TP provides pre-service teachers with an opportunity to perceive their level of skills, correct specific mistakes, and to improve their weaknesses (Kale 2011). Copland (2010) stresses that TP provides support to pre-service students through the experienced (or mentor) teachers who teach in the schools where those students are placed and TP supervisors from institutions that award qualification programmes.

Pre-service teachers can apply the theoretical knowledge they learnt during TP. In this regard, Surucu, Unal and Yildirim (2017) argue that the theoretical knowledge of pre-service teachers can only make sense when they possess the knowledge, skills, attitudes, and behaviours they need in classroom practice. The mentor teachers and TP supervisors provide pre-service students with skills and knowledge on how to teach and how to improve those skills during TP sessions. Copland (2010) argues that the mentor teacher and the supervisor offer pre-service teachers support as they learn how to teach, provide suggestions and advice during TP to improve practice, and assess students through a set of criteria. However, the reflection on post-conference feedback by the supervisors and pre-service teachers appears to have been given little attention.

The University of South Africa (Unisa) is an open distance e-learning (ODeL) institution that offers teacher training programmes such as the Postgraduate Certificate in Education (PGCE) and Bachelor of Education (BEd) for the foundation, intermediate, senior, and further education, and training (FET) phases in the College of Education (CEDU). TP is a compulsory component for all pre-service teachers enrolled in the two programmes in the CEDU (Unisa 2012). All pre-service teachers are expected to spend 10 weeks in schools, the first five consecutive weeks, and the last five consecutive weeks in different schools. The first two weeks in schools are allocated to classroom observations and the remaining weeks are for teaching in the classroom. The placement of pre-service students in schools is diverse in terms of learners, teachers, and how resourceful the school is. The students are expected to commit themselves to all the activities that need their attention during TP sessions.

Unisa (2012) postulates that TP plays a central role in the initial professional education and training (IPET) curriculum for teachers. The IPET is divided into four interrelated competencies for pre-service teachers, including becoming a teacher, a subject or learning specialist, a teaching and learning (T&L) specialist, and a school and profession. It is also argued that TP is the core of the IPET curriculum, progressing from observation to assisting, from team teaching to independent teaching, and cutting across all four competencies (Unisa 2012, 20). For the pre-service teachers to master the four interrelated competencies in schools, the supervisor and the mentor teachers should be present to observe teaching and to provide feedback after the lessons.

In Unisa (2012), pre-service teachers are allocated a mentor teacher at the school level and a supervisor to assess them during TP. The mentor teacher is assigned to assist pre-service teachers with activities, practices, feedback, and advice on a regular basis. The supervisor is assigned to work jointly with the mentor teacher to observe and assess one lesson presented by the pre-service teacher. Both the supervisor and the mentor teacher should conduct both pre-conference and post-conference meetings to provide feedback to the student after the lesson presentation. Unisa conducts seminars with the mentor teachers to train and empower them to mentor pre-service teachers during TP sessions. However, TP supervisors' reflection on post-conference feedback can be essential for the TP supervisors, mentor teachers, and pre-service teachers to understand their experiences during the TP sessions. This can provide guidance on the implementation of TP policies and their practices in schools.

Unlike pre-service teachers in conventional universities, Unisa students do not have an opportunity to come face-to-face with their lecturers. Supervisors conduct post-conference feedback with pre-service teachers after lesson observations during TP and it is not clear what transpires during feedback and what major challenges both supervisors and students face. This can assist the TP office, supervisors, and students as to how those challenges can be addressed to improve practice. This chapter shares ODeL supervisors' reflections on post-conference feedback as pre-service teachers' support strategy during TP supervision, to understand if the assessment for learning (AfL) with the pre-service teachers is reinforced. As post-conference feedback is conducted after classroom observations, our research elucidates a gap between summative assessment that occurs during classroom observations and formative assessment that occurs during post-conference feedback. This study was guided by the following research questions:

- What are ODeL supervisors' reflections on post-conference feedback during TP supervision?
- What major challenges do TP supervisors face when conducting post-conference feedback and how can these challenges successfully mitigate?

Post-Conference Feedback Sessions

Copland (2011) argues that post-observation feedback conferences are common in teacher education programmes during TP sessions. Copland (2008) maintains that for the mentor teachers and the supervisors to perform their duties during TP, they should hold feedback sessions after lesson presentations by pre-service teachers. Tang and Chow (2007) affirm that communicating feedback is vital to professional learning in many professions, including teacher education. The scholars indicate that supervision in the form of lesson observation and post-observation conferences and the communication of constructive feedback in the supervisory conferences are all essential to teachers' professional development (Tang and Chow 2007, 1066). Ali and Al-Adawi (2013) argue that feedback on TP can develop pre-service teachers' pedagogical and teaching skills through oral and written interaction. Calleja et al. (2016) add that feedback sessions promote students' thinking and reflection on their skills while consolidating their pedagogical skills. This happens because, in feedback sessions, students are provided with positive and negative evaluations of their teaching and suggestions for improvement (Copland, Ma and Mann 2009).

In the same vein, Wells and McLoughlin (2014) point out that feedback on performance helps students to learn and meet professional standards during work-integrated learning placements. Furthermore, feedback helps students to make goals and to set clear objectives for future learning and improvement in their performance (Calleja et al. 2016). In addition, Gürsoy (2013) asserts that the mentor teachers' and supervisors' feedback depend on their knowledge and skills and that the quality and quantity of feedback may differ for each pre-service teacher.

Studies have been conducted on feedback during TP and include studies, such as the negotiation of the face in post-observation feedback conferences (Copland 2011); causes of tension in post-observation feedback (Copland 2010); communicating feedback in TP supervision (Tang and Chow 2007); providing effective feedback (Ali and Al-Adawi 2013; Martinez Agudo 2016); the nature of feedback (Akcan and Tatar 2010; Copland, Ma and Mann 2009); the effect of a more intense practicum with an increased number of observations and feedback hours (Gürsoy 2013); feedback on performance (Wells and McLoughlin 2014); and feedback and clinical improvement (Calleja et al. 2016).

In a study conducted by Martinez Agudo (2016), qualitative and quantitative research methodologies were used to investigate Spanish EFL student teachers' needs and expectations from their school mentors during TP. The results of the study revealed a high degree of satisfaction among the student teachers regarding effective feedback provided by mentor teachers. Ali and Al-Adawi's (2013) study, conducted in the United Kingdom (UK), supports the notion that TP feedback has positive results, however, the students revealed that while oral and written feedback were important to them, they all

preferred written feedback. However, the study of Martinez Agudo (2016) highlighted a gap between the quality feedback provided by mentor teachers and student teachers' expectations and satisfaction during their professional learning. For example, the study revealed a lack of detailed feedback and confidence in student teachers by mentor teachers during lesson presentations. Kemmis et al (2014) suggest that TP could be an ongoing process of reflection and cooperation between student teachers, mentor teachers, and university supervisors.

Akcan and Tatar (2010) investigated the nature of feedback given to English pre-service teachers during TP in Turkey. The study sought to understand the way in which university supervisors and cooperating teachers provided feedback to pre-service teachers during TP and the nature of the feedback given through post-observation conferences and written evaluations. Classroom observations, post-observation conferences between supervisors, incorporating teachers and pre-service teachers, and written evaluation sheets and documents were used to collect data. The study findings showed that the supervisors' feedback mostly encouraged reflections and helped the pre-service teachers to critically evaluate their lessons during post-observation conferences. The feedback provided by the teachers to pre-service teachers also only focused on certain instances of classroom practice.

Feedback is vital in TP, but it can cause tension in the process (Brandt 2008). Brandt (2008, 361) suggests that supervisors and students have conflicting expectations regarding the purpose of the TP element: "from the tutor's perspective, it is there (in significance) to facilitate assessment; while from the trainee's perspective, it exists to allow them to develop skill and proficiency in the work of teaching".

Brandt (2008) further suggests that assessment and development do not work hand in hand during feedback sessions. This opinion is supported by Holland (2005) who opines that assessment and supervision can cause tension during feedback sessions either between the supervisor and the student or between the mentor teacher and the student.

Copland (2010) investigated the causes of such tension in post-observation feedback with pre-service teachers who registered for two courses in the UK. The study used interviews with four TP supervisors before and after the course and nine trainees after the course. The findings showed that tension can be caused by the different expectations among trainers and trainees of the purpose and performance of feedback. The findings suggested that tension can cause trainees not to play the game according to the rules, with trainees possibly not understanding the rules or perhaps wishing to challenge those rules.

Gürsoy (2013) postulates that the TP process needs to be restructured and standardised to improve teacher training in Turkey. This study used questionnaires, semi-structured interviews and the author's field notes to investigate the effects of a more intense TP with an increased the number of observations and feedback hours. Gürsoy (2013) argues

that the flexibility and limited feedback hours cause inconsistencies in the teacher education which may ultimately limit pre-service teachers from becoming good professional teachers. Furthermore, the inconsistencies of TP, inflexible implementation, and limited hours for feedback can contribute towards bridging theory and practice.

Conceptual Frameworks

Relational Practice

Grossman et al. (2009) propose a framework called relational practice to guide the implementation of TP for prospective professionals. This framework was deemed relevant for the study because it informs the exploration of the way in which practice is imparted in a university-based learning context – a teacher training course in this instance. The main elements of relational practice are: (i) representations; (ii) decompositions; and (iii) approximations of practice. Representations of practice inform the pre-service teachers of the way in which teaching is represented professionally; the representations can vary depending on the environment and perceptions of the pre-service teachers. Decompositions of practice are about breaking down the components of TP for the pre-service teacher to know and learn how to be a good professional teacher. Approximations of practice involve giving the pre-service teacher an opportunity to perform teaching duties in preparation to be a good professional teacher. These elements can inform the post-conference feedback session.

Assessment for Learning

AfL is defined as "the process of seeking and interpreting evidence for use by learners and their teachers to decide where the learners are in their learning, where they need to go, and how best to get there" (Broadfoot et al. 2002, 2–3). Sutton (1995, 264) argues that AfL is "part of everyday practice by students, teachers and peers who seek, reflect upon and respond to information from dialogue, demonstration, and demonstration in ways that enhance ongoing learning". In principle, AfL is suitable to guide post-conference feedback as it promotes student-centred learning and aims to facilitate adaptive learning to ensure student success.

Ten Principles of Assessment for Learning

1. Effective Planning of Teaching and Learning

TP supervisors should provide an environment that enables the pre-service teachers to sharpen their teaching skills. This enabling environment should be flexible in nature, taking diverse ideas and skills into consideration. Pre-service teachers should have a critical understanding of the T&L goals.

2. Focus on How Students Learn

Research has proven that not all students learn the same way. It is therefore imperative that the process of learning should take into consideration the different ways in which students learn.

3. Recognised as Central to Classroom Practice

Much of what teachers and learners do in classrooms can be described as assessment, that is, tasks and questions prompt learners to demonstrate their knowledge, understanding and skills. What learners say and do is then observed and interpreted by the teachers, and judgments are made about the way in which learning can be improved. These assessment processes are an essential part of everyday classroom practice and involve both the teachers and the learners in reflection, and decision-making.

4. Regarded as a Key Professional Skill for Teachers

Teachers require professional knowledge and skills to plan for assessment; observe learning; analyse and interpret evidence of learning; give feedback to learners; and support learners in self-assessment. Teachers should be supported in developing these skills through initial and continuing professional development.

5. Sensitive and Constructive

Teachers should be aware of the impact that their comments, marks and grades can have on learners' confidence and enthusiasm, so they should be as constructive as possible in the feedback that they give. Comments that focus on the work rather than the person are more constructive for both learning and motivation.

6. Account for the Importance of Learner Motivation

Assessment that encourages learning fosters motivation by emphasising progress and achievement rather than failure. Thus, comparison with others who have been more successful is unlikely to motivate learners, as it can also lead to their withdrawing from the learning process where they have been made to feel they are "no good". Motivation can be preserved and enhanced by assessment methods that protect the learners' autonomy; provide some choice and constructive feedback; and create opportunities for self-direction.

7. Promote a Commitment to Learning Goals and a Shared Understanding of the Assessment Criteria

For effective learning to take place, learners need to understand what it is they are trying to achieve – and want to achieve it. Understanding and commitment follow when learners have some part in deciding goals and identifying criteria for assessing progress. Communicating assessment criteria involves discussing them with learners using terms that they can understand; providing examples of the ways in which the criteria can be met in practice; and engaging learners in peer- and self-assessment.

8. Constructive Guidance to Improve

Learners need information and guidance to plan the next steps in their learning. Teachers should pinpoint the learners' strengths and advise how to develop them; be clear and constructive about any weaknesses and the way in which they might be dealt with; and provide opportunities for learners to improve upon their work.

9. Develop Learners' Capacity for Self-Assessment

Independent learners can seek and gain new skills, new knowledge, and new understandings. They can engage in self-reflection and identify the next steps in their learning. Teachers should equip learners with the desire and the capacity to take charge of their learning through developing the skills of self-assessment.

10. Recognise the Full Range of Achievement of all Learners

AfL should be used to enhance learners' opportunities to learn in all areas of educational activity. In addition, it should enable all learners to achieve their best and to have their efforts recognised.

Methodology

The rationale for the current study was to understand the TP supervisors' experiences of pre-service teachers' TPs during the reflection on post-conference feedback as a developmental approach. The study followed a qualitative approach to interpret and make meaning of the TP supervisors' experiences of post-conference feedback with pre-service teachers during TP sessions. The study participants were TP supervisors who were lecturers in the CEDU at Unisa and had supervised pre-service teachers enrolled for the BEd. The TP supervisors who participated in the study had taught the undergraduate BEd degree for more than five years and they had knowledge of teaching this qualification. Furthermore, the targeted group had participated in the TP of pre-service teachers for three or more years.

Purposive sampling was used with the supervisors who were lecturers in the CEDU at Unisa. Creswell and Creswell (2018) suggest that for qualitative studies, the researchers can purposefully select participants and sites which can give those researchers an opportunity to understand the research problem and questions. A total of 11 open-ended questions were administered to 22 TP supervisors from various departments in the same college. The authors sent out the questionnaire instrument via emails to the participants to fill out. The participants were given three weeks to complete the questionnaire, after which 12 participants returned their completed questionnaires. The selected TP supervisors were senior lecturers, associate professors, and full professors who had participated in the TP for more than three years and had experience supervising pre-service teachers in the classroom and conducting post-conference feedback.

The questionnaire was designed to be completed in 20 to 25 minutes. The questionnaire had 11 open-ended questions for the participants. Three experienced TP supervisors were given the questionnaire instrument to check if the questions used would assist the authors to obtain data pertinent to the study. Initially, there were 13 question items and the supervisors who reviewed the instrument suggested that two questions be removed as they seemed to be a repetition. The authors could not use face-to-face interviews owing to the tight schedules of the participants who volunteered to respond to the questionnaire instrument in their own time and place. The rationale for the questionnaire was:

- to obtain data from the TP supervisors' views about the supervision of TP;
- to get their background knowledge about TP before engaging them on their views about post-conference feedback;
- to determine the purpose of conducting post-conference feedback during TP, and the way in which they conducted it;

- to determine the challenges (if any) faced by both the supervisors and pre-service teachers;
- to determine pre-service teachers' opportunities to reflect on lessons;
- to determine the development of pre-service teachers' professional learning and improvement on teachers' TP skills;
- to obtain general comments and reflection on post-conference feedback; and
- to determine in which way the ODeL TP framework can be improved.

The study obtained a blanket ethical clearance from the CEDU at Unisa, which focused on undergraduate student support. The study followed Israel and Hay's (2006 cited in Creswell and Creswell 2018, 88) ideas on ethical considerations where researchers should "protect their research participants; develop a trust with them; promote the integrity of research; guard against misconduct and impropriety that might reflect on their organizations or institutions; and coping with new, challenging problems". The authors explained to the TP supervisors that participation was voluntary and that there was a guarantee of anonymity by using pseudonyms. The supervisors were also assured that all information would be used only for the purpose of this study. Furthermore, the supervisors were promised they could withdraw at any time without any prejudice.

The study used inductive thematic data analysis to interpret the supervisors' views about the post-conference feedback during TP. The data analysis was informed by the framework used to underpin the study. Microsoft Excel was used to capture the data collected from the questionnaire to make sense of the supervisors' views of post-conference feedback. The rationale for inductive thematic data analysis was to condense the raw datasets into summaries. Furthermore, this approach assisted the authors to form connections between the research questions and a summary of the findings obtained from the raw data.

The process to validate the accuracy of the collected data was adapted from Creswell and Creswell (2018). Firstly, the authors organised and prepared the data for analysis by collating the participants' responses in line with the questions. Secondly, they read through all the data to provide a general sense of the data in accordance with the collated participants' responses and to reflect on the overall meaning. Thirdly, they coded the data by a supervisor, for example, Supervisor A, B, C, D and so on. Fourthly, they represented the descriptions and themes which appeared as major findings in qualitative studies. Lastly, they interpreted the meaning of the descriptions and themes by summarising the overall findings, comparing the findings with the literature, discussing personal views of the findings, and stating limitations and future research. The authors then contacted the participating supervisors for member checking to ensure that the collected data were interpreted accordingly in order to avoid biases.

The two authors are academics in an ODeL institution in the CEDU at Unisa and have more than five years of experience in the same college. They have also taught undergraduate programmes to students who have enrolled for the BEd for more than five years. Furthermore, the authors have conducted TP sessions with undergraduate students for more than five years. Their background, knowledge, skills, and interests qualify them to investigate the reflection on post-conference feedback as a developmental teacher education strategy during TP sessions and to provide recommendations on the way in which the TP framework can be improved to further support pre-service teachers.

Study Findings

The study findings were generated from open-ended questionnaires which were administered to the TP supervisors of pre-service teachers during TP. The findings delineated the supervisors' views about TP and the benefits and pitfalls of post-conference feedback with pre-service teachers. Five supervisors returned the open-ended questionnaires and the authors decided to report on these. The following themes were developed to analyse the data collected from the TP supervisors, namely: the supervisors' views about TP; the benefits of post-conference feedback; and the pitfalls of post-conference feedback.

Teaching Practice Is Viewed as Teaching Support Not Policing Initiative

The supervisors viewed TP as a means of pre-service teachers' classroom teaching support, not as a policing initiative to expose their weaknesses. TP informs the supervisors about the main elements of relational practice which are representations, decompositions, and approximations of practice, according to Grossman et al. (2009). Abdulla and Mirza (2020) argue that this type of support enables pre-service teachers to become confident prospective teachers. For pre-service teachers to become confident teachers, they should fulfil the aforementioned three main elements of relational practice. Supervisor B stated:

> I can say that teaching practice supervision is not some policing initiative to expose your inefficiency. Rather, a means to support you in the journey of becoming a confident teacher who can impart quality lessons that benefit all learners in the classroom.

Thus, Supervisor B showed that this type of support empowers the pre-service teachers to deliver lessons that can cater to all the learners' needs during T&L. For the pre-service teachers to cater to all the learners' needs, they should know in which way to represent teaching professionally and also in which way to break down the components of TP, according to Grossman et al. (2009). Supervisor B also indicated that the support provided during TP sharpens the pre-service teachers to become confident professional

teachers. This concurs with the approximation of practice in Grossman et al.'s (2009) study, which postulates that pre-service teachers are given an opportunity to perform teaching duties in preparation to become good professional teachers.

Furthermore, the findings showed that TP enables supervisors to assess whether pre-service teachers can apply the knowledge and skills they have learnt in their modules in practice. In other words, the assessment used by supervisors during TP is not summative but formative. This is AfL according to Broadfoot et al. (2002) which informs both the supervisor as teacher and learner as a pre-service teacher about the evidence that can guide them about what learners know, where they need to go, and how best to support them. For example, Supervisors F and K said:

> During TP, we can assess what students know about the contents of the module and how they apply them in their teaching practices. (Supervisor F)

> Teaching practice provides us with an opportunity to assess their competence in their modules and how they present them in the classroom. (Supervisor K)

The findings also indicated that this type of assessment can assist both supervisors and pre-service teachers to know which areas the students have mastered and their areas of weaknesses to understand the type of support needed for improvement. Surucu, Unal and Yildirim (2017) concur that TP provides pre-service teachers with an opportunity to know their levels of skills, to correct specific mistakes, and to improve their weaknesses.

Benefits of Post-Conference Feedback

Post-conference feedback is a process of providing both the supervisors and pre-service teachers with an opportunity for reflection on what had been achieved and what had not been achieved during classroom practice. In the reflection process, pre-service teachers may be able to reflect on the three main elements of relational practice according to Grossman et al. (2009). Post-conference feedback can also be an assessment that helps supervisors and mentor teachers to develop pre-service teachers to become reflective and self-managing in the T&L process (Broadfoot et al. 2002). Three supervisors commented as follows:

> I take minutes with students after the lesson so that they can take a moment to reflect on their teaching. (Supervisor C)

> After every lesson presentation, I sit down with the students to discuss the lesson to do reflection. We discuss what the student has achieved and what was not achieved. (Supervisor G)

> It is important for me as a supervisor to do reflection with the student after a lesson presentation to understand if the student has achieved his or her learning outcomes or not and what can be the problem for not achieving them. (Supervisor A)

These quotes support the argument that post-conference feedback allows pre-service teachers to reflect on what they have done during T&L. Supervisor C used the phrase "after the lesson" to signify the time of the feedback with the pre-service teacher, which is after the lesson observations. Akcan and Tatar (2010) argue that post-conference feedback with the supervisor encourages reflection and helps the pre-service teachers to critically evaluate their lessons during the feedback sessions. Feedback sessions can be an ongoing process of reflection and cooperation between the pre-service teachers, the mentor teachers, and the university supervisors, as Kemmis et al. (2014) suggest.

Martinez-Agudo (2016) postulates that both mentor teachers and supervisors should provide pre-service teachers with feedback after the lessons. However, there are varied findings or even there is no consensus in previous studies the findings had conflicting views as some supervisors worked jointly with mentor teachers and some did not in the post-conference process, which is important for both to develop the pre-service teachers. Supervisors A and C worked independently without mentor teachers, unlike supervisors B, D and E. For example, supervisors A and C used the first person singular "I" and not the plural "we" to include the mentor teacher. This can create a gap in students' professional learning. In other words, some pre-service teachers had an opportunity to get feedback from both supervisors and mentor teachers while others did not, as expressed by three supervisors:

> I meet with the students in an office individually. The students explain to me how they feel about the lesson: I let the student rate themselves in terms of scores and tell me why they are happy about and indicate their areas of improvement. (Supervisor A)

> During the feedback session, the student is expected to explain to me how the lesson was presented and allow the student to reflect on his or her lesson. The student is also allowed to tell what can improve in his or her teaching. (Supervisor H)

> As supervisors, we need to give students chance to reflect on their own lessons to identify the successes and challenges of their lessons. Students also are encouraged to suggest areas of improvement in the next lesson presentations. (Supervisor L)

The above quotes show that Supervisor A used the first person singular "I" referring to himself and used "students" three times in the quote referring to pre-service teachers during the post-conference feedback. But the mentor teachers are not mentioned in the feedback sessions, which shows that they were not involved. Unisa (2012) advocates that mentor teachers are assigned to assist pre-service teachers with regular activities, practices, feedback, and advice, yet it seems the pre-service teachers lack the support from mentor teachers during post-conference feedback to master the three components

of relational practice that are necessary for the pre-service teachers to develop in professional learning (Grossman et al. 2009).

Copland, Ma and Mann (2009) postulate that during post-conference feedback, pre-service teachers may be provided with both positive and negative evaluations of their teaching and give suggestions for improvement. The study findings showed that post-conference feedback helps the pre-service teachers, mentor teachers, and supervisors to identify the positive observations and gaps that need attention for improvement in professional learning. As mentioned earlier, post-conference feedback can be regarded as AfL as it is seen as recognising a range of achievements of students and enhancing effective planning of T&L for pre-service teachers, as Broadfoot et al. (2002) advise. Furthermore, identifying achievements and areas of improvement may help the pre-service teachers to know what they can deal with and the way in which they can improve their representation, decomposition, and approximation of practice. Three supervisors commented as follows:

> After that, I highlight the positives that I observed during the lesson, then I highlight the gaps and the student is offered a chance to suggest points of improvement if it is necessary. (Supervisor C)

> During the session, I need to show the student what he or she has done well and what were his or her challenges and suggest what he or she can be improved in the[ir] classroom teaching. (Supervisor D)

> Supervisors need to highlight the strong points and the weak points of the lessons to guide the student as to how to improve the weak point to change their own practices. (Supervisor J)

The above quotes show that post-conference feedback presents supervisors and mentor teachers with an opportunity to understand the good practice of the pre-service teachers. The supervisors and mentor teachers may also be able to gauge what pre-service teachers know, what they need to know, and how best to know the practices that would meet the learners' needs during T&L, as Grossman et al. (2009) suggest. In fact, Calleja et al. (2016) argue that feedback sessions can promote pre-service teachers' teaching skills and can consolidate their pedagogical skills.

The study findings revealed that post-conference feedback encourages learning that motivates pre-service teachers about their progress and achievements during TP. The supervisors who returned the questionnaires stressed that post-conference feedback as the session which provide pre-service teachers with constructive feedback appeared to have motivated them to go back to class and apply their knowledge and skills gained during the sessions. Broadfoot et al. (2002) suggest that motivation of the students can be enhanced through assessment that can protect students' autonomy, give constructive feedback, and create an opportunity for self-direction. Through motivation, relational practices, such as representation, approximation, and decomposition of practice, can be

improved during feedback sessions for the pre-service teachers to become good professional teachers (Grossman et al. 2009). Supervisor B stated:

> Yes, it does. Our Unisa students do not usually have the luxury of face-to-face intervention with lecturers. Showing them how they need to teach gives them clarity on how to apply the theory that is in their study material into practice. Students appreciate the support very much. They end up inviting you for a second visit whereby they want you as the supervisor to go and observe them as they put what you have taught them into practice. (Supervisor B)

As the pre-service teachers are ODeL students, they do not have the opportunity to meet with their lecturers; this platform allows them to engage with their supervisors to understand the way in which they should apply the theories learnt in their study materials to practice. According to Surucu, Unal and Yildirim (2017), theoretical knowledge is essential only when pre-service teachers possess the knowledge, skills, attitudes and behaviours they need in TP. The above quotes show that the students have a chance to get clarity on what they have learned in their modules and that they must apply them through TP sessions. According to the extract, the pre-service teachers appeared to be motivated by the post-conference feedback conducted after their lesson presentations. This was informed by the supervisor who stated that "they end up inviting you for a second visit" to demonstrate the skills and knowledge gained during feedback sessions.

Pitfalls of Post-Conference Feedback

The study findings also highlighted some pitfalls that impede the progress of post-conference feedback during TP sessions. The time factor was found to be one of the challenges that affect the interaction between the supervisor and the pre-service teachers during post-conference feedback. This is affected by the time allocated to supervisors to observe each student once, meaning classroom observations is once-off during TP sessions. The supervisors and the pre-service teachers appear not to have enough time to reflect on the way in which teaching is represented professionally and the way in which the decomposition of practice is carried out during TP sessions (Grossman et al. 2009). AfL may also be affected as the supervisors may not know how best they can provide further remedial support to the pre-service teachers. Three supervisors commented as follows:

> I mostly observe a student once and this does not assist students that much. (Supervisor A)

> I have observed my student once, therefore, it is almost once off observation and the lesson will take about 30 or 40 minutes. Thereafter, it is over with the student. (Supervisor E)

> Lesson observations for teaching practice are only once off and some lessons took 40 minutes this becomes a challenge for both of us, ourselves, and students to draw conclusions about the students' work. (Supervisor I)

The above quotes show that the time allocated for the supervision of pre-service teachers is not enough to support and provide feedback to the students. Supervision is seen as a once-off incident and that cannot guarantee the effectiveness of post-conference feedback to pre-service teachers. Supervisors are unable to measure the improvement of the pre-service teachers within the mentioned time constraints.

The supervisor-to- pre-service-teacher ratio is 1:10 per week, which may not be feasible owing to the distance to be travelled by supervisors between schools. The development of pre-service teachers in professional learning appears to be suffering as supervisors would be keen to cover the scope of work and assess all pre-service teachers allocated to them for a week. Three supervisors commented as follows:

> Given the number of days (5 days) and the number of students I am expected to support (10 students a week and should at least supervise a minimum of two students a day, which in some cases is not possible given the distance I drive) I mostly observe a student once and this does not assist students that much. More time should be allocated to supervisors to make follow up on the lesson. (Supervisor A)

> We have four days to do lesson observation as mostly the last day we travel back to the campus and students are only observed once. The time allocated is minimal and we cannot give students enough time for feedback as they stay far apart, and we are always in a hurry to go to the next school. (Supervisor D)

> We are not allocated enough time apart to do lesson observations. We have only five days to observe students' lessons and our students stay far from each other. The other time is travelling between schools and sometimes when you arrive at the other school you are already because of the distance travelled. (Supervisor K)

The above quotes delineate the number of days given to the supervisors to supervise pre-service teachers as being insufficient for interaction with the students. Supervisor A explained that the distance they travel between schools affects the quality of feedback as time becomes limited for the supervisors and pre-service teachers to interact during TP. Supervisor A indicated that they cannot follow up on the progress and achievement of the pre-service teacher owing to the pressure they are under during TP sessions.

The commitment of some mentor teachers during post-conference feedback was mentioned by the supervisors. Unisa (2012) specifies that supervisors and mentor teachers are assigned to assist pre-service teachers with activities, practices, feedback and advice on a regular basis. According to the manual, supervisors and mentor teachers are assigned to work together to support pre-service teachers in professional teaching to avoid conflicting ideas regarding their inputs and comments during feedback sessions. The findings showed that some mentor teachers are not committed to pre-service

teachers during TP sessions, which can have a negative effect on the progress of pre-service teachers. This cannot be an assessment that can encourage learning in which students can be motivated by their supervisors by emphasising progress and achievement rather than a pass or failure.

Discussion

Although this study focused on post-conference feedback as a developmental strategy to support pre-service teachers, the authors needed first to understand how TP supervisors view TP. This section discusses the findings of this study which focused on the views of TP supervisors as a point of departure to understand their background about TP and then the post-conference feedback during TP sessions. The findings of this study revealed the way in which TP supervisors viewed TP in schools and the way in which post-conference feedback plays a role in pre-service teachers during TP.

The study findings revealed that TP was not meant to be a policing mechanism but rather to support students in improving their pedagogical skills and knowledge, as Copland (2010) advises. In other words, TP was not implemented to criticise pre-service teachers, instead, it was implemented to develop them to become good professional teachers (Abdulla and Mirza 2020) through oral and written interaction (Ali and Al-Adawi 2013). Moreover, TP supervisors can assess pre-service teachers' skills and knowledge during TP. This showed that TP supervisors were able to understand the way in which pre-service teachers' teaching was represented professionally, the way in which the breaking down of the components of TP was done, and the way in which they performed their duties to become good professional teachers.

Calleja et al. (2016) found that post-conference feedback promotes pre-service teachers' thinking and consolidates their pedagogical skills. The study findings showed that post-conference feedback enables the pre-service teachers to reflect on their classroom TPs. During reflection, the pre-service teachers had an opportunity to identify the strengths and weaknesses during TP. This can support Akcan and Tatar's (2010) findings that reflections during post-conference feedback help pre-service teachers to critically evaluate their lessons. Reflections during post-conference feedback can, therefore, enable pre-service teachers to get to know the areas that need improvement during TP. The reflections also help supervisors to identify the pre-service teachers' areas of weaknesses that inform them of the way in which to improve their TP framework. This appears to motivate pre-service teachers in their progress and achievement during TP.

Martinez-Agudo (2016) argues that the post-conference feedback should be effective to satisfy pre-service teachers during post-conference feedback and may help them to set goals for their improvement. The supervisors revealed that pre-service teachers showed satisfaction with the post-conference feedback as they requested them to come back to observe if they applied what they had learnt during the sessions. Furthermore, the pre-

service teachers requested the TP supervisors to visit them again to monitor their progress and achievement during TP sessions.

However, the study findings also identified some pitfalls that affected the progress of post-conference feedback during TP. Firstly, the findings revealed that time was a challenge for both the pre-service teachers and supervisors for the feedback owing to schools that are situated far apart. According to Gürsoy (2013), the limited time allocated for the pre-service teachers and TP supervisors can cause inconsistencies in the teacher education, which may hinder them from becoming good professional teachers. Furthermore, the lack of time for post-conference feedback may contribute to bridging theory and practice during TP.

In addition, the supervisor-to-pre-service-teacher ratio of 1:10 proved to be another pitfall that impeded the post-conference feedback. The findings revealed that each supervisor was expected to supervise 10 pre-service teachers in five days which was practically impossible as mentioned. Furthermore, the supervisors may not provide constructive feedback as they would be expected to cover the scope of the work for that week. Copland (2010) investigated tension in the post-conference feedback that limits pre-service teachers from understanding the rules to follow during TP and this may result in the pre-service teachers not following the rules of TP.

Lastly, the findings showed that some mentor teachers were not actively involved during TP as some of the supervisors did not mention their participation in their responses on the post-conference feedback. This is contrary to Unisa's (2012) requirement which states that both supervisors and mentor teachers should be present when observing and assessing pre-service teachers during TP. The participation of mentor teachers, or the lack thereof, may cause tension as the quantity and quality of feedback provided by supervisors and mentor teachers at different times may differ (Gürsoy 2013). Holland (2005) concurs that assessment and supervision may cause tension if conducted at different times by supervisors and mentor teachers owing to the feedback that may confuse pre-service teachers during TP. Therefore, an aligned commitment by supervisors and mentor teachers may alleviate the conflicting ideas that they may possess for pre-service teachers during the post-conference feedback.

Recommendations

Preservice teaching is a critical part of teacher education because it allows the pre-service teachers to practise their teaching skills and content delivery on real learners. The first study finding highlighted that the participants viewed TP as a policing initiative rather than a means to support teachers and sharpen their teaching skills. So, to curb this perception, it is recommended that TP be designed to have clear and specific outcomes that will enable the pre-service teachers to master teaching and assessing learners

appropriately. TP should only be employed to support pre-service teachers to become good professional teachers instead of a policing and fulfilling-compliance initiative.

The second study finding also reflected various pitfalls that obstruct the positive impact of post-conference feedback during TP sessions. The time factor is a stumbling block in ensuring quality interaction between the supervisor and the pre-service teachers during post-conference feedback, we recommend an increase in TP visits using technological affordances and face-to-face means. The TP would then play a teaching role in form of assessment for learning (Tillema 2009). The current TP classroom observations are once-off which does not allow the preservice to learn and perfect their teaching skill.

The third study finding pointed to the TP supervisors' lack of time to reflect on how TP is represented professionally and how it contributes to the improvement of the teaching profession. It is recommended that a self-assessment rubric is needed for pre-service teachers to avoid conflict during post-conference scoring.

The last study finding highlighted the pitfalls of post-conference feedback. Thus, it is recommended that more strategic professional development workshops on post-conference feedback are designed and conducted to enhance the contribution of post-conference feedback to both the supervisors and the pre-service teachers.

Conclusion

This study investigated the experiences of TP supervisors regarding post-conference feedback with pre-service teachers during TP. The study findings showed that post-conference feedback has pockets of benefits for both pre-service teachers and supervisors. For pre-service teachers, post-conference feedback can be used to improve their pedagogical practices through reflection on lessons and discussions with their supervisors. Supervisors, on the other hand, had an opportunity to assess pre-service teachers when teaching learners during TP. Time, supervisor-to-pre-service-teacher ratio, and commitment of some mentor teachers were found to be some challenges related to post-conference feedback which can hinder the progress of pre-service teachers during TP. The study suggests that the TP framework be revised to improve the practices of ODeL pre-service teachers toward alleviating the pitfalls that the study highlighted.

References

Abdullah, N. A., and M. S. Mirza. 2020. "Evaluating Pre-service Teaching Practice for Online and Distance Education Students in Pakistan: Evaluation of Teaching Practice." *International Review of Research in Open and Distributed Learning* 21 (2): 81–97. https://doi.org/10.19173/irrodl.v21i2.4606

Akcan, S., and S. Tatar. 2010. "An Investigation of the Nature of Feedback Given to Pre-service English Teachers during their Practice Teaching Experience." *Teacher Development* 14 (2): 153–172. https://doi.org/10.1080/13664530.2010.494495

Ali, H. I. H., and H. A. Al-Adawi. 2013. "Providing Effective Feedback to EFL Student Teachers." *Higher Education Studies* 3 (3): 21–35. https://doi.org/10.5539/hes.v3n3p21

Brandt, C. 2008. "Integrating Feedback and Reflection in the Teacher Preparation." *ELT Journal* 62 (1): 37–46. https://doi.org/10.1093/elt/ccm076

Broadfoot, P., R. Daugherty, J. Gardner, W. Harlen, M. James, and G. Stobart. 2002. *Assessment for Learning: 10 Principles*. Cambridge: University of Cambridge School of Education.

Calleja, P., T. Harvey, A. Fox, and M. Carmichael. 2016. "Feedback and Clinical Practice Improvement: A Tool to Assist Workplace Supervisors and Students." *Nurse Education in Practice* 17: 167–173. https://doi.org/10.1016/j.nepr.2015.11.009

Copland, F. 2008. "Deconstructing the Discourse: Understanding the Feedback Event." In *Professional Encounters in TESOL*, edited by S. Garson and K. Richards, 5–23. London: Palgrave Macmillan. https://doi.org/10.1057/9780230594173_1

Copland, F. 2010. "Causes of Tension in Post-Observation Feedback in Pre-Service Teacher Training: An Alternative View." *Teaching and Teacher Education* 26 (3): 466–472. https://doi.org/10.1016/j.tate.2009.06.001

Copland, F. 2011. "Negotiating Face in Feedback Conference: A Linguistic Ethnographic Analysis." *Journal of Pragmatics* 43 (15): 3832–3843. https://doi.org/10.1016/j.pragma.2011.09.014

Copland, F., G. Ma, and S. Mann. 2009. "Reflecting in and on Post-Observation Feedback in Initial Teacher Training on Certificate Courses." *ELTED Journal* 12: 14–22.

Creswell, J. W., and J. D. Creswell. 2018. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 5th ed. Thousand Oaks: Sage.

Grossman, P., C. Compton, D. Igra, M. Ronfeldt, E. Shahan, and P. W. Williamson. 2009. "Teaching Practice: A Cross-Professional Perspective." *Teachers College Record* 111 (9): 2055–2100. https://doi.org/10.1177/016146810911100905

Gürsoy, E. 2013. "Improving Practicum for a Better Teacher Training." *Procedia – Social and Behavioral Sciences* 93: 420–425. https://doi.org/10.1016/j.sbspro.2013.09.214

See Ali.

Holland, P. 2005. "The Case of Expanding Standards for Teacher Evaluation to Include an Instructional Supervision Perspective." *Journal of Personnel in Education* 18 (1): 67–77. https://doi.org/10.1007/s11092-006-9009-0

Kale, M. 2011. "Problems Encountered in Teaching Practice of Teachers' Course." *Turkish Journal of Educational Sciences* 9 (2): 255–280. https://dergipark.org.tr/en/download/article-file/256212

Kemmis, S., H. L. T. Heikkinen, G. Fransson, J. Aspfors, and C. Edwards-Groves. 2014. "Mentoring a New Teacher as a Contested Practice: Supervision, Support and Collaborative Self-Development." *Teacher and Teacher Education* 43: 154–164. https://doi.org/10.1016/j.tate.2014.07.001

Martinez Agudo, J. de D. 2016. "What Type of Feedback do Student Teachers Expect from their School Mentors during Practicum Experience? The Case of Spanish EFL Student Teachers." *Australian Journal of Teacher Education* 41 (5): 35–51. https://doi.org/10.14221/ajte.2016v41n5.3

Surucu, A., A. Unal, and A. Yildirim. 2017. "Evaluation of Teaching Practice Course Teachers According to Opinions of Math Teacher Candidates." *International Journal of Research in Education and Science* 3 (1): 107–113.

Sutton, R. 1995. *Assessment for Learning*. Salford: RS.

Tang, S. Y. F., and A. W. K. Chow. 2007. "Communicating Feedback in Teaching Practice Supervision in a Learning-Oriented Field Experience Assessment Framework." *Teaching and Teacher Education* 23 (7): 1066–1085. https://doi.org/10.1016/j.tate.2006.07.013

Tillema, H. H. 2009. "Assessment for Learning to Teach: Appraisal of Practice Teaching Lessons by Mentors, Supervisors, and Student Teachers." *Journal of Teacher Education* 60 (2): 155–167. https://doi.org/10.1177/0022487108330551

Unisa (University of South Africa). 2012. *Supporting Teaching Practice: A Manual for Supervisors and Mentors*. Pretoria: Unisa Press.

Wells, L., and M. McLoughlin. 2014. "Fitness to Practice and Feedback to Students: A Literature Review." *Nurse Education Practice* 14 (2): 137–141. https://doi.org/10.1016/j.nepr.2013.08.006

Appendix

Dear Participant

We, Dr Tšhegofatšo Makgakga and Prof. Sindile Ngubane, are conducting a study "Reflection on post-conference feedback as a developmental teacher training strategy: Teaching practice supervisors' experiences in an ODeL institution" and we request your participation in this study by filling out this questionnaire that will take you approximately 20 to 25 minutes. This study intends to share the ODeL supervisors' reflections on post-conference feedback as a pre-service teachers support strategy during teaching practice supervision. Your name will not be disclosed as pseudonyms will be used for all the participants and the information you give us will be treated with confidentiality.

Your participation in this study will be highly appreciated.

Questionnaire

1. What are your views about TP supervision for pre-service teachers?

2. What is the purpose of conducting post-conference feedback?

3. How do you conduct post-conference feedback for pre-service teachers to reflect on their lessons?

4. What challenges (if any) do you face as supervisors during post-conference sessions?

5. What are students' challenges during post-conference sessions?

6. Does post-conference feedback provide students with an opportunity to reflect on their own lessons? If yes/no, why?

7. Does the feedback help to develop students' professional learning and improve TP skills? If yes/no, why?

8. What are your general comments and reflections on post-conference feedback during TP?

9. How many times and how long do you observe each student during TP supervision?

10. Is the time allocated for the TP supervision enough to support students? If yes/no, why?

11. What can be done to improve the ODeL TP framework?

Chapter 9

Group Work and Distance Online Learning in Higher Education – Reflecting on the Covid-19 Experience in the Natural Sciences

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Abstract

The sudden shift to online education at higher education institutions due to Covid-19, which was declared a global pandemic in March 2020, had a significant impact on teaching and learning. For many the "new experience" meant learning or improving on the use of online technology in the distance mode. Although there have been many studies conducted on the impact of the pandemic on higher education, there is a paucity of research on specific pedagogies to mediate learning in the distance context, with group work being one of them. This chapter presents a reflective analysis of a case study in which group work was a pedagogical strategy used during the lockdown. Data collection involved questionnaires and a part transcript of a group's mobile synchronous text chat. The data was analysed qualitatively and quantitatively for the open- and closed-ended questions, respectively. The findings revealed the mobile phone as the most common technological device used; the specific challenge of data and internet access on group work success; and the professional benefit of developing social skills even in a distance online learning context. The study confirmed that group work is a viable pedagogical strategy to mediate distance online learning which requires the expert guidance of the lecturer and reflection by the group members to improve their distance online learning interactions.

Keywords: group work; distance online learning; structured reflection

Introduction

Covid-19, which was declared a global pandemic in March 2020, impacted higher education (HE) unprecedentedly through an unplanned shift to distance online learning (DOL) effected over a short period of time for continuity of education during the necessitated lockdowns. The sudden shift to DOL manifested complexities and challenges, some unique and others common to higher education institutions (HEIs) (Hedding et al. 2020; König, Jäger-Biela and Glutsch 2020; Mittal, Pani and Thakur 2020). The lack of pre-existing policies mandating online learning; the inadequacy of skill in using technological tools and resources for virtual teaching in distance learning; the inexperience of applying effective pedagogy; and the perception of increased workload were some of the challenges faced by teachers at different levels of education, including university lecturers (Chaka 2020; Mishra, Gupta and Shree 2020; Sokal, Trudel and Babb 2020). South Africa also experienced this impact. Although there have been many studies on the impact of the pandemic on HE, there is paucity of research on specific pedagogy, with group work during the forced shift to DOL being one of them. Hence, this reflective analysis of group work sought to improve the quality of pedagogical mediation and prompt further reflection of its use in DOL.

There is more to group work as a strategy than managing large class size. More importantly, there are pedagogical reasons which include the co-construction of knowledge and a mimic of social practice through collaboration and the development of skills for the workplace (Govender and Pillay 2018; Rafferty 2013). Thus, DOL cannot negate the value of group work as a pedagogical mediation to prepare graduates for the workplace. Given the uncertainty of the post-pandemic shift to safer times of social contact and a probable prolonged shift to DOL, group work needs to be given significant attention. This chapter reports on a case study of reflective analysis on group work attempted by an academic in the shift to DOL during the lockdown enforced by the Covid-19 pandemic. The following three research questions framed the study:

- In which way did the groups communicate, approach the tasks and interact in distance online learning during the lockdown?
- What were the views and experiences of the students on group work in distance online learning during the lockdown?
- What were the student reflections and recommendations on group work in distance online learning tasks?

Literature Review

The rapid and disruptive introduction of digitisation exacerbated by the Covid-19 pandemic had an impact on university education (Dover 2020). DOL is likely to continue to dominate formal education as an imperative in the "new normal" and post the pandemic (Chaka 2020; Mittal, Pani and Thakur 2020). Facilitators of education delivery will need to reflect and rethink through their pedagogical practices as DOL demands changes from conventional face-to-face modalities (Pather and Cupido 2020; Naamati Schneider and Meirovich 2020). Structured reflection using multiple sources provides authentic means of rethinking through pedagogical practices. Structured critical reflection encompasses pedagogical issues and social and economic aspects that have an impact on pedagogical practices (Killen 2016). The sudden shift to DOL was implemented across a range of social and economic contexts.

Open, Flexible and Distance Learning

Open distance learning (ODL) can be considered a multidimensional concept that seeks to synergise time, geographical space, economic, social, educational and communication distance in the relational web of students, peers, academics, institutions and the curriculum (Unisa 2008). In South Africa, ODL institutions have historically provided access to HE for a majority of working students who previously, for whatever reason, experienced limitations in accessing HE opportunities (Letsekaa and Pitsoe 2014). The University of South Africa (Unisa) is the largest ODL university in South Africa, and post-2012, there was as a shift from postal correspondence of study materials towards online teaching and learning (T&L) pedagogy (Murray, Byrne and Koenig-Visagie 2013).

The ODL framework is based on the assumption that every student's learning can be optimally supported by modern electronic and digital technologies (Tsabedze and Ngoepe 2020). There was also a progressive shift in conceptualisation from ODL to open, flexible and distance learning (OFDL). It is evident though that there is increasing tendency for contemporary educators to experiment with OFDL T&L pedagogies and technologies to socially engage students in active learning (Zhang, Burgos and Dawson 2019; Zhang, Li and Liu 2019). However, globally this not an equitable situation, as evident in the Sub-Saharan countries, where there is stark variation to economically developed countries in relation to internet access, resources, devices and training (Tadlaoui and Chekour 2021).

In reality, OFDL is not without its challenges, many of which became conspicuous when traditional face-to-face HEIs were forced to shift to ODL at the onset of the Covid-19 pandemic. Online learning experiences can take place either in a synchronous environment (where academics, students and peers interact at the same time), or in an

asynchronous environment (where interactions are independent and take place at different times using electronic devices, such as mobile phones, ipads and laptops) with internet access (Naamati Schneider and Meirovich 2020; Sadiku, Adebo and Musa 2018; Singh and Thurman 2019). DOL is used as a specific reference point in this chapter instead of blended learning, as the study reports on group work in a DOL context. Initial Covid-19 lockdown regulations in South Africa sanctioned face-to-face education delivery modalities.

Blended or hybrid learning combines elements of the traditional face-to-face modality with those of ODL and online learning, as was adopted in schools in Morocco owing to the Covid-19 pandemic (Tadlaoui and Chekour 2021). Johnson, Daum and Norris (2021) point out that DOL has implications when it is forced rather than being a choice. In their study in the United States, issues relating to equity, marginalisation of practical subjects, learning pedagogy and accessibility emerged. Online T&L pedagogies often have various challenges resulting in many academics avoiding innovative possibilities for active learning (Naamati Schneider and Meirovich 2020), group work being one of them.

Group Work

The ability of employees to work collaboratively is a much-valued graduate attribute (McKinney and Cook 2018; Zhang, Burgos and Dawson 2019; Zhang, Li, and Liu 2019). Thus, group work is an effective constructivist pedagogy in HE to develop students' cognition, personal, social and professional skills (Cartwright et al. 2021; Govender and Pillay 2018; Rafferty 2013) and scientific literacy skills (Auerbach and Schussler 2017; Zhang, Burgos and Dawson 2019; Zhang, Li and Liu 2019).

Group work should involve both meaningful interaction and successful task completion (Chiriac 2014). However, it can be difficult for students to work together in an academic context (Cartwright et al. 2021; McKinney and Cook 2018; McKinney and Sen 2016), and group pedagogy may appear challenging to lecturers and students without much experience in DOL contexts. Even in face-to-face group work there are issues when working in a team, including fairness in allocating the same mark even when there are unequal contributions by group members (Cartwright et al. 2021; Chiriac 2014; McKinney and Cook 2018). The positive impact of group work in face-to-face contexts has been widely reported (Cartwright et al. 2021; Govender and Pillay 2018; Zhang, Burgos and Dawson 2019; Zhang, Li and Liu 2019).

Methodology

A survey research design is useful to elicit the participants' views, experiences and suggestions (Bertram and Christiansen 2018; Maree and Pietersen 2016), as was the intention in the current study. The participants were first- and second-year students from an undergraduate programme in the Natural Sciences. The students registered for a face-to-face mode of delivery of lectures and were taught by the same lecturer. The students responded individually to electronic questionnaires which included closed- and open-ended questions. One questionnaire was specifically designed for GLs (to which four GLs responded); a second questionnaire was designed for the students in two second semester modules (to which 33 students responded); and parts of a mobile text application transcript was provided by one group from a year one first semester module. The justification for using the three data collection strategies was to get an in-depth, valid and holistic reflective analysis to contribute authentically to the body of knowledge on group work in DOL.

The analysis followed a mixed methods approach, that is, a quantitative analysis (descriptive statistics) and qualitative analysis (content analysis) to provide a complete understanding of the context (Ivankova, Creswell and Plano Clark 2016; Kumar 2014). Quantitative analysis involved expressing as a percentage the tallied responses to the survey questions where students needed to select from choices provided for statements on group work in DOL during the lockdown period. Qualitative analysis involved content analysis of the group interaction transcript and responses to open-ended questions in the questionnaires for GLs and for students. In a preliminary analysis, thematic categories were identified in the responses followed by coding of the data according to the categories, for example, collaborative learning and home backgrounds that were unconducive to learning.

A limitation of using an all electronic questionnaire was that it was dependent on data and internet access. In addition, student response to the questionnaire was voluntary. It is likely for these reasons all the students did not respond. Ethical protocols were observed. The study was conducted under a research project registered with the university research directorate.

Findings

In Which Way Did the Groups Communicate, Approach the Tasks and Interact in Distance Online Learning during the Lockdown?

Communication Channels/Media

In the survey, the students listed a range of communication channels that they used to communicate with their group members such as messaging applications (WhatsApp groups), emails, phone calls and cell phone video calls. According to the group leaders (GLs), the key communication channel used most often was the WhatsApp group chat which included both text and audio communication. The WhatsApp group chat was used most often as it was easy to use, cost effective, fast and interactive as indicated in the GLs' quotations in the GL questionnaire:

> It was the easiest way we communicated and it saved us data (GL 1)

> I used this type of media for fast, direct and interactive responses (GL 3)

Approach to the Tasks

The results of the survey (n = 32) indicated that dividing the workload/questions amongst the members seemed to be the greatest choice of approaching the group work tasks (65.6%); followed by all members contributing to the questions (31.25%); and by one person doing all the work (3.1%). The last was actually not group work but one person completing the task on behalf of the group. These results were also confirmed by the GLs' responses which showed that the way in which the tasks were approached varied in the groups:

> We divided questions and if one had a problem we worked together (GL 1)

> We attacked every question together. No one was left alone to do any question with no help from any of our members unless if he or she understood it better than us. (GL 4)

Group Interaction

The findings indicated that groups met through their communication channels for a minimum of three times. Although there was geographical distance, the groups attempted to work together using technology. However, three groups indicated that they would have liked to have met as many times as possible, with one group indicating it would have liked to meet least four to five times.

The following transcript of one group provides evidence of the interaction taking place within the group. The different group members were given numbers to differentiate them in the text communication in the transcript While this is just one group, it makes the point that group work is a viable pedagogical strategy for online learning where there is geographical/ spatial separation.

Day 3

How is the assessment going? Have you managed to start with it? (Student 1)

Hello guys . . . by my side I HV started but may I please HV answers for 1.1 . . . once am done I will send my table for some help. (Student 3)

That is the easiest answer. Chlorophyll, sunlight, water and Carbon dioxide. (Student 1)

Thank you for confirming. (Student 3)

All the notes that (Lecturer's name) gave is in the assessment. Please make use of it. (Student 1)

Day 4

Afternoon colleagues. Please don't only answer your selected questions. Read through the whole notes for better understanding. Thank you. (Student 1)

If you need to be helped. I will assist you. (Student 1)

Thank you Student 1. (Student 2)

I am sorry guys I am still busy with the notes, will probably be done by tomorrow. (Student 4)

I'll send mine tomorrow. (S1)

I already did it but not properly it's draft. I'll send you a picture tomorrow, please bear with me. (Student 6)

That is great. We are all making progress. Excellent. (Student 1)

I will do the whole question 2. (Student 4)

Or I will do 2.1 only . . . Which is the table? (Student 4)

The whole of 2.1. (Student 1)

Thanks. (Student 4)

The transcripts of days 3 and 4 showed evidence of collaborative learning. The student interactions showed both clarification of content (day 3 – student 1's response to photosynthesis) and process (day 4 – student 4 seeking clarification on question number 2.1). However, 43% of the responses in the survey indicated some non-participation by group members (n = 32). Cooperation among the groups also varied as indicated by the GLS' opinions:

> From my perspective the team was a bit slow on responding during the duration. If the assignment was due soon, the team would have worked faster. (GL 3)

> My team were trying by all mean to co-operate and work so hard so that at the end work will be done on time due to any circumstances that they face at home. (GL 3)

GL 4 seemed to indicate positive working together. The other three GLs indicated challenges which included data issues: (GL 1); lack of cooperation (GL 2); and the pace of the responses (GL 3).

What Were the Views and Experiences of Students on Group Work in Distance Online Learning during the Lockdown?

Table 1 shows the responses to the survey on students' views and experiences of aspects of distance online group work.

Table 1: Survey responses to students' views and experiences of DOL group tasks

Question		Responses					*n*
		SA	**A**	**N**	**D**	**SD**	
1	Working in a group inspired me to do my best during the lockdown/online learning?	17 (51.5%)	8 (24.2%)	6 (18.2%)	1 (3%)	1 (3%)	33
2	I felt that group work helped me to understand the content?	10 (32.2%)	14 (45.2%)	3 (9.6%)	2 (6.4%)	2 (6.4%)	31
3	Did the lecturer provide adequate information (e.g. worksheet with instructions) for you to do the group task?	27 (81.8%)	6 (28.2%)	–	–	–	33
4	What skills (if any) did the gr oup work tasks assist you to strengthen or develop?	Scientific: 16 (50%) Social: 23 (71.8%) Communication: 16 (50%) Technological: 6 (18.75%)					32
5	Overall how would you describe your group work experience?	Positive: 31 (93.4%) Negative: 2 (6.5%)					33

Note: SA = strongly agree; A = agree; N = neutral; D = disagree; SD = strongly disagree

The results indicated that group work in DOL did overall inspire students during the lockdown (75.9%; $n = 33$). Group work, as in other settings, also assisted students in understanding the content of the course (a positive response of 77.4%; $n = 31$). All the students ($n = 33$) agreed that the lecturer provided adequate information to guide the task. This can be noted as a factor with potential to guide students towards success in DOL group work. Group work provides a pedagogical strategy to develop or strengthen various skills in students. The results ($n = 32$) indicated that group work mostly helped to develop or strengthen social skills (71.8%). It is interesting that social skills were considered to be the most developed as this was a DOL experience and not a face-to-face one. Overall, in spite of the challenges, the students found the DOL experience to be inspiring and positive. The quotations from the GL questionnaire and from the general survey showed the positive value of DOL group work experiences:

> We were able to learn a lot in a different and understandable way. (GL 1)

> I got a chance to listen to ones' point of view. How they understood what was been explained in a short period of time. (GL 3)

> I learnt to come up with my own ideas and to be able to listen to other people's ideas. (Survey)
>
> It helps as we shared different ideas and understand the content which add to the information you already had. (Survey)

What Were Students' Reflections and Recommendations on Group Work in Distance Online Learning Tasks?

Student Challenges

Three key challenges were raised by the students, namely: data and connectivity, non-cooperation, and home backgrounds that were unconducive to learning. All three challenges had an impact on the success of pedagogical strategies such as group work:

> The problem was with the lack of communication due to data and network problem. (GL 1)
>
> Some members had data and network issues, so we had to understand that issue if they did not participate. (Survey)

It may be agreed that the lack of cooperation in DOL group work applied equally to tasks in the face-to-face learning context. One aspect of non-cooperation was not being punctual when group inputs were required, as indicated by GLs 1 and 3, and in student responses in the survey:

> Some of the group members were pushing the time by great extent. I was waiting for others to contribute, which held me from submitting earlier. We took almost a week to complete a three-question assignment. (GL 3)
>
> I hate it because some colleagues don't want to do work on time. You then have to submit late because of this unpleasant behaviour. (Survey)
>
> Some group members did not want to participate, and it was hard to communicate with them and some took long to respond while others were inactive. (Survey)
>
> That someone would reply late to the WhatsApp message to the group chat when we needed views. (Survey)

DOL required students to work away from the main university campus. The lockdown regulations imposed due to the Covid-19 pandemic did not give the students any choice of movement. There were other interruptions to the study schedule as indicated by GL4. Students' home backgrounds were not always conducive for the purpose of studying, which inevitably impacted on group work tasks as well:

> It was not so easy to work at home, some of our parents do not understand the online learning and sometimes they have to send us to do their work as we were at home thus affecting our time and the way we work. (GL 4)

Student Reflections

Amongst the student reflections in the survey and how they would do group work tasks differently to improve their learning experience in the future (should a situation such as Covid-19 occur) the following were indicated: changing of group members to increase productivity as there is a belief that familiarity within groups may hinder productivity in future tasks; dividing the task equally amongst group members; not delaying in doing the task; setting convenient meeting times; and using multiple communication channels. The last two seem to particularly pertinent to DOL:

> Use new groups after every activity to avoid colleagues getting too familiar with each other which yields less productive work. (Survey)

> Divide the work equally. (Survey)

> Try and do the work as soon as it is given to us. (Survey)

> Set a specific time that is convenient for everyone so we can address and clarify to those with problems. (Survey)

> Have more than one form of communication with group members and the work to be earlier so there is no miscommunication. (Survey)

Student Recommendations

In the survey, the students provided recommendations of note to lecturers in the DOL context. A suggestion of declaration of the contribution of each member to the task and self-assessment in terms of the mark deserved for the contribution. This would mean that all group members might not receive the same mark. A punitive measure suggested was that a non-participating member's name should not appear on the final submission of the task. Successful group work is also dependent on the clarity and reasonability of the task given. In this regard it was suggested that the task should be clearly explained. This seems much easier in the face-to-face context through verbal dialogue. However, the DOL context may require other forms of mediation for clarification in addition to written instructions which could be misinterpreted. Such misinterpretations are likely to impact on the assessment results:

> The students should write how much each person has contributed and the mark they deserve. (Survey)

> If a member did not participate then his or her name should not be submitted with the group work. (Survey)

> I think it must be well explained. (Survey)

The issue of data and access was a concern raised repeatedly, and its importance cannot be undermined to employ various pedagogical strategies (group work included) for quality online T&L. It is an issue that requires greater and immediate attention by collaborating stakeholders of education at all levels:

> In this time of Covid-19, data should have been provided to students including myself in different areas. Work that was given to us needed constant attention and we relied mostly on data from the start. (Survey)

Discussion

There is empirical evidence to show the positive social and cognitive impact of having students learning in groups (Cartwright et al. 2021; Chiriac 2014; McKinney and Cook 2018; McKinney and Sen 2016). Success of group work, although empirically reported, may not always be constant as contextual dynamics may differ from understanding the task and group communication to interaction. There is a difference between working in a group (i.e., where students are in a group but work individually on separate parts of the task) and working as a group (i.e., where there is collaboration with other group members with meaningful interaction) (Chiriac 2014). Meaningful learning in small group work is not about being in a physical space or logging on to an online group, rather it is about the collaboration that is necessary for active learning (Killen 2016). In this study, group work in DOL revealed both working in a group (division of the task) and as a group (the collaboration evidenced in the group transcripts).

The key mobile device that the students used for communication to bridge the spatial separation was the mobile phone for text chats, audio and video calls in some instances. The students indicated that the mobile phone was the most pragmatic device to communicate with each other given the circumstance. The mobile phone was used asynchronously and synchronously in the DOL experience. The device can be effectively used for group collaboration as shown by the group text transcription; a positive for distance online group work. While mobile devices have been recognised as a significant medium for interaction in learning contexts, Wright and Parchoma (2011), Zhang, Burgos and Dwason (2019) and Zhang, Li and Liu (2019) aver that it is not just the technology that improves learning experiences but the quality of match between the use of technology, the tasks and the student interaction. The study also showed that there were communication disgruntlements linked to functioning in the group. This included delays of immediate responses when required. In a study done by McKinney and Sen (2016) similar findings were reported where groups used electronic devices (such as smart phones) for group interaction.

Collaborative learning as expected in small group work, has the potential of developing interpersonal skills (Cartwright et al. 2019; Govender and Pillay 2018; Killen 2016; McKinney and Sen 2016; Rafferty 2013) and scientific skills (Auerbach and Schussler 2017; Zhang et al. 2019). In this study, focusing on group work within a DOL context, student feedback supported the assertions that they had developed or strengthened scientific and communication skills and to a larger extent social skills. However, researchers need to be cautious when interpreting the finding of the high response to the development of social skills (71.8%) on the basis of the context being distance online group work. However, synchronous learning does not necessarily imply audio and visual communication. It could also take the form of texting within immediate responses but it also requires etiquette. The group text transcripts provided evidence of this etiquette through greetings, for example, "good afternoon"; through the expression of gratitude, "thank you"; and positive affirmation, "that's great". These social skills are also essential to professional teamwork (Govender and Pillay 2018; McKinney and Sen 2016; Rafferty 2013). This opposes the notion alluded to by Killen (2016) that online collaboration tasks should emphasise learning outcomes rather than the learning process.

The role of the lecturer or teacher cannot be overlooked in increasing the potential for successful group work (Killen 2016; Zhang, Burgos and Dawson 2019; Zhang, Li and Liu 2019). Potential issues associated with negative group work experiences could be circumvented through careful structuring of group work instructions and tasks (Cartwright et al. 2021). In this study, all the students were in agreement that the lecturer had provided adequate instructions and information on the ODL tasks. Zhang, Burgos and Dawson (2019) and Zhang, Li and Liu (2019) suggest that in collaborative group work, the teacher can intervene where appropriate. The possibility exists that academics in HEIs can join in group chats as facilitators more especially where groups request such guidance.

Research has shown that engaging students in structured reflection has benefits such as helping group members to understand their own and group practices to improve their future interaction (Killen 2016; McKinney and Sen 2016). The student reflections in this study focused on three areas to improve collaboration within the context of DOL, namely, increasing the range of communication channels; not delaying in doing tasks; and division of tasks. Given the challenges experienced in DOL, also expressed by students in a study on group work in a Business Intelligence module cited by McKinney and Sen (2016), increasing the range of communication channels may help to reduce communication challenges. In South Africa, network access and data challenges are widely cited as negatives to DOL, as indicated by the GLs' inputs in the study.

Non-participation ("free-riding") can be the cause of negative group work experiences (Cartwright et al. 2020; McKinney and Sen 2016). However, in the current study, although the students recommended punitive measures, non-participation could not be totally justified as laziness. The students raised issues of data and internet access as

problematic for their online group work interaction. Punitive measures would need to be cautiously considered in contexts of data and internet access inequities.

Conclusion

Group work cannot be ignored as a pedagogical strategy to support its value in the world of work. Although it may be argued that many of the students; responses were aligned with group work tasks in face-to-face learning, they also confirmation that DOL can afford similar benefits. There are avenues of technological communication for students to engage with each other in DOL. Data issues are a concern that cannot be ignored. However, it should not be a deterrent to distance online group work as education stakeholders seek to improve connectivity and access inequities.

References

Auerbach, A. J., and E. E. Schussler. 2017. "Curriculum Alignment with 'Vision and Change' Improves Student Scientific Literacy." *CBE Life Science Education* 16 (3): 1–9. https://doi.org/10.1187/cbe.16-04-0160

Bertram, C., and I. Christiansen. 2018. *Understanding Research*. Cape Town: Van Schaik.

Cartwright, N. M., P. Patil, D. M. Liddle, G. Newton, and J. M. Monk. 2021. "Enhancement of Professional Behaviours and Perceptions of Critical Skill Job Preparedness through the Use of a Group Work Contract in Fourth-Year Nutritional Science Students." *International Journal of Higher Education* 10 (2): 27–41. https://doi.org/10.5430/ijhe.v10n2p27

Chaka, C. 2020. "Higher Education Institutions and the Use of Online Instruction and Online Tools and Resources during the COVID-19 Outbreak – an Online Review of Selected U.S. and SA's Universities." *Research Square* 1–46. https://doi.org/10.21203/rs.3.rs-61482/v1

Chiriac, E. H. 2014. "Group Work as an Incentive for Learning – Students' Experiences of Group Work." *Frontiers of Psychology* 5: 558. https://doi.org/10.3389/fpsyg.2014.00558

Dover, P. 2020. "Ivory Tower to the Ecosystem Driver: Transforming the University Business Model." In *The University of the Future Responding to Covid-19*, edited by D. Remenyi, K. Grant and S. Singh, 9–18. Pretoria: Van Schaik.

Govender, S., and R. P. Pillay. 2018. "University Students' Response to Group Work in Life Sciences – A Social and Cognitive Perspective." *Journal of Educational Studies* 17 (2): 42–59.

Hedding, D. W., M. Greve, G. D. Breetzke, W. Nel, and B. jansen van Vuuren. 2020. "COVID-19 and the Academe in South Africa: Not Business as Usual." *South African Journal of Science* 116 (7/8): 1–3. https://doi.org/10.17159/sajs.2020/8298

Ivankova, N. V., J. W. Creswell, and V. L. Plano Clark. 2016. "Foundations and Approaches to Mixed Methods Research." In *First Steps in Research*, edited by K. Maree, 306–336. Pretoria: Van Schaik.

Johnson, J., D. Daum, and J. Norris. 2021. "I Need Help! Physical Educators Transition to Distance Learning during COVID-19." *Physical Educator* 78 (2): 119–137. https://doi.org/10.18666/TPE-2021-V78-I2-10866

Killen, R. 2016. *Teaching Strategies for Quality Teaching and Learning*. Cape Town: Juta.
König, J., D. J. Jäger-Biela, and N. Glutsch. 2020. "Adapting to Online Teaching during COVID-19 School Closure: Teacher Education and Teacher Competence Effects among Early Career Teachers in Germany." *European Journal of Teacher Education* 43 (4): 608–622. https://doi.org/10.1080/02619768.2020.1809650
Kumar, R. 2014. *Research Methodology*. 4th ed. Los Angeles: Sage.
Letseka, M., and V. Pitsoe. 2014. "The Challenges and Prospects of Access to Higher Education at UNISA." *Studies in Higher Education* 39 (10): 1942–1954. https://doi.org/10.1080/03075079.2013.823933
Maree, K., and J. Pietersen. 2016. "Surveys and the Use of Questionnaires." In *First Steps in Research*, edited by K. Maree, 173–190. Pretoria: Van Schaik.
McKinney, P., and C. Cook. 2018. "Student Conceptions of Group Work: Visual Research into LIS Student Group Work Using the Draw-and-Write Technique." *Journal of Education for Library and Information Science* 59 (4): 206–227. https://doi.org/10.3138/jelis.59.4.2018-0011
McKinney, P., and B. Sen. 2016. "The Use of Technology in Group-work: A Situational Analysis of Students' Reflective Writing." *Education for Information* 32 (4): 375–396. https://doi.org/10.3233/EFI-160983
Mishra, L., T. Gupta, and A. Shree. 2020. "Online Teaching–Learning in Higher Education during Lockdown Period of COVID-19 Pandemic." *International Journal of Educational Research Open* 1: 1–8. https://doi.org/10.1016/j.ijedro.2020.100012
Mittal, P., S. R. D. Pani, and Y. Thakur. 2020. *Protecting Academic Interest of Students during COVID-19 Pandemic – Sharing Best Practices*. New Delhi: Association of Indian Universities.
Murray, J., D. Byrne, and L. Koenig-Visagie. 2013. "Teaching Gender Studies via Open and Distance Learning in South Africa." *Distance Education* 20 (34): 339–52. https://doi.org/10.1080/01587919.2013.835775
Naamati Schneider, L., and A. Meirovich. 2020. "Student Guided Learning – from Teaching to E-Learning." *Revista Romaneasca pentru Educatie Multidimensionala* 12 (1Sup2), 115–121. https://doi.org/10.18662/rrem/12.1sup1/254
Pather, S, and X. Cupido. 2020. "Understanding Academics' Adaptation to Learning and Teaching during a Crisis." *Proceedings of ICERI Conference*, 3441–3445. https://doi.org/10.21125/iceri.2020.0773
Rafferty, P. D. 2013. "The Evaluation of MBA Group Work: A Case Study of Graduate Student Experiences and Perceptions of Positive Group Work Outcomes." *Journal of Education for Business* 88: 43–50. https://doi.org/10.1080/08832323.2011.638680
Sadiku, M. N. O., P. O. Adebo, and S. M. Musa. 2018. "Online Teaching and Learning." *International Journals of Advanced Research in Computer Science and Software Engineering* 8 (2): 73–75. https://doi.org/10.23956/ijarcsse.v8i2.549
Singh, V., and A. Thurman. 2019. "How Many Ways Can We Define Online Learning? A Systematic Literature Review of Definitions of Online Learning (1988–2018)." *American Journal of Distance Education* 33 (4): 289–306. https://doi.org/10.1080/08923647.2019.1663082
Sokal, L., L. E. Trudel, and J. Babb. 2020. "Canadian Teachers' Attitudes toward Change, Efficacy, and Burnout during the COVID-19 Pandemic." *International Journal of Educational Research Open* 1. https://doi.org/10.1016/j.ijedro.2020.100016

Tadlaoui, M. A., and M. Chekour. 2021. “A Blended Learning Approach for Teaching Python Programming Language: Towards a Post Pandemic Pedagogy.” *International Journal of Advanced Computer Research* 11 (52): 13–22. https://doi.org/10.19101/IJACR.2020.1048120

Tsabedze, V., and M. Ngoepe. 2020. “A Framework for Archives and Records Management Education in an Open Distance E-Learning Environment in eSwatini.” *Education for Information* 36: 157–175. https://doi.org/10.3233/EFI-190294

Unisa (University of South Africa). 2008. *Open Distance Learning Policy*. Pretoria: Unisa Press.

Wright, S., and G. Parchoma. 2011. “Technologies for Learning? An Actor-Network Theory Critique of ‘Affordances’ in Research on Mobile Learning.” *Research in Learning Technology* 19 (3): 247–258. https://doi.org/10.3402/rlt.v19i3.17113

Zhang, J., D. Burgos, and S. Dawson. 2019. “Advancing Open, Flexible and Distance Learning through Learning Analytics.” *Distance Education* 40 (3): 303–308. https://doi.org/10.1080/01587919.2019.1656151

Zhang, Z., Y. Li, and H. Liu. 2019. “Research on Collaborative Problem-Solving Supported by Multi-Screen and Multi-Touch Teaching System.” *International Journal of Information and Education Technology* 9 (2): 105–109. https://doi.org/10.18178/ijiet.2019.9.2.1182

Part VI

Technology in Open Distance e-Learning

Chapter 10

Feasibility of Implementing Social Media Platforms during the Covid-19 Pandemic: Open Distance e-Learning Context

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Abstract

The advent of Covid-19, which was declared a global pandemic in March 2020, and the subsequent lockdowns, saw the suspension of face-to-face teaching and learning. Consequently, most educational institutions developed contingency plans to preserve the remainder of the 2020 academic year through open distance e-learning. Nursing colleges and other higher education institutions that were not open distance e-learning-centred were forced to facilitate distance education through Microsoft teams, podcasts and WhatsApp. The perceptions of lecturers and student nurses from three public nursing colleges in Gauteng, South Africa, were sought concerning the use of social media as a method of enhancing both the theoretical and the practical components of teaching and ldarning. The aim was to develop a conceptual teaching and learning model that integrated nursing theory and practice, using social media platforms, which could encourage the adoption of open distance e-learning. The study was conducted from September 2019 till July 2020, using a qualitative, exploratory design. Focus group interviews were conducted with 20 purposefully selected student nurses and 14 lecturers across the three researched public nursing colleges. The participants were asked to consider if easily accessible social media platforms, such as WhatsApp, YouTube and Facebook, were feasible strategies for remote teaching and learning. The authors developed a conceptual model for teaching and learning using social media platforms for both theory and practice which infuse open distance e-learning. This model was recommended for piloting in one of the three selected public nursing colleges.

However, policies that regulate the use of social media platforms for teaching and learning need to be developed which would warrant future research.

Keywords: Covid-19; learning; open distance e-learning; social media platforms; teaching

Introduction

Social media refers to online platforms, including blogs, business networks, collaborative projects, and virtual worlds which are quite diverse and not limited to sharing of promotional advertising (Aichner et al. 2021). This online exchange of information encourages the improvement of interpersonal communication skills in students of educational organisations (Wafa 2022, 11). In this chapter, social media refers to those social platforms which are embedded in digitalisation and can enhance online teaching and learning (T&L) remotely.

In the Fourth Industrial Revolution (4IR) the student is at the centre of learning and the lecturer is a facilitator of content. The outbreak of the Covid-19 pandemic in March 2020 provided an opportunity to move from face-to-face T&L to innovative ways of T&L on a par with 4IR in an ODeL context. It prompted the authors to consider how social media platforms (SMPs) could be used for T&L in an ODeL context. People spend considerable time on different types of SMPs, either for socialisation or business, and considering that during the hard lockdown when people were confined to their homes further motivated this study. SMPs that facilitated T&L at a distance were considered that led to ODeL and overcame challenges encountered during Covid-19. One of the challenges being the abrupt breaking of face-to-face T&L specifically in those higher education institutions (HEIs) which traditionally were not using ODeL.

This chapter deals with those South African nursing colleges which are expected to produce nurse practitioners who are able to promote and maintain high standards and quality of nursing care (DoH 2013/2017). Despite the many challenges related to the pandemic, the high standards of T&L had to be maintained.

To continue with T&L the three selected nursing colleges communicated with their students via WhatsApp to provide support and give assignments during the hard lockdown. As lockdown levels increased they utilised WhatsApp, Microsoft teams, and podcasts to facilitate distance T&L although each brought their own challenges with network connections.

The authors noted that SMPs are available on smart phones and laptops providing access to information immediately and anywhere. Lecturers and students can then access T&L material at their convenience thus encouraging flexibility and supporting ODeL. Screen size, storage space, and readability were considered and noted as being dependent on

the type of device the user chose. The range of new and emerging SMPs offer new opportunities to enhance T&L experiences, thus creating a collaborative learning environment for the students and the lecturers (Alhumaid 2020).

When the Covid-19 pandemic broke out, the Department of Basic Education (DBE) and Department of Higher Education and Training (DHET) were badly affected as all face-to face teaching had to stop immediately. The mode of content delivery was forced to change from face-to-face to ODeL to continue T&L and salvage what remained of the 2020 academic year. This study also provided student nurses with opportunities to engage and share information with their fellow students' and lecturers' community in a broader perspective, where both clinical and theoretical views were shared collaboratively.

The authors hoped that the implementation of SMPs in teaching would assist the nursing colleges to remain up to date with current issues in relation to the growing digital world in the 21st century. Currently, in South Africa, the DBE has initiated the use of smart boards in classrooms and provides tablets to Grade 12 learners in some provinces. However, according to Chomunorwa, Mashonganyika and Marevesa (2022), this educational technology has yet to be fully adopted in schools in previously disadvantaged communities in South Africa. Covid-19 has reshaped lives, its impact should lead to discussions on digital transformation and technology adoption (Chomunorwa, Mashonganyika and Marevesa 2022).

Discussions might encourage policy makers to fully endorse ODeL as the preferred mode of teaching in HEIs in South Africa. Hence, the authors explored lecturers' and student nurses' perceptions about the feasibility of implementing SMPs for T&L. The intention was to develop a conceptual T&L model using SMPs, to integrate nursing theory and practice that could be implemented as an element of the ODeL approach to mitigate the crisis created by the 2020 pandemic. This study focused on how SMPs could be best used to enhance T&L in an ODeL context.

Literature Review

SMPs were utilised in educational spaces to enhance students' learning experiences and to complement traditional teaching strategies. These platforms actively engaged students, helped them retain knowledge, motivated interest in the subject matter, and illustrated the relevance of the learnt concepts in nursing programmes.

Different studies that covered International countries, continental, and local types of SMPs such as WhatsApp, Facebook, Twitter, Myspace, Instagram, and YouTube were read to understand the different types of SMPs available and how they could be used to benefit T&L in the 21st century, specifically in an ODeL context. Much of this research

on how social media is embedded into the educational practices of HE has a Western orientation.

The case study by Madge et al. (2019) on African international distance education students at Unisa, one of the largest providers of IDE globally, examined the varied ways in which IDE students actively use social media to shape their learning experiences. From an analysis of 1 295 online questionnaires and 165 in-depth interviews, WhatsApp emerged as the "key" social media tool that opens opportunities for IDE students to transfer, translate and transform their educational journey when studying "at a distance". Although WhatsApp does provide a "space of opportunity" for some students, this is framed through socio-technical marginalisation, itself a reflection of demographic legacies of inequality (Madge et al. 2019). Other studies covering online university teaching during Covid-19, found that it was time to reconsider curriculum design. Subsequently, three broad headings were established, namely learning design, teacher presence, and assessment to facilitate education during and beyond the pandemic. Google and YouTube were found to be search engines that could be used for study purposes (Rapanta et al. 2020).

Edublog is a blog created for educational purposes that serves as a form of communication and collaboration with others, and promotes learning through new information and communication technologies (ICTs) (Campillon-Ferrer, Miralles-Martinez and Sanchez-Ibanez 2021). Myspace allows users to share videos, pictures, emails, blogs, instant messages, games and music (Allgaier 2018). This allows large networks of teachers, students, parents, administrators and nursing colleges to create a sense of a virtual school community. The study of social media use in HE by Zachos, Paraskeyoupoulou-Kollia and Anagnostopoulos (2018), found that social media networks may be used in formal and informal learning contexts, which was relevant to implement during the crisis. Douglas et al. (2019) reviewed the role of Instagram in education (focusing on anatomy education), determined a variety of teaching styles, including clinical images, descriptive videos, multiple-choice questions and cartoons could be promoted through the use of Instagram.

Using SMPs in class promotes student nurses' ability to use technology in clinical practice. To produce high quality, independent and effective nurses, they need to be exposed to multiple and comprehensive learning systems. Hence, the authors intended to explore lecturers' and student nurses' perceptions on the feasibility of implementing SMPs in T&L.

The following theories underpinned this chapter. Siemens' (2005) and Downes' (2005) connectivism learning theory seek to be the 21st century solution to perceived gaps that exist in traditional ideas about learning, particularly those concerned with the use of technology. Thus, it is regarded as a learning theory of the digital age. It attempts to close the gap between traditional learning and the use of technology; and demonstrates that technology warrants looking at learning through a new lens. It builds upon

established theories to propose that technology is changing what, how and where people learn. The focus on student interaction with peers and the environment around them provides fascinating possibilities for future learning (Huezo 2017).

Moore's (1997) transactional distance theory (TDT) explains that distance is not simply geographical, but also a pedagogical phenomenon. However, the effects of geographic separation on T&L are important, particularly in interaction between the students and the lecturers, the design of the courses, and the organisation of human and technological resources (Moore and Kearsley 2012). If the students and the lecturers are not physically present at the same time, they are separated by distance, thus it becomes necessary to introduce an artificial communication medium that will deliver information and provide channels for interaction (Moore and Kearsley 1996). Social media is seen as bridging the gap of interaction between the students and the lecturers.

Vygotsky's (1978) social constructivism theory supports learner-centred learning. It focuses on the way individual learners gain understanding of a phenomenon (Vygotsky 1978). Learning is student-centred and instructions are interactive during the construction of knowledge. Constructivism provides students with opportunities to explore learning. Using SMPs in T&L is a student-centred approach. It is relevant to this study.

Mayer, Sweller and Moreno's (2017) e-learning theory consists of cognitive science principles describing how electronic educational technology can be used and designed to promote effective learning. Multimedia and modality principles are relevant in that learning is more effective when visuals are accompanied by audio narration. SMPs include audio-visual aspects as one of the components in digitalising T&L.

Research Design and Methodology

Research Design

A qualitative, exploratory design was used. According to Creswell and Plano Clark (2018), qualitative explorative design is an in-depth description and understanding of people's beliefs, experiences and perceptions and events (Brink and Van Rensburg 2022). The current study explored perceptions on the feasibility of implementing SMPs in T&L.

Research Setting

The setting refers to the place from which data was collected (Polit and Beck 2018). In this study, the data was collected from three public nursing colleges in Gauteng, South

Africa that offer basic nursing programmes. These colleges were selected purposefully as they were the only public nursing colleges which offer an undergraduate diploma in nursing. They are situated in Tshwane (formerly Pretoria), Johannesburg and Soweto and for ethical reasons were named C1, C2 and C3.

Population, Sampling and Sample

The target population was registered student nurses in their first and second year of training, and all lecturers teaching in those colleges. A non-probability purposive sampling technique was used which enabled selection of specific participants who provided extensive information about the use of different T&L strategies. The sample consisted of 14 lecturers teaching first- and second-year students and 10 first-year and 10 second-year registered student nurses. The student focus groups consisted of either two or three participants per session from either level making a maximum of five participants in any given session. To maintain anonymity, they were named according to the name of the college (C1) followed by group (A or B) the year of study (L1) and participant code according to numeric (P1). One focus group interview per college was conducted for the lecturers and the format college (C1) followed by the participant in numeric format (C1P1). The numbers of all participants were further determined by data saturation.

Table 1: Breakdown of participants

College	Number of lecturers	Focus groups (FG)	First-year students (L1)	Second-year students (L2)
C1	5	FG1 (A)	3	2
		FG2 (B)	2	3
C2	5	FG1	3	2
C3	4	FG1	2	3

Data Collection

Data was collected in two phases across focus group interviews, phase 1.1 student nurses, phase 1.2 lecturers. From September 2019 this was face-to-face however, after the outbreak of the pandemic data was collected under strict pandemic protocols until the end of data collection in July 2020.

An appointment was made with a research coordinator at each nursing college to recruit participants and to set dates and times for data collection. Students were recruited during orientation after their 2019 registration. Notices about participation in the study were displayed on student-information notice boards at all three nursing colleges. Lecturers

were recruited during academic staff meetings with information about the intention to request participation displayed on staff notice boards. This served as a reminder of the upcoming activity to prevent possible interruptions with their daily work schedule. The students and the lecturers were interviewed on the same day but on different time schedules during tea and lunch breaks and even after hours in order to minimise class disruption. The same format of data collection was adopted for both the students and the lecturers.

The purpose of the study was explained, and the participants signed informed consent and gave their consent for recording. They were assured that measures of ethical consideration would be maintained. During the interviews, the participants were referred to by code in order to maintain confidentiality and anonymity. Focus group interviews were conducted using an interview guide with follow-up questions. The interviews were audio-recorded with field notes taken as back-up in case of equipment failure. All the interviews lasted for 25 to 58 minutes till data saturation. In phase 1.1, the data was collected from 20 students across all three colleges. On data collection days, the available students gathered in one venue at their respective college and the interviews were conducted in college meeting rooms.

In phase 1.2, data was collected from the 14 lecturers in their respective college meeting rooms and the interviews lasted for 25 to 58 minutes until data saturation. All the participants were thanked.

Trustworthiness

Trustworthiness, which is defined as the rigour of research in a qualitative research study, was ensured throughout (LoBiondo-Wood and Haber 2014). The four aspects of trustworthiness based on Lincoln and Guba's constructs, as described by Stahl and King (2020), were applied to strengthen the findings and ensure rigour. Credibility was ensured by using audio-recordings and field notes during data collection. This was further strengthened by the inclusion of participants who were a true representation of the target group whose views reflected the broader population. Conformability was ensured by the co-coder participating in developing themes and sub-themes for analysis and ensuring that the narratives were those of the participants and not of the author, thus preventing bias. Transferability was not possible as only three public nursing colleges participated in the study, and it could be risky to generalise the study outcome to other nursing colleges. Dependability was ensured by stepwise replication and inquiry of data.

Ethical Considerations

Permission to conduct the study was requested from and granted by the South African Ministry of Health, Management of the three public nursing colleges and ethical

approval was obtained from the Unisa Research and Ethics Committee. Participation was voluntary. Informed consent for the study was obtained from the participants and their permission to make audio recordings was sought and confirmed after explaining the study.

To maintain confidentiality and anonymity the participants were named according to name of their college (C1), followed by their group (A or B), their year of study (L1), and their numeric participant code (P1). For the lecturers the format was the name of their college (C1) followed by their participant in numeric format (C1P1).

Data Analysis

The data was captured electronically. Recorded data was listened to and transcribed verbatim. The transcripts were read repeatedly to develop meaning and themes. Field notes were used to obtain any additional information. The data was analysed thematically, and initial coding was undertaken by the authors and verified by the co-coder to ensure conformability. Themes and categories were developed, and major qualitative findings were summarised. Analysis was presented according to phase 1.1 as student nurses' responses and phase 1.2 as lecturers' responses.

Findings: Phase 1.1

Understanding of Existing Knowledge about Social Media Platforms for Socialisation

The participants' responses described their understanding of existing knowledge about socialisation on SMPs as follows: The participants seemed to be confidently knowledgeable about social media. There was a high degree of understanding of SMPs. The majority understood SMPs as digital communication hubs, where communication can be with anyone, irrespective of location. The participants understood that communication and information on SMPs reached many people in a short period.

These platforms are used for socialising with others. SMPs were also identified as information-hubs where information is easily found and shared among users. They allowed for simple and fast interactions, and the most widely mentioned SMPs were Facebook, Twitter, Instagram and WhatsApp:

> I understand the internet, Facebook, Instagram, WhatsApp and Twitter. It's what most people do to socialise, communicate and connect with friends and family members who are near and abroad. (C1BL2 P1)

> The term social media is self-explanatory. It's used to socialise. It's away of being able to reach people faster, and socialise. It has got various advantages and disadvantages. (C2L1P4)

> What I understand about SMPs is that it's a communication network utilised to reach masses at once. It is actually time saving. (C3L1P1)

From the above quotes, it was evident that participants from all three colleges were knowledgeable about different SMPs, which is a good foundation for some aspects of ODeL.

Perceptions Related to the Use of Social Media Platforms in Teaching and Learning

The participants had differing perceptions on the usage of SMPs for T&L. The majority were positive, with all believing that use of social media in T&L was beneficial for both the students and the lecturers. A minority already use social media in their studies and referred to WhatsApp group communication with some using YouTube channels. The participants stated that the use of social media in their studies fostered greater interaction between the students and the lecturers. They believed that the access to SMPs on their devices also allowed them easy access to content and discussions with their lecturers and fellow participants, even when not in class. A small number saw SMPs as good storage facilities where they could access past examination papers and content. A few participants raised issues of tools and were concerned about others who did not have access to data, Wi-Fi or smartphones:

> Because the lessons are released during block, it will be so much easier to post study material links to the group. The students can receive notification on when material is available and links to where that material is stored. (C1BL1P3)

> Yes, I agree with her. Even if you travelled, maybe you went to the next province because of an emergency, they can record the lesson session because you were not there and send it to you via WhatsApp and you can listen to what they discussed during the lesson then you can understand. (C2L2P5)

> So, it can be used but it needs discipline, obviously there'll be people who'll deviate when there's a group. So, I think if there's discipline in the group, some rulesimplemented in the group, I think then it would work well. (C3L2P1)

Readiness to Implement Social Media Platforms

Most of the participants felt that their colleges were ready to implement SMPs immediately because digital tools, such as Wi-Fi, were already installed and operational.

Even though they questioned the technological capabilities of some older lecturers, they still believed the use of social media was feasible. A few of the students claimed their colleges were not ready for the social media movement, as indicated by the lack of digital tools needed to access those platforms. The students suggested that colleges provide them with sufficient electronic tools to use those platforms effectively. Some of the students claimed to be using SMPs, but it was not as successful as it could be because of lack of lecturer involvement:

> I'd say the college is ready for digitalisation. We have access to Wi-Fi; we are living in a digital era whereby our phones are our lives. They can e-mail us these materials. Most of our prescribed books are already on e-books. (C1AL2P2)

> I also think our nursing college is not ready technology-wise, I think we are still behind, for example the Wi-Fi was installed this year. So, I think we are still behind because I think for us to move onto let's say create a social media platform, first we need to create a student portal. (C2L2P1)

> Feasibility meaning it can work – however the resources need to be upgraded and improved. There are resources that are doing well with technology and others are lagging behind. (C3L1P5)

The participants perceived ODeL as an option to deliver T&L although some were hesitant as their college did not seem to ready to explore ODeL.

Existing Types of Social Media Platforms

Different types of SMPs were mentioned in the study including WhatsApp, Facebook, YouTube, Twitter, Instagram, Skype, Google and blogs. Approximately two SMPs were mentioned by each participant, with WhatsApp being the most popular. It is possibly the most familiar to them because they are currently using it in their personal space. The participants agreed that WhatsApp would be the easiest and simplest platform to integrate into their learning space. However, as much as WhatsApp was favoured, concerns were raised about control, regulation and the privacy of contact numbers. Facebook was considered favourably because it required no personal details and was preferred for its multiple abilities, including the posting of videos, sharing of links, and posting of basic information. YouTube was noted for its video content, particularly related to the practical component of nursing:

> WhatsApp groups; the same purpose the YouTube channel will serve; you can still upload that video on WhatsApp. Some students might think downloading on WhatsApp takes less data than YouTube. (C1AL2P5)

> I personally think each platform created has a purpose, like Facebook to connect us, Twitter for jokes, Instagram for bragging. (C2L1P1)

> I think even Facebook, where we can have a group for each level of study in the nursing college. Then in that way people can record themselves while they are practising a skill. (C3L2P2)

For nursing colleges without student portal systems which would like to activate ODeL, the use of familiar SMPs with some stringent control measures might be a good way to begin implementing remote T&L.

Findings: Phase 1.2

Existing Knowledge of Communication Platforms and Their Advantages

The participating lecturers knew and understood SMPs well. They labelled SMPs as technological communication tools, including Facebook, WhatsApp, Instagram, Google, YouTube, Zoom, Twitter and blogs. These tools are easy to use and can conveniently reach high numbers of people. Many were already using these platforms, although they expressed security and safety of information concerns. They also worried that some people might not know how to use certain SMPs:

> What I understand with SMPs is that it is a form of communication which is very convenient especially nowadays. You can communicate with people and don't have to be in direct eye-to-eye contact with that person. (C1P1)

> I think social media is where different types of people communicate in a platform that is not controlled, that is not formal. It can be Twitter, Facebook, and even WhatsApp. (C2P3)

> My understanding of social media platforms is what we have currently, your Twitter, Facebook, WhatsApp. These are for me, the social platforms where the conversation or interaction is as wide as possible. And anyone could be invited to interact. (C3P1)

Perceptions Related to Implementing Social Media Platforms in Education and Training

The participants had both positive and negative perceptions of implementing SMPs in T&L. Generally, there was a positive consensus for their addition and agreement that it would be advantageous to add SMPs as tools when teaching students basic nursing T&L. While questions and concerns were raised around the mechanics of these new tools, others centred around connectivity, such as Wi-Fi and data. If students were to require constant access to these platforms, this could increase their expenses as data is expensive in South Africa. Most of the participants agreed that they would require training and assistance to become proficient in the effective use SMPs in teaching:

> I agree with her. I think social media can be used as a teaching tool. I have uploaded a video of myself this year on Facebook where I was demonstrating the mechanism of labour for my students and it was viewed almost by all students, about 1 200 views. (C1P2)

> I think in order to implement SMPs, first of all, the lecturers need to be capacitated, because it will involve computer literacy and technology. (C2P5)

> My take on that. It gives me mixed feelings. How do we control it? What are the security measures that we can put in place? How do we make certain, that the response that comes through is really the student that is responding? (C3P4)

Barriers to Implementing Social Media Platforms in Teaching and Learning

Computer literacy skills for both the lecturers and the students were questioned. ICT was also seen as a barrier, because most colleges have a limited number of ICT personnel. Some questioned the availability of tools for students to be able to use SMPs because most claimed their computer laboratories can only accommodate a handful of students:

> On feasibility, my view is that the college is not ready. I believe the college should benchmark as we move to higher education as to how other institutions are doing. (C1P4)

> We do have a computer lab where students are able to access those platforms. (C2P1)

> The implementing of social media platforms in the nursing college I think is still a very big challenge if I think about it. (C3P2)

Preferred Types of Social Media Platforms

WhatsApp was considered the most effective platform that should be implemented in T&L, followed by Facebook and YouTube. Easily accessible, interactive and immediate types of platforms where the students can get help as requested, and where it will be easy to reach the lecturer were valued. It was evident that the participants were of the view audio-visuals are the way to go for 21st century T&L, believing that if one sees something, it is easy to remember. Moreover, material that is recorded can be viewed multiple times until learning has taken place:

> We have a WhatsApp group. And what is nice, I have one for the students and I have one for the operational managers. (C1P1)

> As I said before they can form WhatsApp groups, and on WhatsApp there is voice messages if maybe somebody want to talk to one another. (C2P2)

> Facebook page, then you can have your topic for discussion, and you will have your followers that you will also monitor. (C3P1)

Discussion

The findings revealed that a "social media platform" concept was clearly understood by the lecturers and the students. They all agreed that it is a tool that facilitates prompt communication and connects many people. The most frequently used and favourable SMPs were WhatsApp, Facebook, YouTube and Twitter; however, this required ownership of costly smartphones and tablets.

According to the participants, the roll-out of SMPs as additional tools for studying was considered a positive move. However, concerns were raised about accessibility of technological equipment involved and the capabilities about older lecturers' ability to implement this in T&L. The study findings concur with the findings of a study conducted in Saudi Arabia which examined the application and usefulness of social media and mobile devices resource availability and interaction with academics in HEIs. Online social media used for collaborative learning had significant impact on interactivity with peers, teachers and online-knowledge-sharing behaviour. This indicates that engaging students in collaborative learning via social media leads to better academic performance (Ansari and Khan 2020).

Similar findings emerged from Sehapi's (2020) study on the impact of commonly used social media, such as WhatsApp, LinkedIn, YouTube, Facebook, Twitter and Google Plus, on T&L in HEIs in Lesotho. Social media use led to increased interaction and engagement between the teachers and the students, and it enhanced learning experiences and practices. Thus, social media has converted a routine daily exercise for some into something that attracts the attention of students, researchers, and academics progressively. Advantages of social media for learning were identified as it being used for recreational purposes, academic activities, and information seeking (Sehapi 2020).

The students and the lecturers acknowledged the fact that the Department of Health (DoH 2013) was in the process of developing their college's infrastructure, but many were not yet ready to roll-out SMPs for T&L. They argued that not all students could afford smartphones or tablets, and the cost of data was prohibitive. Using social media requires internet and ICT skills. The lecturers perceived ICT personnel as requiring advanced training before they are able to capacitate others. The other concern was internet capacity, because the internet becomes overloaded during class periods when more users log into the system at once. This was perceived as a challenge that could compromise the quality of T&L and disadvantage some students.

According to a study on ICT in education by Ratheeswari (2018), the use of ICT in the classroom is important to give students opportunities to learn and apply the required 21st century digital skills. ICT improves T&L and is important for lecturers to continue in their role as creators of pedagogical environments. ICT, as exemplified by the internet and interactive multimedia, is obviously an important focus for future education and needs to be effectively integrated into formal T&L. From the literature review, it is evident that each social media platform can be used for different reasons. The participants argued that WhatsApp was good for revision purposes whilst YouTube better suited tutorials. They all agreed that it was communication between the students and the lecturers via WhatsApp that saved the 2020 academic year.

The lecturers believed that if T&L is to be digitalised, interactive boards should be used as they are multifunctional and innovative. These findings are in line with a study on the impact of social media in the health field, where it was found that medical health researchers do share their research findings on SMPs (Pulido et al. 2018). They were of the view that academic lessons might be shared in some of the secured SMPs, as suggested by the findings of this study. It was evident that the students and the lecturers seemed to be in favour of WhatsApp, YouTube, Facebook and Twitter. The students that reported they would be happy to have the learning content recorded, which will enable them to repeatedly listen. According to Nasta (2019), engagement between the students and the institution can be sustained through social media such as YouTube, Facebook or Instagram live video. The benefits of social media in the education process do not stop at the lecturer-student relationship as there are other benefits that can be found in higher levels of social networking as well. For example, principals or administrators can find new ways to integrate social media.

The participants used SMPs that appeared familiar and easy to use. The responsibilities of the lecturers and the students were then considered and aligned to T&L using SMPs. The students and the lecturers' expectation of the college were then aligned to support and provide governance in using SMPs in T&L to provide monitoring and control in an ODeL context.

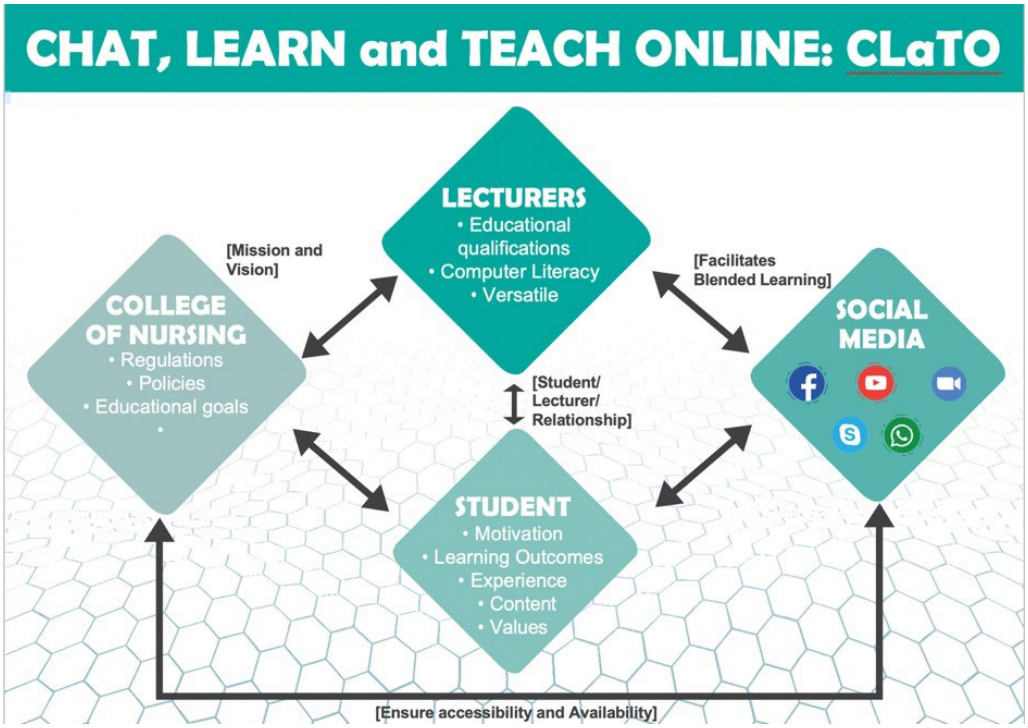

Figure 1: Conceptual T&L model using SMPs that integrate nursing theory and practice
Source: Authors' model

The study findings showed that prompted by the pandemic the authors tried to be innovative and guide colleges to move from face-to face T&L and to adopt ODeL. They developed a conceptual model of SMP use that integrates nursing theory and practice in T&L called Chat, Learn and Teach Online (CLaTO), as shown in Figure 1.

The model in Figure 1 is student-centred and directs all T&L activities towards the students by enhancing T&L using the SMPs. The origin of the developed model comes from the three public nursing colleges and the involvement of the students and the lecturers and their findings and theories guided its development. Furthermore, the authors being both face-to-face and ODeL lecturers used their exposure, innovation and creativity to develop the model. Application of innovative T&L methods is critical to motivate and engender a spirit of learning as well as enthusiasm on the part of students (Subramani and Iyappan 2018).

The study findings support the theory of connectivism, where students will be connected with their lecturers and study material at a distance. It confirms the suggestion proposing that technology is changing the what, how and where people learn – even at a distance.

TDT, where the students and the lecturers are able to interact by using social media, supports the constructivist viewpoint, as does e-learning. Cognitive science principles describe how electronic educational technology can be used and designed to promote effective learning.

The study findings are supported by Rwodzi, De Jager and Mpofu (2020), who showed that teachers are responsible for changing the teaching approach to place the students at the center of the activities in their studies. The students need sufficient resources to enhance access to SMPs in order to achieve their learning outcomes. These outcomes should be accessible online ahead of block periods to stimulate the students' motivation to learn. The learning content must include activities that are student-centered to allow the students to take the initiative to learn even remotely. The chosen SMPs should mainly be used to communicate academic matters that will benefit the students, the lecturers and the nursing colleges.

The students and the lecturers should develop interactive relationships through information sharing, and they are responsible to maintain by the nursing colleges' regulations and policies to attain their educational goals. The students and the lecturers were concerned about control measures as SMPs are open for everyone and it is not easy to regulate participation. Thus, nursing colleges must develop rules and regulations that modify the conduct of both the students and the lecturers, who must conduct themselves in line with the mission and vision of the colleges when using SMPs. The lecturers must be willing to change and learn new teaching approaches to align their teaching methods to fit a 21st century student nurse. The lecturers have a responsibility to monitor and control the content posted on the approved SMPs and should remain accessible when necessary to engage with the students and their peers and share educational information.

Nursing colleges are responsible for providing access to equipment for the lecturers and the students, ensuring clear regulations and policies that direct the use of SMPs in T&L. The lecturers must provide quality education and training for the students within the accredited curriculum. Rochefort's (2019, 2) study on regulating SMPs revealed that in order to ensure the quality information, data contamination should be prevented.

Appropriate SMPs for T&L identified by the participants were YouTube, WhatsApp, Skype or video-conferencing and Facebook. These platforms can be used for remote teaching, to assign learning tasks to the students. Sharna (2023, 1) in support of this study indicated that many schools, colleges and universities have begun interconnecting large numbers of students through SMPs. Social media use in education aids in disseminating valuable information and connecting learning groups and other educational systems. SMPs and websites provide opportunities to students and schools to improve techniques of learning and teaching, by providing modules or plugins that empower sharing and collaboration.

Zachos, Paraskevopoulou-Kollia and Anagnostopoulos (2018, 4) determined that Facebook was the most popular social network sites used among their participants. The nursing college Facebook page could be used by everyone for different purposes such as events and projects, as well as marketing the college itself. Posted YouTube videos enhance both the theoretical and the practical components of T&L. The students and the lecturers are able to form different WhatsApp groups for communication among themselves.

Conclusion

It is evident that the participants in the nursing fraternity were willing to embrace the online developments of the 21st century. The students acknowledged prominent usage of different SMPs and expressed their potential for educational purposes. The students and the lecturers believed control measures are needed to maintain order and discipline according to set protocols. The students and the lecturers supported WhatsApp, YouTube and Facebook SMPs being used as foundations for remote T&L.

The authors recommend that the model be piloted in the researched colleges. This model will expose the colleges to T&L in an ODeL context. Thus, creating an awareness for them to shift to ODeL context and the need to conduct further research in the use of social media in T&L. Furthermore, policies for the regulation of social media in T&L need to be developed and this warrants future research. The research was limited to three public nursing colleges; therefore, these findings cannot be generalised to other colleges.

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References

Aichner, T., M. Grünfelder, O. Maurer, and D. Jegeni. 2021. "Twenty-Five Years of Social Media: A Review of Social Media Applications and Definitions from 1994–2021." *Cyberpsychology, Behavior, and Social Networking* 24 (4): 215–222. https://doi.org/10.1089/cyber.2020.0134

Alhumaid, K. 2020. "Qualitative Evaluation: Effectiveness of Utilizing Digital and Social Media in Education." *Journal of Utopia y Praxis Latinoamericana* 25 (6): 465–475. https://doi.org/10.21125/edulearn.2020.1359

Allgaier, J. 2018. “Myspace.” In *The SAGE International Encyclopedia of Mass Media and Society*, edited by D. Merskin. London: Sage.
Ansari, J. A. N., and N. A. Khan. 2020. “Exploring the Role of Social Media in Collaborative Learning the New Domain of Learning.” *Smart Learning Environments* 7 (9): 1–16. https://doi.org/10.1186/s40561-020-00118-7
Brink, H., and G. van Rensburg. 2022. *Fundamentals of Research Methodology for Healthcare Professionals*. 5th ed. Cape Town: Juta.
Campillon-Ferrer, J., P. Miralles-Martinez, and R. Sanchez-Ibanez. 2021. “The Effectiveness of Using Edublogs as an Instructional and Motivating Tool in the Context of Higher Education.” *Humanities and Social Sciences Communications* 8 (1): 35–49. https://doi.org/10.1057/s41599-021-00859-x
Chomunorwa, S., E. Mashonganyika, and A. Marevesa. 2022. “Educator Perspectives on the Use of Technology in Schools in Previously Disadvantaged Communities.” *South African Computer Journal* 34 (2): 35–49. https://doi.org/10.18489/sacj.v34i2.1088
Creswell, J. W., and V. L. Plano-Clark. 2018. *Designing and Conducting Mixed Methods Research*. 3rd ed. Thousand Oaks: Sage.
DoH (Department of Health). 2013. *The National Strategic Plan for Nurse Education, Training and Practice 2012/13–2016/17*. Pretoria: Government Printer.
Downes, S. (2005). “An Introduction to Connective Knowledge.” Stephen’s Web (weblog), December 22. http://www.downes.ca/post/33034
Douglas, N., M. Scholz, M. Myers, S. Rae, A. Elmansouri, S. Hall, and S. Border. 2019. “Reviewing the Role of Instagram in Education: Can Photo Sharing Application Deliver Benefits to Medical Dental Anatomy Education?” *Medical Science Educator* 1 (29): 1117–1128. https://doi.org/10.1007/s40670-019-00767-5
Huezo, E. “Connectivism for Future of Learning.” Insider. Accessed July 7, 2020. https://insider.fiu.edu/connectivism-future-learning/
LoBiondo-Wood, G., and J. Haber. 2014. *Nursing Research: Methods and Critical Appraisal for Evidence-Based Practice*. 8th ed. St Louis: Mosby/Elsevier. https://doi.org/10.1016/S2155-8256(15)30102-2
Madge, C., M. Breines, M. Tapiwa, A. Gunter, J. Mittelmeier, P. Prinsloo, and P. Raghuram. 2019. “WhatsApp Use among African International Distance Education (IDE) Students: Transferring, Translating and Transforming Educational Experiences.” *Learning, Media and Technology* 3 (44): 267–282. https://doi.org/10.1080/17439884.2019.1628048
Mayer, R., J. Sweller, and R. Moreno. 2017. “E-Learning Theory.” Learning Theories. Accessed July 7, 2020. https://learning-theories.com/e-learning-theory-mayer-sweller-moreno.html
Moore, M., and G. Kearsley. 1996. *Distance Education: A Systems View of Online Learning*. London: Thomson.
Moore, M., and G. Kearsley. 2012. *Distance Education: A Systems View of Online Learning*. 3rd ed. Boston: Wadsworth Cengage Learning.
Nasta, R. “The Role of Social Media in Education.” JCBN International School. Accessed July 7, 2020. https://www.jbcnschool.edu.in/blog/social media-in-education/
Polit, D., and C. Beck. 2018. *Nursing Research: Generating and Assessing Evidence for Nursing Practice*. 9th ed. Philadelphia: J.B. Lippincott.
Pulido, C., G. Rendondo-Sama, T. Sorde-Marti, and R. Flecha. 2018. “Social Impact in Social Media: A New Method to Evaluate the Social Impact to Research.” *PLoS One* 13 (8): 1–20. https://doi.org/10.1371/journal.pone.0203117

Rapanta, C., L. Botturi, P. Goodyear, L. Guardia, and M. Koole. 2020. “Online University Teaching during and after the Covid-19 Crisis: Refocusing Teacher Presence and Learning Activity.” *Postdigital Science and Education* 1 (2): 923–945. https://doi.org/10.1007/s42438-020-00155-y

Ratheeswari, K. 2018. “Information Communication Technology in Education.” *Journal of Applied and Advanced Research* Suppl 1 (3): 45–47. https://doi.org/10.21839/jaar.2018.v3iS1.169

Rochefort, A. “Avoiding the Pitfalls of Social Media Regulation.” Freedom House. Accessed July 23, 2020. https://freedomhouse.org/article/avoiding-pitfalls-social media-regulation

Rwodzi, C., L. de Jager, and N. Mpofu. 2019. “The Innovative Use of Social Media for Teaching English as a Second Language.” *Journal for Transdisciplinary Research in South Africa* 16 (1): 1–15. https://doi.org/10.4102/td.v16i1.702

Sehapi, K. 2020. “The Impact of Social Media on Teaching and Learning in Higher Educational Institutions in Lesotho.” Master’s thesis, University of Kwa-Zulu Natal.

Sharna, K. “Role of Social Media in Education.” The Asian School. Accessed July 7, 2020. https://www.theasianschool.net/blog/role-of-social media-in-education/

Siemens, G. 2005. “Connectivism: A Learning Theory for the Digital Age.” *International Journal of Instructional Technology and Distance Learning* 2 (1): 3–10. https://lidtfoundations.pressbooks.com/chapter/connectivism-a-learning-theory-for-the-digital-age/

Stahl, N. A., and J. R. King. 2020. “Expanding Approaches for Research: Understanding and Using Trustworthiness in Qualitative Research.” *Journal of Developmental Education* 44 (1): 26–28.

Subramani, P. C., and V. Iyappan. 2018. “Innovative Methods of Teaching and Learning.” *Journal of Applied and Advanced Research* 3 (Suppl 1): 56–57.

Vygotsky, L. S. 1978. *Mind in Society. The Development of Higher Psychological Processes*. Cambridge, MA: Harvard University Press.

Wafa, H. 2022. “The Role of Social Media in Improving Teaching According to the Perspective of Teachers of the Elementary Schools in East Jerusalem.” *UcoPress* (2022): 1–236.

Zachos, G., E-A. Paraskevopoulou-Kollia, and I. Anagnostopoulos. 2018. “Social Media Use in Higher Education: A Review.” *Education Science* 8 (4): 1–13. https://doi.org/10.3390/educsci8040194

Chapter 11

Supporting Adult Basic Education and Training Students at the University of South Africa during the Fourth Industrial Revolution

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Abstract

Teaching adult students in the context of the Fourth Industrial Revolution poses not a few difficulties in the global higher education context. Yet, more still has to be done to address teaching and learning since there are so many challenges facing the students. Generally, students at the University of South Africa are adults who are working, but younger students also register with the institution, and they require support. Student support is one of the cornerstones of open distance e-learning. This chapter focuses on the students in the Adult Basic Education and Training Department, which falls within the School of Educational Studies. The adult basic education and training tudent cohort comprises both older and younger students who are keen to learn. However, the lack of internet connectivity; unavailability of network; shortage of devices for online learning; and lack of computer skills made their teaching and support during the Covid-19 pandemic difficult, with many students living in rural areas. The chapter reports on a study that investigated the challenges relating to student support for adult students in the context of the Fourth Industrial Revolution. The author used the community of inquiry theoretical framework, which promotes interaction between student, teacher and content. At the University of South Africa, teaching and learning takes place on the myUnisa learning management system. The study findings suggested that some students do not have the necessary skills to use myUnisa. The lack of skills in the use of technologies is a cause for concern. The new technologies continue to offer both opportunities and challenges to students. Training of both teachers and students should be ongoing to ensure student success.

Keywords: adult learner; open distance e-learning; student support; Fourth Industrial Revolution; adult basic education and training

Introduction

The notion of the Fourth Industrial Revolution (4IR) was put forward by Klaus Schwab, who founded the World Economic Forum (WEF) in 1971, to capture the rapidity and scale of technological change and its impact on society (Mdluli and Makhupe 2017). The changes driven by technological transformation influence the way people do things daily. The WEF (2015, 5) identified six software and services megatrends which are shaping society, namely: people and the internet; computing, communications, and storage everywhere; the internet of things; artificial intelligence (AI) and big data; the sharing economy and distributed trust; and the digitisation of matter. Society today is dependent on intelligent technology that is powered by AI (Xing and Marwala 2017).

The University of South Africa (Unisa) began as a correspondence university, serving students who were working full time. Unisa migrated through different stages, from correspondence, to distance education, open distance learning (ODL), and more. Currently, Unisa has adopted open distance e-learning (ODeL) as its business model, enabling the university to register many students who previously did not have access to HE in South Africa, in the Southern African region and in other countries of the world. Unisa has therefore had to introduce support systems and structures to support the students from a range of backgrounds; consequently, the support mechanisms must be diversified, as the institution has undertaken to place students first on its teaching and learning (T&L) agenda. Student support is one of the cornerstones of ODL. According to Thorpe (2005), Simpson (2003) and Tait (2000), supporting students contributes to promoting the student success rate in distance education. Students studying via distance education experience very specific problems relating to this mode of T&L. Many of the students who register with Unisa do so because the courses are less expensive than those offered by contact universities. Unisa thus recognised the need for student support in T&L that takes place through a learning management system (LMS).

In preparation for the full adoption of the ODeL model, the Unisa undergraduate modules were placed on the university's myUnisa LMS, as a means to facilitate access to online T&L. Thus, the Integrated Tutor Model was introduced and formalised by Unisa in 2013. Currently, Unisa students write their examinations online; this was made possible by integrating ODL and e-learning. Unisa managed to conduct online examinations even during the Covid-19 pandemic.

Research Problem

The main problem identified in the study was the challenges relating to student support for adult students in the context of the 4IR. Unisa has adopted an ODeL model to increase students' access to HE. However, internet connectivity and other skills remain a problem to many students living in rural areas. Even though the 4IR is currently underway, both students and lecturers are not sufficiently reskilled and upskilled to ensure student support on myUnisa.

Literature Review

Globally, the concept of 4IR has changed the way higher education institutions (HEIs) have come to conduct teaching, learning, research, community engagement and academic citizenship. Schwab (2016a; 2016b, n.p.) refers to these changes as the "fusion of technologies across the physical, digital and biological worlds." Davis (2016, n.p.) describes 4IR as, "the advent of cyber-physical systems involving entirely new capabilities for people and machines". Accordingly, Davis (2016) observes that while these capabilities are reliant on the technologies and infrastructure of the Third Industrial Revolution (3IR), the 4IR represents entirely new ways in which technology becomes embedded within societies and even human bodies. Rural students face unprecedented challenges in adjusting to a new mode of life and learning. Universities play a vital role in shaping societies in the global context, in that they equip students with the skill set required to engage in economic activities. Therefore, university programmes should be responsive to societal challenges.

The majority of graduates during the 3IR lacked the necessary skills to function fully in the economy of their country. Students therefore require extensive skills to function optimally in the 4IR. It is in this context that students should be continuously trained to acquire some skills set needed in market economy.

The myUnisa LMS includes electronic tutoring (e-tutoring), with the goal of improving the student success rate. The e-tutoring refers to online tutoring on the LMS. The term "online tutor" includes any person undertaking a role to support and enable students to learn online effectively. E-tutors are expected to scaffold learning by acting as the centre of learning initially, and gradually withdrawing support as students gain the confidence to become independent in the construction of knowledge (Pitsoane and Lethole 2020). Unisa modules in undergraduate studies are tutor linked and this is done to support the students. According to Tait (2003), an effective student support system is at the heart of any ODL institution. Thus, ODL institutions have developed and introduced systems and structures as part of their student support programmes. Segoe (2017) reports an improvement in the learner success rate following the adoption by Unisa of a tutor support model. Mtsweni and Abdulla (2014) explain that tutors also perform a technical

role in the facilitation of learning, since students need technical skills. This role is mostly performed when tutors facilitate online. The LMSs sometimes present technical challenges to students and this is a cause for concern.

Student support in DE remains key to student success. DE students study on their own without in-person supervision by their lecturers, and the fact that many drop out due to lack of student support is cause for concern. Most adult students display a high degree of motivation, and they bring a degree of experience to their learning. However, even though the 4IR is currently underway, many students lack internet connectivity in their environment. Some of the students face challenges, including limited financial, technological and human resources, the adoption of online learning, digital competence and socio-economic factors. Even though the students are motivated to learn, the lack of access to computer facilities for T&L is a cause for concern.

The Unisa student population comprises both working adults and unemployed younger students, all of whom require support. The study reported on in this chapter sought to explore student support strategies as a means to lower the dropout rate in the adult basic education and training (ABET) department. Human beings have undergone revolutions throughout the ages, and these revolutions have presented both opportunities and threats. In the 4IR, students should be equipped with a variety of technological skills to enable them to succeed in their studies, and so the Unisa programmes need to respond to the labour market of the 21st century. Even though the 4IR presents HEIs with challenges, for example, internet access, at the same time it promises more opportunities in T&L.

T&L using technologies takes place at a much faster pace, and technologies evolve rapidly (Agrawal, Gans and Goldfarb 2018; Harari 2018; Marwala and Hurwitz 2017). This revolution influences the form taken by teaching and learning in HEIs. Students at Unisa are learning and supported through myUnisa, which allows student-to-student, student-to-content, and student-to-teacher interactions to take place. These promote flexible T&L and deep learning, all of which signal a fundamental shift in how T&L take place.

Because the technologies of the 4IR change frequently, both students and lecturers need to be reskilled and upskilled continuously. Unfortunately, the majority of Unisa students are still stuck in the 3IR, as they lack the necessary internet connectivity and other skills to access T&L. This continues to pose challenges to Unisa students.

While, on the one hand, the technological advancements of the 4IR will reduce the number of workers required to perform certain tasks, on the other hand, it will create increased demand for the performance of others, leading to new job creation (WEF 2018). Therefore the skills that will be in demand are analytical thinking, innovation, active learning, creativity, technological design, complex problem solving, leadership and social influence, reasoning, systems analysis and evaluation (WEF 2018). However,

the emphasis on some of these competencies is having a negative effect on adult students, at Unisa and elsewhere, such as students' lack of the digital competencies necessary to navigate myUnisa. Generally adult students find working with technology difficult, which has a negative effect on T&L. Digital phobia, to use the informal term used to convey reluctance to become fully immersed in the digital age out of fear of negative consequences, may lead to a high dropout rate in both the ABET department and the university more widely.

Schwab (2016a; 2016b) proposes four types of intelligence, namely, contextual, emotional, inspired and physical intelligence, which are crucial in order to minimise the potential disruption brought about by the 4IR. Lorenz et al. (2015), speaking of the rise of new digital industrial technologies, state that transformation will take place at a speed hitherto never experienced. Although it is not known at precisely what speed the 4IR will unfold, it is crucial that the response to it must come from collective stakeholders, that is, the public and private sectors, academia and civil society (Schwab 2016a; 2016b). In this wave of 4IR, the future presents numerous challenges and possibilities to stakeholders. A more optimistic view by Stewart, De and Cole (2015, 1) highlights the way in which technology has led to overall job creation in the past. In this age of machine intelligence, creative abilities, leadership skills and strategic thinking are important competencies (Brynjolfsson and McAfee 2014).

According to Makhanya (2019, cited in Ravhudzulo 2019), the 4IR has changed the way in which institutions and markets operate in the 21st century. HEIs have a role to play in educating society about the challenges and opportunities introduced by the 4IR. This means that there should be a new pedagogy of student support using new technologies. In this chapter I place student support in the centre of new technology pedagogy, even though most communities are still grappling with the digital divide. Castells (2001, 247) defines the digital divide as "inequality of access to the internet," while Van Dijk (2006, 222) calls it the "gap between those who do and those who do not have access to the internet", Norris and Inglehart (2001, 4) term it "any and every disparity within the online community".

Within the context of the 4IR, when students need certain skills in order to participate in the labour market, HEIs have a role to play in transforming their curriculum to respond to labour market needs (Schwab 2016a; 2016b). Marwala (2020) suggests that new technologies and computers that were dominant during the 3IR are currently needed to equip graduates with new skills that will assist the economy. AI, robotics, and the internet of things have changed the labour market for the better during the 4IR.

The current president of South Africa, Cyril Ramaphosa (2018) has encouraged HEIs and the private sector to start thinking about the adoption of 4IR. He conveyed this message after attending the WEF, where 4IR was discussed in detail (Schwab 2016a; 2016b). The government has therefore mandated HEIs to overcome the difficulties and identify opportunities presented by 4IR.

Philbeck and Davis (2018) remind us that the 4IR continues where the First, Second and Third have left off, and that the information and communication technology of the 3IR is crucial and serves as the point of departure for the 4IR – the latter therefore does not occur in isolation from its predecessors.

In the e-learning environment, Rovai and Downey (2010) view support intervention as crucial in influencing, learning immersion and eventually success. In a study to assess if online technology can build a student-centric community and encourage academic involvement, the instructors argued that technologies are valuable in dealing with students' collaboration challenges and help them accomplish the learning outcomes (Trevathan and Myers 2013).

Today's global HE system, characterised by the widespread adoption of advanced technologies and a changing student demographic, compels ODeL institutions to develop and implement new teaching pedagogies that will best respond to the academic needs of students (Trevathan and Myers 2013).

From 2009 to 2013, mobile learning, social media, bring your own devices, and using mobile devices that students already possessed became popularised in T&L in HE. "Sadly, however, although mobile social media, open educational resources, and other technology enhanced learning opportunities are available in South Africa, teaching and learning practices in higher education remain largely untransformed" (CHE 2016, 172). HEIs face huge challenges of capacity in technology-assisted teaching, learning and research.

Anderson (2005) is drawn to thinking about technologies in the context of Moore's (1989) description of education communications as being made up of student-student, student-content and student-teacher interactions, but continued to focus on the ones that are most relevant to a learning-centric view, and those that involved students. In this context, there are three interactions. Therefore, if the interaction is well created, there will be high learning experience in T&L (learning centric view). HEIs are continuing to create online learning platforms. As Hase and Kenyon (2000, n.p.) note, "heutagogy looks to the future in which knowing how to learn will be a fundamental skill given the pace of innovation and the changing structure of communities and workplaces".

In online learning, "The teacher's role becomes one of facilitator and guide as students use a very wide of resources both online and traditional to solve problems and to gain personal understanding and capacity" (Siemens 2005, 3). Siemens (2005, 5) argues that "we derive our competence from forming connections" and further that "our capacity to know more is more critical than what is currently known". According to Anderson (2005, 34):

> Learning occurs as individuals discover and build connections between nodes. Learning environments are therefore created and used by individuals as they access information,

process, filter, recommend, and apply that information with the aid of machines. Rather than learning facts and concepts, connectivism stresses learning how to create paths to knowledge when it is needed. Students form a community in online learning.

As Downes (2006, n.p.) notes, "Learning occurs in communities, where the practice of learning is the participation in the community". Student–student and images and videos can be uploaded to enhance learning.

The growing espousal of e-learning to execute T&L functions (Smith and Smith 2007) contribute to an increasingly competitive HE sector. The swift advancement in technologies entices HEIs to use them (Trevathan and Myers 2013). Contemporary technologies allow for more rapid feedback on students' work, while teachers can update and revise learning materials more frequently than they can with printed materials (Daniel 2019).

Methodology

The term "research design" refers to decision about how to achieve research goals linking theories, questions and goals to appropriate resources and methods (Flick 2018). In summary, the research design is a plan for collecting and analysing evidence that helps to answer question posed (Ragin 1994). Conceptual papers typically focus on proposing new relationship among constructs, the purpose is thus to develop logical and complete arguments about these associations rather than testing them empirically (Gilson and Goldberg 2015).

This chapter is a typical typology research design. In typology, the aim is to develop a categorization that explains the fuzzy nature of many subjects by logically and causally different constructs into a coherent and explanatory set of types (Cornelissen 2017). Typologies also offer a multidimensional view of the target phenomenon by categorising theoretical features or dimensions as distinct profiles that offer coordinates for empirical research (Cornelissen 2017).

Community of Inquiry Framework

This chapter has adopted Garrison et al.'s (2000) CoI as the theoretical framework for this chapter. According to Swan, Garrison and Richardson (2009, 4) the CoI framework accepts that critical learning requires establishing a community. As an online learning model, the three presences, namely, the cognitive, social and teaching presences, are vital constituents for the pursuit of critical inquiry in educational environments (Swan, Garrison and Richardson 2009, 5; Waghid 2016). The CoI theory is built upon a constructivist view of learning and on John Dewey's idea of practical inquiry within a

particular community (Fiock 2020). The three interconnected components of CoI framework are used to support online learning modes.

Social Presence

Garrison (2007) describe the social presence in the CoI as consisting of open communication, group cohesion and affective expression. Students communicate online with their fellow students and instructors express their feelings and engage in collaborative tasks to achieve a common educational goal (Anderson et al. 2001). The students collaborate amongst themselves socially and emotional in an online.

Teaching Presence

Teaching presence consists of three fundamental stages, design and organisation, facilitating discourse and direct instruction (Anderson et al. 2001). Design and organisation happen before the start of the course where the instructor develops course materials and organises them in a way that makes it easy for students to navigate around them (Fiock 2020; Stenbom, Jansson and Hulkko 2016). Facilitating discourse involves instructor guiding and facilitating students' learning (Garrison 2007). The students are supported to achieve the learning objectives. In this context, the instructor provides feedback to the students on the LMS, thus there is student to teacher interaction.

Cognitive Presence

Cognitive presence involves students' use of critical skills to construct meaning and understanding through a deep and sustained reflection (Anderson et al. 2001). According to Garrison et al. (2000), cognitive presence occurs in four stages, namely, the triggering event, exploration, integration, and resolution.

Approach Used to Obtain Data

For the purposes of this chapter, the author reviewed literature on 4IR, ODL and new technologies, and adopted the community of inquiry (CoI) approach to analyse the literature. Gilson and Goldberg (2015) state that researchers use conceptual papers to interact with the literature while focussing on a particular research study.

Discussion

According to the Future of Jobs Report (WEF 2018), graduates require a vast number of skills and competencies to solve complex problems in society, including: social skills, which could include persuasion, emotional intelligence and teaching others, and

cognitive skills, which could include creativity, mathematical reasoning, processing skills, critical thinking, and more.

The Future of Jobs Report (WEF 2018, vii) identified four specific technological advances, namely, ubiquitous high-speed mobile internet; AI; widespread adoption of big data analytics; and cloud technology as being set to dominate between 2018 and 2022. These can be seen as the drivers of change. Unisa has increasingly been required to anticipate the skills with which it will need to equip its students and graduates during the 4IR. The institution will have to collaborate with companies in order to broaden the skills set of its students and graduates. The offerings that HEIs make available should be in line with what the market requires.

Currently, the 4IR is making a rapid technological impact on HE. HEIs were aware of the advent of the 4IR, and so a necessary point of discussion is the preparedness of these institutions to embark on this journey. This revolution will continue for many years to come, and its effects on HE will not be merely fleeting. The literature review also indicated that society and HEIs are finding it difficult to adapt to the 4IR in the context of T&L.

The 4IR brings exciting opportunities to society, HEIs, the economy and industry. All of these are supportive of an environment that is favourable to T&L. Therefore, HEIs should embrace this revolution and make the best use of it. Moreover, the 4IR has arrived at a time when transformation is rapidly setting the tone in HEIs in South Africa and will therefore proceed in tandem with the new ways of T&L that transformation demands.

Marwala (2009) identifies three types of AI, namely: machine learning, computational intelligence, and soft computing. In group discussions on the LMS, students interact with one another, and identify and solve learning problems. Marwala (2009) terms this individual intelligence, but collectively students can come up with a learning solution. This example shows how AI influences teaching on LMSs in ODeL. Students are able to upload assignments, post comments, and watch videos as part of group discussions on an LMS. This can be referred to as deep learning in the machine learning context. As Moloi and Marwala (2020) observe, the 4IR has changed the way people think and act in teaching, learning and the workplace.

According to the Future of Jobs Report (WEF 2016), the T&L programmes that students take in HE sometimes become redundant after four years because of technology diffusion in the economy and labour market. The curricula that HEIs offer need to be valid and to fulfil the societal needs of the 21st century. The students should be trained and supported with the relevant skills set. According to the National Development Plan 2030 (NPC 2011), South African HEIs should offer a curriculum that is relevant to 21st century skills. The South African government is providing internet connectivity to rural communities to overcome the problem of the digital divide.

The difficulties brought about by the digital divide remain a thorny issue in online learning during the 4IR. A large portion of the budget in developing countries is spent on quality education, and the problems are gradually solved as barriers in online learning fall away. The dialogue in online learning motivates students to learn and succeed in their studies. In such a context, the students speak freely and express diverse views that promote social presences in learning. The students develop and promote friendships during online learning. HEIs learning have a duty to generate ideas and solve societal problems. The department should promote sound graduates in HE. Successful student support will ensure quality of learning through teaching in the department. HEIs should use new technologies to understand students better during the 4IR.

Conclusion

According to the literature review, one of the principal tasks of every university is to educate the youth. In the era of the 4IR, it is important to implement appropriate programmes that will respond to the needs of society. To achieve this, HEIs need to implement appropriate learning programmes and offer better learning experiences to their students. Educational services must be improved radically and to respond to the economy in the global society.

There has been a shift in the way people think, do things and interact with their space in the HE environment during the 4IR. Industrial revolutions are more than simply eras in which new technologies are developed and introduced. Technology is the cornerstone of the 4IR.

T&L are connected by the instructor on LMSs. There is student-to-student and student-to-teacher interaction on LMSs. However, there are some students who still struggle with internet connectivity and find it difficult to access T&L.

Lecturers are thinking of teaching and research methods in the 21st century or 4IR. The world is changing rapidly due to new technologies. The 4IR has an impact on T&L in HE. Undeniably, online learning should be fit for purpose. Students should be provided with quality T&L. Online learning reaches many students within a very short space of time. Although some important successes have been achieved in online learning, it is important to improve internal and external quality assurances in online learning.

Connectivity continues to pose challenges for HE students. Connectivity specifically involves those students living in rural areas who have to travel to the nearest towns and cities to access the internet.

The challenges that HE will be facing will become more pressing and complex in nature. There should be a connection between HEIs and society. The growing disconnection seems almost too powerful to reverse, perhaps not even with discussion. The policies

should adopt the frameworks of ubuntu, which loosely translated means that everybody generally knows everybody else in their community. There should be policies that create knowledge systems that promote issues of social justice and human dignity. HEIs should focus on transdisciplinary, community engagement, responsible research, collaboration. The curriculum should move from Eurocentric to Afrocentric, therefore, the centre needs to be moved in terms of curriculum transformation, and so on. The curriculum should be responsive and offer solutions to societal challenges, for example, climate changes, poverty, economic challenges, and more.

References

Agrawal, A., J. Gans, and A. Goldfarb. 2018. *Prediction Machines: The Simple Economics of Artificial Intelligence*. Brighton, MA: Harvard Business Review Press.

Anderson, D. L. 2005. "A Portrait of a Feminist Mathematics Classroom: What Adolescent Girls say about Mathematics, Themselves, and Their Experiences in a 'Unique' Learning Environment." *Feminist Teacher: A Journal of the Practices, Themes, and Scholarship of Feminist Teaching* 15 (3): 175–194.

Anderson, T., L. Rourke, D. R. Garrison, and W. Archer. 2001. "Assessing Teaching Presence in a Computer Conference Context." *Journal of Asynchronous Learning Network* 5 (2): 1–17. https://doi.org/10.24059/olj.v5i2.1875

Brynjolfsson, E., and A. McAfee. 2014. *The Second Machine Age: Work, Progress and Prosperity in a Time of Brilliant Technologies*. New York: W.W. Norton.

Castells, M. 2001. *The Internet Galaxy: Reflections on the Internet, Business and Society*. New York: Oxford University Press.

CHE (Council on Higher Education). 2016. *South African Higher Education Reviewed: Two Decades of Democracy*. Pretoria: CHE.

Cornelissen, J. 2017. "Editor's Comments: Developing Propositions, a Process Model, or a Typology? Addressing the Challenges of Writing Theory without a Boilerplate." *Academy of Management Review* 42 (1): 1–9. https://doi.org/10.5465/amr.2016.0196

Downes, S. 2006. "Learning Networks and Connective Knowledge." Accessed October 1, 2020. https://www.downes.ca/cgi-bin/page.cgi?post=36031

Fiock, H. 2020. "Designing a Community of Inquiry in Online Courses." *International Review of Research in Open and Distributed Learning* 21 (1): 135–153. https://doi.org/10.19173/irrodl.v20i5.3985

Flick, U. 2018. *An Introduction to Qualitative Research*. London: Sage. https://doi.org/10.4135/9781529622737

Gilson, L. L., and C. B. Goldberg. 2015. "Editor's Comment: So, What Is a Conceptual Paper?" *Group and Organisation Management* 40 (2): 127–130. https://doi.org/10.1177/1059601115576425

Harari, Y. N. 2018. *21 Lessons for the 21st Century*. London: Jonathan Cape.

Hase, S., and C. Kenyon. 2000. "From Andragogy to Heutagogy." *UltiBase Articles* 5: 1–10.

Lorenz, M., M. Rüßmann, R. Strack, K. L. Lueth, and M. Bolle. 2015. "Man and Machine in Industry 4.0: How Will Technology Transform the Industrial Workforce through 2025?" Boston Consulting Group, 2. Accessed April 13, 2020. https://www.bcg.com/publications/2015/technology-business-transformation-engineered-products-infrastructure-man-machine-industry-4

Marwala, T. 2009. *Computational Intelligence for Modelling Complex Systems*. Delhi: Research India.

Marwala, T. 2020. "Building Human Capital for the Fourth Industrial Revolution." *Mail & Guardian*, February 28. https://mg.co.za/article/2020-02-28-building-human-capital-for-the-fourth-industrial-revolution/

Marwala, T., and E. Hurwitz. 2017. *Artificial Intelligence and Economic Theory: Skynet in the Market*. Cham: Springer International. https://doi.org/10.1007/978-3-319-66104-9

Mdluli, S., and O. Makhupe. 2017. "Defining Leadership Competencies Needed for the Fourth Industrial Revolution: Leadership Competencies 4.0." Africa Expansion Project. Accessed March 24, 2020. https://www.bankseta.org.za/wp-content/uploads/2018/08/Bankseta_Defining-Leadership_Siboniso-Mdluli-Olebile-Makhupe.pdf

Moloi, T., and T. Marwala. 2020. "The Growth Model." In *Artificial Intelligence in Economics and Finance Theories*, edited by T. Moloi and T. Marwala, 13–20. Cham: Springer. https://doi.org/10.1007/978-3-030-42962-1_2

Moore, M. G. 1989. "Editorial: Three Types of Interaction." *American Journal of Distance Education* 3 (2): 1–6. https://doi.org/10.1080/08923648909526659

Mtsweni, J., and H. Abdulla. 2014. "The Role of E-Tutors in Promoting E-Learning Using Web 2.0 Technologies." Paper presented at the African Cyber Citizenship Conference, Port Elizabeth, November 5–6. https://researchspace.csir.co.za/dspace/bitstream/handle/10204/7943/Mtsweni_2014.pdf?sequence=1&isAllowed=y

National Planning Commission (NPC). 2011. "National Development Plan 2030." NPC. Accessed March 24, 2020. https://www.gov.za/sites/default/files/gcis_document/201409/devplan2.pdf

Norris, P., and R, Inglehart. 2018. *Cultural Backlash, Trump, Brexit and Authoritarian Populism*. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781108595841

Philbeck, T., and N. Davis. 2018. "The Fourth Industrial Revolution." *Journal of International Affairs* 72 (1): 17–22.

Pitsoane, E, and P. Lethole. 2020. "Exploring e-tutors' views on in-service training for online student: A Professional Development Analysis." *Journal of Open Distance and e-Learning* 37 (4): 1–12. https://doi.org/10.1080/02680513.2020.1801404

Ragin, C. C. 1994. *Constructing Social Research*. Thousand Oaks: Pine Forge Press.

Ramaphosa, C. 2018. "Sona 2018." Accessed March 24, 2020. https://www.thesouthafrican.com

Ravhudzulo, L. 2019. "4IR Deepening in Equalities in South Africa." Unisa. Accessed March 23, 2020. https://www.unisa.ac.za/sites/corporate/default/news-s-Media/Articles/4IR-deepening-inequalities-in-South Africa

Rovai, A.P., and J. R. Downey. 2010. "Why Some Distance Education Programs Fail while Others Succeed in a Global Environment." *The Internet and Higher Education* 13 (3): 141–147. https://doi.org/10.1016/j.iheduc.2009.07.001

Schwab, K. M. 2016a. “The Fourth Industrial Revolution.” World Economic Forum. Accessed March 24, 2020. https://www.weforum.org/about/the-fourth-industrial-revolution-by-klaus-schwab

Schwab, K. M. 2016b. “The Fourth Industrial Revolution: What It Means, How to Respond.” World Economic Forum. Accessed March 24, 2020. https://www.weforum.org/agenda/2016/01/the-fourth-industrial-revolution-what-it-means-and-how-to-respond/

Segoe, B. 2017. “Tutor Support in an Open Distance Learning Environment for Upgrading Teachers.” *Journal of Human Ecology* 48 (1): 161–169. https://doi.org/10.1080/09709274.2014.11906785

Siemens, G. 2005. “Connectivism: A Learning Theory for the Digital Age.” *International Journal of Instructional Technology and Distance Learning* 2 (1): 3–10. https://lidtfoundations.pressbooks.com/chapter/connectivism-a-learning-theory-for-the-digital-age/

Simpson, O. (2003). *Student Retention in Online Open and Distance Learning*. London: Kogan Page. https://doi.org/10.4324/9780203416563

Smith, L. A., and E. T. Smith. 2007. “Using Camstasia to Develop and Enhance Online Learning: Tutorial Presentation.” *Journal of Computing Sciences in Colleges* 22 (5): 121–122.

Stenbom, S., M. Jansson, and A. Hulkko. 2016. “Revising the Community of Inquiry Framework for the Analysis of One-to-One Online Relationships.” *International Review in Open and Distributed Learning* 17 (3): 36–53. https://doi.org/10.19173/irrodl.v17i3.2068

Stewart, I., D. De, and A. Cole. 2015. *Technology and People: The Great Job–Creating Machine*. London: Deloitte.

Swan, K., D. Garrison, and J. Richardson. 2009. “A Constructivist Approach to Online Learning: The Community of Inquiry Framework.” In *Information Technology and* Constructivism in Higher Education: Progressive Learning Frameworks, edited by C. R. Payne, 43–57. Hershey: IGI Global. https://doi.org/10.4018/978-1-60566-654-9.ch004

Tait, A. 2000. “Planning Student Support for Open and Distance Learning.” *Journal of Open Distance and eLearning* 15 (3): 287–299. https://doi.org/10.1080/713688410

Tait, A. 2003. “Reflections on Student Support in Open and Distance Learning.” *International Review of Research in Open and Distributed Learning* 4 (1): 1–9. https://doi.org/10.19173/irrodl.v4i1.134

Thorpe, M. 2005. “Rethinking Learner Support. The Challenge of Collaborative Online Learning.” *Open Learning* 7 (2): 105–119.

Trevathan, J., and T. Myers. 2013. “Towards Online Delivery of Process-Oriented Guided Inquiry Learning Techniques in Information Technology.” *Journal of Learning Design* 6 (2): 1–12. https://doi.org/10.5204/jld.v6i2.122

Van Dijk, J. A. 2006. “Digital Divide Research, Achievements and Shortcomings.” *Poetics* 34 (4–5): 221–235. https://doi.org/10.1016/j.poetic.2006.05.004

Waghid, Z. 2016. “Using Film and Online Group Blogs to Cultivate a Community of Inquiry: A Case at a University of Technology in South Africa.” *Progressio: South African Journal for Open Distance Learning* 38 (2): 106–131. https://doi.org/10.25159/0256-8853/2103

World Economic Forum (WEF). 2015. “Deep Shift – Technology Tipping Points and Societal Impact.” WEF. Accessed March 24, 2020. https://www3.weforum.org/docs/WEF_GAC15_Technological_Tipping_Points_report_2015.pdf

World Economic Forum (WEF). 2018. “The Future of Jobs Report 2018.” WEF. Accessed March 23, 2020. https://www.weforum.org/publications/the-future-of-jobs-report-2018

Xing, B., and T. Marwala. 2017. “Implications of the Fourth Industrial Age on Higher Education.” Accessed March 24, 2020. arXiv preprint arXiv:1703.09643

Chapter 12

Covid-19 as an Accelerator for Training and Technology Adoption by Lecturers in Mega Open Distance Learning Institutions in Africa

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Abstract

Covid-19, which was declared a global pandemic in March 2020, provoked a paradigm shift never imagined by higher education institutions, especially in developing countries. This chapter highlights how Covid-19 accelerated professional development, training, and technology adoption by lecturers in large-scale open distance learning institutions in Africa. The chapter reports on a study that aimed to understand how the lecturers in open distance learning institutions attended to their digital skills needs during the Covid-19 lockdown. Within an interpretative paradigm, qualitative research and a multiple case study were employed to interview 20 lecturers and relevant stakeholders from two of Africa's largest open distance learning institutions. The data was analysed using thematic analysis. The findings showed increased training and professional development of lecturers during the pandemic. The study also revealed how Covid-19 fostered the speed and ease with which technology was adopted. Although the unified theory of acceptance and use of technology, the theoretical framework for the study, regards age, gender, experience and voluntariness as having a significant influence on technology adoption and behavioural intention, the study findings highlighted Covid-19 as the facilitating factor in technology adoption. Therefore, the Covid-19 crisis might stimulate the design and development of new theories for future technology adoption and acceptance. Based on the findings, the research recommends that the training of lecturers be timely, specific, relevant and appropriate for the technology being implemented. Also, training programmes should be based on the real needs of all of the university's stakeholders, not just the lecturers.

Keywords: continuous professional development; training; digital skills; Covid-19; e-learning; open distance learning; technology adoption; technology acceptance

Introduction

Continuous professional development and technology adoption have been among the most researched topics in higher education (HE) and distance education (DE). The ever-changing technological developments and innovations, such as e-learning and the Fourth Industrial Revolution (4IR) (Mhlanga and Moloi 2020), within the teaching and learning (T&L) spaces require that both the students and the lecturers continuously equip themselves with relevant digital knowledge and skills.

E-learning has brought about an unprecedented and disruptive revolution in HE (Garrison, Anderson and Archer 2003), promising to widen access to quality HE. The United Nations Educational, Scientific and Cultural Organization (UNESCO) Millennium Development Goals for education for all for the 21st century of expanding access to education (Pandor 2009) have driven the adoption and use of information communications technologies (ICTs) in education to implement and fast-track the much-needed radical transformation of the education systems in Africa. Technology adoption has also been negatively impacted by resistance to change by faculty (Masalela 2011); limited financial resources for training (Mtebe and Raphael 2013); the lack of incentives; and the fact that faculty is "severely uninformed about e-learning in general" (Price et al. 2011, vii). However, the acceptance and use of technology have been accelerated by the Covid-19 pandemic, and most higher education institutions (HEIs) in Africa have started embarking on e-learning and blended learning approaches. With the closure of physical campuses due to the pandemic, there was a massive shift towards online learning. Many universities and colleges had to adopt learning management systems (LMSs), such as Canvas, Blackboard and Moodle, to deliver course content and conduct classes online. Lecturers increasingly used various tools to enhance the online learning experience, such as video conferencing tools, interactive whiteboards, and digital textbooks (Jena 2020). A study by Koninckx, Fatondji and Burgos (2021) revealed that many African HEIs were not ready for online instruction, although they started developing digital or self-study solutions.

While HEIs have provided training and support to ensure that lecturers are adequately trained to use technology for education, it has been a challenge to equip and prepare them for teaching using new systems and tools of education. Many HEIs and lecturers were unprepared for the sudden migration from face-to-face or blended approaches to fully online education during Covid-19 (Dwivedi et al. 2020). In this regard, a study by Bekele (2021) recommended systematised training and professional development opportunities for staff members in HEIs in Africa based on a study revealing the online T&L challenges these institutions faced during the pandemic. The pandemic has

affected all aspects of life, such as business, social activities and education, shifting the paradigm and accelerating lecturers' training and technology adoption (Manzanedo and Manning 2020). This included HEIs needing to continue providing educational services by migrating to digital environments (Deslandes and Coutinho 2020). Technology, which has been central to T&L in DE for decades (Aoki 2012), has proven to be an effective vehicle through which education can be disseminated.

DE is framed within larger socio-economic and political contexts in developing and developed countries. Evans and Haughey (2014) believe that DE is susceptible to the sequence of global crises. This is also true for the emergence of the Covid-19 pandemic, which led to a global lockdown early in 2020. Institutions worldwide suspended contact teaching, and provided ODL as the only solution, highlighting the urgent need for digital literacy. Digital literacy is believed to be key in digitalised education systems (Falloon 2020). At the centre of any successful learning activity, such as acquiring digital literacy skills, is well-trained and adequately supported academic teaching staff. Ferrari, Punie and Redecker (2012, 79) believe that digital literacy is a "multi-faceted moving target" constantly evolving as new technologies appear. Thus, the training and development of lecturers need to be strategically placed within this uncertainty. Although all educational services had to take place digitally literally overnight, Dwivedi et al. (2020) argue that the critical lessons of the pandemic for decision-makers were to ensure that they could harness the power of technology to learn and to be better prepared for future waves and viruses.

Against the above background, the aim of the current study was to determine how Covid-19 accelerated the training, adoption and use of technology for T&L of lecturers at two of Africa's largest open and distance learning (ODL) institutions, namely the University of South Africa (Unisa) and the National Open University of Nigeria (NOUN). Concerning the contextualisation of the two universities, Unisa is an ODL institution based in Pretoria, South Africa. In 2022, Unisa's website stated that it had over 400 000 students enrolled in its various undergraduate and postgraduate programmes. The institution offers qualifications in fields such as Law, Business, Management Sciences, Education, Human Sciences, Agriculture, and Environmental Sciences. Unisa has a flexible academic calendar that allows students to study at their own pace and convenience while offering a blend of online and face-to-face learning through its learning management system (LMS), known as myUnisa. The institution also operates several regional offices and learning centres throughout South Africa and has an extensive international presence with offices in several countries.

According to the NOUN website, it is a federal government-owned open ODL institution established in 2002 with its headquarters in Abuja, Nigeria. The NOUN offers various undergraduate and postgraduate courses and programmes. As of 2022, the NOUN had over 510 000 students enrolled in its various programmes across its 78 study centres spread across Nigeria. The institution offers courses in various fields such as Arts, Education, Sciences, Health Sciences, Management Sciences, and Law. The

NOUN operates a flexible academic calendar, allowing students to study at their own pace and convenience while offering a blend of online and face-to-face learning through its LMS known as the NOUN LMS. Both institutions play a crucial role in providing access to quality education to students who may not have the opportunity to study in conventional universities due to various constraints.

In this chapter, ODL is defined as a multi-dimensional concept aimed at bridging the time, geographical, economic, social, educational and communication distance between student and institution, student and lecturers, student and courseware, and student and peers (Unisa 2018). According to UNESCO (2002), ODL is one of the most rapidly growing fields of education. Its potential impact on all education delivery systems has been greatly accentuated through the development of internet-based ICTs, and in particular, the World Wide Web presenting approaches that focus on opening access to education and training provision, freeing learners from the constraints of time and place and offering flexible distance learning opportunities to individuals and groups of learners. The objective of the study was to understand how the lecturers in these ODL institutions attended to their digital skills needs during the Covid-19 pandemic lockdowns. Subsequently, the research question guiding the study was:

- How did the Covid-19 pandemic impact training and technology adoption of lecturers at two large-scale open distance learning institutions in Africa?

This chapter starts with the theoretical framework of the study, followed by the issues related to the research methodology. After that, the study findings are reported before concluding remarks and recommendations are made.

Theoretical Framework

Technology adoption and acceptance have gained popularity over the past few decades (Gunasinghe et al. 2019) and thus attracted a flood of models and theories. The unified theory of acceptance and use of technology (UTAUT) is one of the products and a response to the influx of technology acceptance models (TAMs). The UTAUT combines a spectrum of theories to understand and predict behaviour concerning technology adoption and use. It was developed by Venkatesh et al. (2003) and comprises four key elements, namely: performance expectancy (individuals believe the system helps them to attain the desired job performance); effort expectancy (the degree of ease associated with the use of the system); social influence (an individual's perception of the importance others place on the new system); and facilitating conditions (an individual belief that there is enough support in place to use the new system). The UTAUT has four moderating variables, namely, age, gender, experience, and voluntariness of use (Venkatesh et al. 2003). Although the theory has received critiques, such as its focus on consumer contexts with little focus on education (Williams, Rana and Dwivedi 2015) and that it focuses on technology adoption of students rather than

lecturers (Mosunmola et al., 2018), the authors found it suitable to frame this study about technology adoption by lecturers in ODL institutions.

According to Venkatesh et al. (2003), age, gender and experience are theorised to play a moderating role in technology adoption contexts. For example, Plude and Hoyer (1985, cited in Venkatesh et al. 2003), argue that increased age is associated with difficulty in processing complex stimuli and allocating attention to information on the job. The authors further argue that experience will influence effort expectancy and social influence and may facilitate usage behaviour, while gender may impact performance, effort expectancy, and social influence. The voluntariness of use in the context of HEIs is important because of its ability to facilitate and accelerate the intentionality and effort lecturers need to learn how to use new and emerging technologies voluntarily.

When an institution decides to adopt and implement new technology to improve processes and performance, it is assumed that management will ensure that the facilitating conditions are conducive to such innovation being easily accepted by the lecturers and students. Research supports the notion of staff development as an important consideration when implementing any innovation, including implementing technology initiatives such as e-learning (Ncube, Dube and Ngulube 2014). The facilitating conditions and behavioural intention identified in the UTAUT are seen by Venkatesh et al. (2003) as determinant factors of actual use. Moreover, Afonso et al. (2012) found that moderating factors play an essential role in the users' use of technology. With the recent debate on gender participation in HEIs, it is also important to see what role gender plays in using technology for T&L. The moderator variables were significant in providing insight into the participants' roles in technology adoption in this study.

Methodology

This study used a qualitative multiple case study design to guide the data collection and analysis. This design was grounded within an interpretivist paradigm in understanding the perceptions of the academic and non-academic staff members regarding the training and adoption of e-learning technologies (Creswell and Creswell 2017; Maree 2010) in large-scale ODL HEIs.

Sampling

Purposive sampling was relevant for the study because of its unique characteristics, such as flexibility in allowing the authors to invite candidates "according to their availability and accessibility" (Elfil and Negida 2017, 2). Snowballing was also used to refine and further identify more relevant participants (Cohen, Manion and Morrison 2011),

especially with the participants from Nigeria, where there was no direct access to the population (Elfil and Negida 2017). The aim was to target candidates with relevant knowledge of and experience in continuous professional development, e-learning implementation, readiness and technology adoption in HE and ODL environments. A sample of 20 participants from the two universities was chosen – eight from the NOUN and 12 from Unisa.

Data Collection

The data was collected using semi-structured interviews because they allowed unrestricted exploration of the issues under investigation and an opportunity for follow-up questions (Iyamu 2018). Owing to the pandemic regulations, the interviews were conducted and recorded online via Microsoft Teams and Zoom. The interviews were converted into audio files to protect the identity of the participants before being transcribed by a professional transcriber and verified by the authors. A pilot study was conducted before the actual interviews to test the quality and viability of the interview schedule (Morin 2013). Based on the feedback, some questions were stated more clearly to avoid misunderstanding.

Data Analysis

Thematic analysis was used to identify patterns (themes) within the data (Braun and Clark 2019), and Atlas.ti software was used for the analysis. Both deductive coding (with pre-set coding schemes derived from the interview questions and preliminary scanned text) and inductive coding (codes derived from the data) (Azungah 2018) were used in the analysis to reap the maximum benefits of both approaches and also to balance the limitations that each approach presents (Ligurgo et al. 2017).

Trustworthiness

Trustworthiness in qualitative research refers to the "quality, authenticity, and truthfulness of findings of qualitative research, and it relates to the degree of trust, or confidence, readers have in results" (Schmidt and Brown 2015, 548). Trustworthiness is measured through credibility, dependability, confirmability and transferability (Amankwaa 2016; Lincoln and Guba 1985). To adhere to the trustworthiness of the study, the research processes were documented, and relevant methods and tools were also explained. The advantage of digital research tools is that a trial is automatically created, such as coding and data analysis with computer programs, and recorded audios and videos. Transparency, one of the key ingredients of credibility (Yin 2011), was ensured by a reiterative consultation process between the authors. Transferability, which is the generalisability of research results (Houghton et al. 2013), was ensured by

describing critical processes and procedures that helped to construct, shape, connect and relate the meanings associated with the issues under investigation (Cohen, Manion, and Morrison 2011).

Ethical Considerations

Online technologies have affected the way in which research is done. Webster, Lewis and Brown (2013) mention the necessity of gaining the participants' consent when conducting research through online platforms. Ethical considerations, such as confidentiality, anonymity and informed consent, were observed throughout the research (McMillan and Schumacher 2010). Both universities granted ethical clearance, and the participants were invited via email and provided with all the relevant information about the research.

The issue of gatekeepers in research remains relevant and "gatekeepers are an integral part of an ethical process of seeking authorisation for research" (Kay 2019, 37). Gatekeeping can be a major issue when research is done outside the researcher's organisation, country or any external setting that requires involving gatekeepers or decision-makers who hold the keys to certain elements of the research. Fortunately, there was no negative gatekeeping at the two universities involved.

Findings and Discussion

This section presents the study findings focusing on the trajectory of Covid-19 through two major emerging themes, as presented in Table 1. The 20 selected participants were between the ages of 35 and 67; seven were males and 13 were females; and they had between three and 40 years of experience in HE. The participants included lecturers; staff involved in the continuous professional development of staff; staff from ICT departments; and staff from various levels of management of the two universities.

Table 1: Emerging themes from the study

Theme 1	Professional development and training of lecturers in higher education and distance education
Theme 2	Technology adoption and use

The purpose of the study was not to compare the findings, but to get a collective result of the impact of the Covid-19 pandemic on training and technology adoption of lecturers in large-scale ODL institutions in Africa. For this reason, the names and references to the specific institutions have been removed, as indicated in Table 2.

Table 2: Participants (n = 20)

Type of participant	Symbol
Lecturers	A1 to A13
Other participants	P14 to P20

Theme 1: Professional Development and Training of Lecturers in Higher Education and Distance Education

The participants from both universities initially showed enthusiasm about the opportunities and future of e-learning in Africa. Yet, there was a concern about the much-needed training for T&L, which was highlighted by the need to continue teaching using technology during the lockdown. Sixteen of the 20 participants believed the teaching staff from both universities were not equipped and well prepared for e-learning in terms of digital skills.

The lecturers at both universities had difficulty finding materials or information on their computers. Additionally, backing up files and navigating the universities' learning management systems (LMSs) was a major effort for some participants. It would be assumed that lecturers in DE should have been ready for online T&L; however, teaching and assessing in online environments were also a major struggle for lecturers from both institutions. This led to an increase in requests from colleagues for training and refresher training on using the universities' LMSs, as indicated by a participant from the training and development unit:

> During the lockdown in March 2020, we got many training requests for Microsoft Teams. Microsoft Teams was introduced in 2018, we used to train two, three, or less than ten people, but came March 2020, during the lockdown, we were overwhelmed with training requests, especially from lecturers. (P18)

Most lecturers found that working online or using the universities' LMSs was time-consuming, so the LMSs were not used regularly It also appeared that neither institution had e-learning policies that regulated and/or enforced the transition to LMS teaching before the pandemic. Nevertheless, the pandemic forced many lecturers to interact with online teaching tools, including administering examinations online. One of the major challenges identified during the Covid-19 pandemic was migrating all examinations online, as indicated by this participant:

> . . . from an assessment point of view, we are still struggling with a lack of knowledge of the available tools in administering the exam. Due to Covid-19; we had to interact

> with those tools to ensure that we deliver online exams . . . the administration of the online examination was difficult, so there's a need for adequate training. (A4)

However, it seems as if not everybody had the same challenge, as another participant reported that the online examinations were not a problem for them because they were used to online exams before Covid-19:

> And when Covid-19 started, it was effortless to go online and migrate, easy, no stoppage in the calendar, no stoppage in the institution . . . and the learning. (A6)

The pandemic exposed everyone who did not have the needed skills and knowledge to use technology to perform their duties. This was highlighted by one of the participants, who pointed out that:

> There are a lot of professors who do not know how to share the screen and do a presentation [on Microsoft Teams]. (P16)

The overwhelming increase in training requests was directed not only to those responsible for providing training and development services but also to the ICT departments that were inundated with requests for basic functions that people should ideally have mastered by themselves, especially in ODL institutions, as indicated by this participant:

> That's when you hear people needing constant support from ICT for the things which really do not need ICT, such as "my computer is not working". Not necessarily that their computers are not working; it's just that they don't know how to find information. (A3)

Changing the computer password; backing up files; and using the university's softphones via Microsoft Teams during the pandemic were a few of the things that some participants could not do. Two participants mentioned the lack of commitment and compulsory training policies, pointing out that although the university provided training for basic computer skills and skills to use available tools provided by the institution, many of these training sessions were ignored by lecturers. As one participant stated:

> Workshops took place, and training opportunities were provided but not compulsory. If training is not compulsory, how do we as an institution ensure that people are prepared [for e-leaning]? (A1)

It is argued by some authors, such as Ödalen et al. (2019) and Trowler and Bamber (2005) that unless training programmes are made mandatory (and aligned with key performance areas), their attendance will remain skeleton. This aspect was echoed by one participant who stated:

> Well, there needs to be compulsory training in providing support to lecturers, the issue is that there are these many relevant workshops from (Continuous Professional Development – CPD), but they struggle with attendance at those workshops, but we

> need to start doing what Google and Microsoft have started, providing certificates for basic online skills that the lecturers have acquired. (A4)

Professional technology development seems to have been positively impacted and accelerated by the pandemic. In this regard, Zawacki-Richter (2020, 218) reported that the pressure of the Covid-19 crisis "will have a positive effect on digital innovations in university teaching". The participants who were involved in the training and development departments at both institutions reported an overwhelming increase in training requests by lecturers for online T&L:

> We were overwhelmed with training requests . . . people are supposed to use the tools that the university provides, especially lecturers, but clearly, most were not using them. (P18)

> . . . many academics, since the Covid-19 pandemic, had resorted to using Microsoft Teams, where before people never bothered with Teams. (P20)

The study found that prior to Covid-19, those who were using the LMSs and other resources on campus efficiently became leaders or champions in the field of training and development. This aspect is mentioned by Al-Qeisi, Dennis and Abbad (2015), who state that the emergence of champions, who were lecturers with experience in using technologies, such as the use of the LMS to teach, proved that users' experiences had an impact on effort expectancy of behavioural intention. In this regard, two participants said:

> We had champions and flowers that were flourishing that suddenly came out and helped through training, mentoring and helping other colleagues how to do certain things. (P20)

> Whenever I got stuck, I called her, and then I stopped doing it because I felt guilty. (A2)

The challenge with champions is that they might eventually feel overstretched as training other lecturers does not form part of their tasks at the university. Although this form of skills transfer may be instant, effective and practical, if it is not creatively aligned with an incentive system, the "champions" may not feel inspired and motivated to continue with their services (Mtebe and Raphael 2013).

The fact that the LMS, social media, online support for students and other digital media became essential during the pandemic motivated lecturers to seek relevant assistance and training. With all educational services migrating to online spaces during the lockdown, specific training on teaching&L in ODL spaces became a reality for all institutions (Deslandes and Coutinho 2020). As one participant put it bluntly:

> Covid-19 was a good accelerator, and we are starting to see interest developing within colleges, where lecturers are upskilling themselves or trying different things they wouldn't have tried before. (A4)

The raised expectations by HEIs and students have motivated many lecturers to incorporate technology in their teaching, which is related to the second theme that emerged from the study.

Theme 2: Technology Adoption and Use

Dwivedi et al. (2020) point out that the Covid-19 pandemic forced many organisations to undergo significant transformation in a short period, particularly impacting people's education, work and life. The pandemic and subsequent lockdowns forced HEIs to migrate T&L activities to online spaces, changed attitudes and forced lecturers and students to adopt the necessary technology to teach and learn. Institutions learned during the pandemic that those with some knowledge and skill in teaching with educational technology were much more prepared (Ferrel and Ryan 2020). However, the pandemic has generated much-needed e-learning awareness regarding developing countries. The migration to online spaces facilitated the adoption and use of ICTs for teaching and learning, as pointed out by one of the participants:

> You have to engage people when introducing change; with this Covid-19, no one prepared anyone for the change. We were all forced to change, whereas before Covid-19, we needed to explain to lecturers why they needed to change to this new way of work. (P18)

One participant alluded to the complicated nature of e-learning innovation implementation processes, indicating that this may ideally be a five to ten-year project. However, institutions had to migrate to T&L activities online overnight.as one participant remarked:

> To digitise three-and-a-half thousand courses, put them all online on the LMS . . . You're not going to do that overnight. (P18)

Ferri, Grifoni and Tiziana (2020) argue that the pandemic acted as an accelerator and a motivator for many lecturers in ODL institutions because these technological tools were needed to teach and support their students.

Interestingly, a few participants identified age as one of the major problems why lecturers were not adopting technology as they should. One participant stated:

> . . . it is difficult for people to try something new and to learn something new and then I think nowadays we are appointing more young people in the college. But older people

> like me and some of my colleagues, you know it is hard to teach an old dog new tricks. (A2)

In various contexts, age has been found to influence behavioural intention to adopt and use technology. Research investigating technology adoption among older adults has focused mostly on participants who are older than 46 years (Wang, Chen and Chen 2017). Zhao, Ni and Zhou (2018) and Berkowsky, Sharit and Czaja (2017) conducted studies on older persons over the age of 65 years. In various contexts, however, "older adults' willingness to adopt technology is associated with a variety of factors including the perceived value of the technology, confidence in learning the technology, and the perceived impact on quality of life" (Berkowsky, Sharit and Czaja 2017, 1). Although purposive sampling was used, it is interesting to note that the youngest participant in the current study was 35 years old, and the overall average age was 53 years. Two participants had this to say about age:

> We underestimate the age factor because if you look at the age of some senior lecturers and professors in other colleges, they struggle to make the required technological jump. So, they still feel comfortable utilising paper-based material. (A4)

> Our university's lecturers are very old. They're not that motivated to start something new. The younger generation is much more eager to start it, and we can focus on them. (P19)

Several factors, such as perceived usefulness; perceived ease of use; perceived impact on quality of life; perceived value of the technology; and confidence in learning the technology, have been found to impact the final decision of older users on whether to adopt technology. However, these decisions vary from context to context. The study participants believed that the sudden changes brought about by the Covid-19 pandemic ignited an awakening to adopt and use technology for teaching duties, regardless of age. One participant stated:

> People are getting there; they realise that they can't be techno-dinosaurs and need to get up to speed. (P14)

Theories that explain how technologies are accepted and adopted by lecturers in HE abound. However, a different dimension emerged and caused a paradigm shift in the adoption and use of technology. The urgent need to continue providing education became the determining factor for facilitating the adoption and use of technology. Venkatesh et al. (2003, 467) identify variables from eight TAMs, namely: "confirmed as integral features of the UTAUT" (age, gender, experience and voluntariness) as having a significant influence on technology adoption and behavioural intention. The current study showed that age is an inhibiting factor for technology adoption at the institutions under study. Despite this, the urgency to continue T&L and interact with others forced the lecturers to adopt and use available technology immediately.

Even though the participants reported a lack of resources, many lecturers reported using their own resources to continue with their work and support the students, which is in contrast to the UTAUT's facilitating conditions believed to predict technology use. Venkatesh et al. (2003) posit that voluntariness moderates the relationship between social influence and behavioural intention; however, Chiu and Ku (2015) argue that studies conducted in highly volunteer-driven environments have shown different relationships. Although only participants aged 34 years and over were available in this study, male and female lecturers of different age groups requested the training, while others tried to work independently. Tan (2013, 4) defines voluntariness of use as the "degree to which use of the innovation is perceived as being voluntary or through one's free will". Thus, the situation did not give lecturers any option but to urgently learn how to use the available technology to teach and support students.

Conclusion and Recommendations

This chapter has reported on how the Covid-19 pandemic accelerated training and technology adoption in two mega ODL institutions in Africa. Lecturers were overwhelmed with tasks and responsibilities when forced to migrate their teaching, assessment and student support activities to their universities' LMSs, and reportedly requested training and support. Considering the UTAUT's key elements and moderating variables, the study highlighte Covid-19 as one of the facilitating factors in technology adoption. The systematic approach that has always been recommended was overtaken by chaotic and spur-of-the-moment approaches that led to increased adoption of technology, challenging theories of technology adoption and use as they are known. Both formal and informal approaches to training and development for digital skills were adopted to gain the relevant technological skills, evidenced by increased requests made to the training and ICT departments and the trend of lecturers their colleagues for assistance.

The study findings should enrich future practices and research on academic technology adoption and continuous professional development. The main contribution of the study is that using the UTAUT as the study's theoretical framework, age, gender, and the voluntariness of use were identified as unimportant moderating factors for technology adoption by lecturers during the pandemic. The findings suggested that pandemics can be major influential moderating factors in technology adoption in HE contexts. Additionally, the Covid-19 crisis might stimulate adaptions to existing theories and the design and development of new ones for future technology adoption, acceptance, and professional development in T&L in online environments. The Covid-19 pandemic has shown that when people face a crisis, there is cohesion and collaborative-social effort to find solutions. During the pandemic, the individual lecturers also pushed to develop and improve their skills to use technology to learn, and teach and support students. Both

young and old lecturers realised the importance of continuously equipping themselves with the relevant skills for effective T&L in online environments.

Further, the findings confirmed that the training of lecturers needs to be timely, specific, relevant and appropriate for the technology being implemented. If not, it leaves lecturers confused and unable to use relevant teaching and student support technologies. This is equally important for the institutions' internal training programmes, and thus the study recommends that the staff in professional development departments receive continued training to keep themselves relevant and effective when supporting staff.

Lastly, the authors believe that the lessons learnt from the study will be relevant and applicable to HEIs in similar contexts in future. Covid-19 has forced many HEIs to do things differently, but it has created opportunities and positive aspects for future research.

References

Afonso, C. M., R. Salgueiro, M. J. S. Franco, and M. de la O. González 2012. "The Moderator Role of Gender in the Unified Theory of Acceptance and Use of Technology (UTAUT): A Study on Users of Electronic Document Management Systems." Paper presented at the 7th International Conference on Partial Least Squares and Related Methods, Houston, May 19–22. https://core.ac.uk/download/pdf/161255008.pdf

Al-Qeisi, K., C. Dennis, and M. Abbad. 2015. "How Viable Is the UTAUT Model in a Non-Western Context?" *International Business Research* 8 (2): 204–219. https://doi.org/10.5539/ibr.v8n2p204

Amankwaa, L. 2016. "Creating Protocols for Trustworthiness in Qualitative Research" *Journal of Cultural Diversity* 23 (3): 121–127.

Aoki, K. 2012. "Generations of Distance Education: Technologies, Pedagogies, and Organisations." *Procedia – Social and Behavioral Sciences* 55 (5): 1183–1187. https://doi.org/10.1016/j.sbspro.2012.09.613

Azungah, T. 2018. "Qualitative Research: Deductive and Inductive Approaches to Data Analysis." *Qualitative Research Journal* 18 (4): 383–400. https://doi.org/10.1108/QRJ-D-18-00035

Bekele, T. A. 2021. "COVID-19 and the Prospect of Online Learning in Higher Education in Africa." *Journal of Comparative and International Higher Education* 13 (5): 243–253. https://doi.org/10.32674/jcihe.v13i5.4060

Berkowsky, R. W., J. Sharit, and S. J. Czaja. 2017. "Factors Predicting Decisions about Technology Adoption among Older Adults." *Innovation in Aging* 1 (3): igy002. https://doi.org/10.1093/geroni/igy002

Braun, V., and V. Clarke. 2019. "Reflecting on Reflexive Thematic Analysis." *Qualitative Research in Sport, Exercise and Health* 11 (4): 589–597. https://doi.org/10.1080/2159676X.2019.1628806

Chiu, T. M. L., and B. P. S. Ku. 2015. "Moderating Effects of Voluntariness on the Actual Use of Electronic Health Records for Allied Health Professionals." *JMIR Medical Informatics* 3 (1): e7. https://doi.org/10.2196/medinform.2548

Cohen, L., L. Manion, and K. Morrison. 2011. *Planning Educational Research: Research Methods in Education*. New York: Routledge.
Creswell, J. W., and J. D. Creswell. 2017. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks: Sage.
Deslandes, S. F., and T. Coutinho. 2020. "The Intensive Use of the Internet by Children and Adolescents in the Context of COVID-19 and the Risks for Self-Inflicted Violence." *Ciencia et Saude Coletiva* 25: 2479–2486. https://doi.org/10.1590/1413-81232020256.1.11472020
Dwivedi, Y. K., D. L. Hughes, C. Coombs, I. Constantiou, Y. Duan, J. S. Edwards, B. Gupta, B. Lal, S. Misra, P. Prashant, R. Raman, et al. 2020. "Impact of COVID-19 Pandemic on Information Management Research and Practice: Transforming Education, Work and Life." *International Journal of Information Management* 55: a102211. https://doi.org/10.1016/j.ijinfomgt.2020.10221
Elfil, M., and A. Negida. 2017. "Sampling Methods in Clinical Research: An Educational Review." *Emergency* 5 (1): e52.
Evans, T. D., and M. Haughey. 2014. "Online Distance Education Models and Research Implications." In *Online Distance Education: Towards a Research Agenda*, edited by O. Zawacki-Richter and T. Anderson, 131–149. Athabasca: Athabasca University Press.
Falloon, G. 2020. "From Digital Literacy to Digital Competence: The Teacher Digital Competency (TDC) Framework." *Educational Technology Research and Development* 68 (5): 2449–2472. https://doi.org/10.1007/s11423-020-09767-4
Ferrari, A., Y. Punie, and C. Redecker. 2012. "Understanding Digital Competence in the 21st Century: An Analysis of Current Frameworks." In *European Conference on Technology Enhanced Learning*, edited by A. Ravenscroft, S. Lindstaedt, C. D. Kloos and D. Hernández-Leo, 79–92. Berlin: Springer. https://doi.org/10.1007/978-3-642-33263-0_7
Ferrel, M. N., and J. J. Ryan. 2020. "The Impact of COVID-19 on Medical Education." *Cureus* 12 (3): e7492. https://doi.org/10.7759/cureus.7492
Ferri, F., P. Grifoni, and G. Tiziana. 2020. "Online Learning and Emergency Remote Teaching: Opportunities and Challenges in Emergency Situations." *Societies* 10 (4): 86. https://doi.org/10.3390/soc10040086
Garrison, D. R., T. Anderson, and W. Archer. 2003. "A Theory of Critical Inquiry in Online Distance Education." In *Handbook of Distance Education*, edited by M. Moore and G. Anderson, 113–127. New York: Erlbaum. http://hdl.handle.net/2149/764
Gunasinghe, A., J. A. Hamid, A. Khatibi, and S. M. Ferdous Azam. 2019. "Academicians' Acceptance of Online Learning Environments: A Review of Information System Theories and Models." *Global Journal of Computer Science and Technology* 19 (1): 30–39. https://doi.org/10.34257/GJCSTHVOL19IS1PG31
Houghton, C., D. Casey, D. Shaw, and K. Murphy. 2013. "Rigour in Qualitative Case-Study Research." *Nurse Researcher* 20 (4): 12–17. https://doi.org/10.7748/nr2013.03.20.4.12.e326
Iyamu, T. 2018. "Collecting Qualitative Data for Information Systems Studies: The Reality in Practice." *Education and Information Technologies* 23 (5): 2249–2264. https://doi.org/10.1007/s10639-018-9718-2
Jena, P. K. 2020. "Online Learning during Lockdown Period for Covid-19 in India." *International Journal of Multidisciplinary Educational Research (IJMER)* 5 (8): 82–92. https://doi.org/10.1080/25783858.2019.1589988

Kay, L. 2019. “Guardians of Research: Negotiating the Strata of Gatekeepers in Research with Vulnerable Participants.” *Practice* 1 (1): 37–52. https://doi.org/10.1080/25783858.2019.1589988

Koninckx, P., C. Fatondji, and J. Burgos. 2021. “COVID-19 Impact on Higher Education in Africa.” OECD. Accessed March 23, 2020. https://www.wathi.org/covid-19-impact-on-higher-education-in-africa-oecd-development-matters-may-2021/

Ligurgo, V., T. Philippette, P. Fastrez, A-S. Collard, and J. Jacques. 2017. “A Method Combining Deductive and Inductive Principles to Define Work-Related Digital Media Literacy Competences.” In *European Conference on Information Literacy*, 245–254. Cham: Springer. https://doi.org/10.1007/978-3-319-74334-9_26

Lincoln, Y. S., and E. G. Guba. 1985. *Naturalistic Inquiry*. Thousand Oaks: Sage. https://doi.org/10.1016/0147-1767(85)90062-8

Manzanedo, R. D., and P. Manning. 2020. “COVID-19: Lessons for the Climate Change Emergency.” *Science of the Total Environment* 742: 140563. https://doi.org/10.1016/j.scitotenv.2020.140563

Maree, D. J. F. 2020. *Realism and Psychological Science*. Cham: Springer. https://doi.org/10.1007/978-3-030-45143-1_2

Masalela, R. K. 2011. “Implementing E-Learning at the University of Botswana: The Practitioner’s Perspective.” *Online Journal of Distance Learning Administration* 14 (2).

McMillan, J. H., and S. Schumacher. 2010. “Research in Education: Evidence-Based Inquiry, MyEducationLab Series.” Princeton: Pearson.

Mhlanga, D., and T. Moloi. 2020. “COVID-19 and the Digital Transformation of Education: What Are We Learning on 4IR in South Africa?” *Education Sciences* 10 (7): 180. https://doi.org/10.3390/educsci10070180

Morin, K. H. 2013. “Value of a Pilot Study.” *Journal of Nursing Education* 52 (10): 547–548. https://doi.org/10.3928/01484834-20130920-10

Mosunmola, A., A. Mayowa, S. Okuboyejo, and C. Adeniji. 2018. “Adoption and Use of Mobile Learning in Higher Education: The UTAUT Model.” In *Proceedings of the 9th International Conference on E-Education, E-Business, E-Management and E-Learning*, 20–25. https://dl.acm.org/doi/abs/10.1145/3183586.3183595

Mtebe, J., and C. Raphael. 2013. "Students’ Experiences and Challenges of Blended Learning at the University of Dar es Salaam, Tanzania.” *International Journal of Education and Development Using ICT* 9 (3): 124–136.

Ncube, S., L. Dube, and P. Ngulube. 2014. “E-Learning Readiness among Academic Staff in the Department of Information Science at the University of South Africa.” *Mediterranean Journal of Social Sciences* 5 (16): 357–366. https://doi.org/10.5901/mjss.2014.v5n16p357

Ödalen, J., D. Brommesson, G. Ó. Erlingsson, J. K. Schaffer, and M. Fogelgren. 2019. “Teaching University Teachers to Become Better Teachers: The Effects of Pedagogical Training Courses at Six Swedish Universities.” *Higher Education Research and Development* 38 (2): 339–353. https://doi.org/10.1080/07294360.2018.1512955

Pandor, N. 2009. “Achievements in Commonwealth Educational Co-Operation: Rising to 21st Century Challenges.” *Round Table* 98 (405): 679–685. https://doi.org/10.1080/00358530903371387

Price, R. M., K. M. Rayworth, S. S. Brooks, and T. B. Ketterer. 2011. “Enhancing E-Learning at the Polytechnic of Namibia.” Semantic Scholar. Accessed March 23, 2020. https://www.semanticscholar.org/paper/Enhancing-E-Learning-at-the-Polytechnic-of-Namibia-Brooks-Ketterer/9afc12fd465b3e692819c7d720a168a095a69a36

Schmidt, N. A., and J. Brown. 2015. *Evidence-Based Practice for Nurses: Appraisal and Application of Research*. 3rd ed. Burlington: Jones and Bartlett.

Tan, P. J. B. 2013. "Applying the UTAUT to Understand Factors Affecting the Use of English E-Learning Websites in Taiwan." *Sage Open* 3 (4): 2158244013503837. https://doi.org/10.1177/2158244013503837

Trowler, P., and R. Bamber. 2005. "Compulsory Higher Education Teacher Training: Joined-Up Policies, Institutional Architectures and Enhancement Cultures." *International Journal for Academic Development* 10 (2): 79–93. https://doi.org/10.1080/13601440500281708

UNESCO (United Nations Educational, Scientific and Cultural Organization). 2002. *ODL: Trends, Policy and Strategy Consideration*. Paris: UNESCO.

Unisa (University of South Africa). 2018. *Unisa Open Distance e-Learning Policy*. Pretoria: Unisa Press.

Venkatesh, V., M. G. Morris, G. B. Davis, and F. D. Davis. 2003. "User Acceptance of Information Technology: Toward a Unified View." MIS Quarterly 27 (3): 425–478. https://doi.org/10.2307/30036540

Wang, K. H., G. Chen, and H-G. Chen. 2017. "A Model of Technology Adoption by Older Adults." *Social Behavior and Personality: An International Journal* 45 (4): 563–572. https://doi.org/10.2224/sbp.5778

Webster, S., J. Lewis, and A. Brown. 2013. "Ethical Considerations in Qualitative Research." *Qualitative Research Practice: A Guide for Social Science Students and Researchers*, edited by J. Ritchie, J. Lewis, C. McNaughton Nicholls and R. Ormston, 77–110. Thousand Oaks: Sage.

Williams, M. D., N. P. Rana, and Y. K. Dwivedi. 2015. "The Unified Theory of Acceptance and Use of Technology (UTAUT): A Literature Review." *Journal of Enterprise Information Management* 28 (3): 443–488.

Yin, R. K. 2011. *Applications of Case Study Research*. Thousand Oaks: Sage.

Zawacki-Richter, O. 2020. "The Current State and Impact of Covid-19 on Digital Higher Education in Germany." *Human Behavior and Emerging Technologies* 3 (1): 218–226. https://doi.org/10.1002/hbe2.238

Zhao, Y., Q. Ni, and R. Zhou. 2018. "What Factors Influence the Mobile Health Service Adoption? A Meta-Analysis and the Moderating Role of Age." *International Journal of Information Management* 43: 342–350. https://doi.org/10.1016/j.ijinfomgt.2017.08.006

Conclusion

Open Distance e-Learning – Driving Debates into the Future

Sub-Saharan Africa has in the past decade experienced "an explosion of interest in distance learning" (CoL 2002, 6). Within the space of a brief few years, the task of harnessing a range of scholarly voices to address an environment of global open distance e-learning (ODeL) debates has mounted in complexity. Just on the continent of Africa alone, the impetus of the ODeL discussion has gained significant traction. Many African countries have embraced the distance education (DE) mode, including, Zimbabwe, Zambia, Tanzania, Mauritius, Nigeria and South Africa to name a few (TUKO 2021). The time when only face-to-face interactions could be used to learn is long past. Even when lecturers and students are physically separated during teaching, learning can still take place with the appropriate tools in place. Within the context of an emerging ODeL institutional cohort on the African continent, the University of South Africa (Unisa) has been a leader, reaching the mark of just over 400 000 in student enrolments.

As the oldest dedicated distance education in the world, Unisa's editorial board had set the challenge to a range of scholars to more actively engage in debate on contemporary and new opportunities, challenges and models facing ODeL in a globally connected digital era. The resultant range of a diverse discussions emanated from both ODL practitioners and scholars across Africa – variously interrogating the purpose of the Unisa ODeL task, while collectively managing to engage creatively with various aspects of the "contextualized risk" (Mashile, Fynn and Matoane 2020,1) surrounding the student within an open distance learning environment.

In an opening analysis of the ODeL scholarly journey, Roberts and Van der Walt (Chapter 1) analyse South Africa distance learning research level and sublevels, effectively tracing the roots of scholarship within this field. This is followed by a grounding interrogation of the concept of ODeL by Setlhodi (Chapter 2) and by Matjila and Van der Merwe (Chapter 3). The polemic aspect of access, equity and quality in distance learning gains new traction within this discussion, while the transformative research paradigm in the ODeL environment offers renewed perspectives for scholars to engage with.

The undertaking of continuous research remains high on the agenda of this continent's scholars, with a closer look at ODeL research on the continent (Amponsah and Agyekum, Chapter 4). The focus here moves to higher education (HE) in Ghana, with service quality satisfaction placed under scrutiny.

In order to drive more inclusive approaches in mobile learning from an ODeL viewpoint, a much-needed call was made for educators to address psychological and disability perspectives. The aim was to ensure that South African HE can adequately be accommodated within the Framework for the Rational Analysis of Mobile Education (Frame) model (Wells, Chapter 5).

Student success is often seen as "the nexus of interaction" between student and institution (Mashile, Fynn and Matoane 2020). The next four chapters present the issues of Teaching and Learning and student support in ODeL. While some scholars indicate that "continuous assessment does not differentially impact students who already require additional support" (Playfoot, Wilkinson and Mead 2022) the debate remains open – and in chapters 6 and 7, Van Zyl and Le Roux, and Robinson, respectively, address aspects around the effective implementation of continuous assessment and student success. Justifiably so, major concerns are raised around of intervention on how continuous assessment and e-portfolios can be implemented to effectively learning and student success.

It remains crucial for teaching practice supervisors to reflect continuously on a more nuanced debate on a development approach with the reinforcing of assessment for learning (Makgakga and Ngubane, Chapter 8). The value of group work and distance online learning in HE as seen through the lens of the Covid-19 experience (Pillay, Chapter 9) adds to the realisation that the ODeL environment remains a highly dynamic entity to grapple with.

As a pervasive force within the online environment, the increasing use of social media platforms in teaching and learning continue to raise a myriad of challenges to engage with (Maboe and Ndwambi, Chapter 10). Much though these may offer crucial support to driving innovation in the teaching and learning process, the future will tell whether the various role players across the spectrum manage to sustain a reasonable balance in an ODeL context.

Despite South Africa's situatedness within the Fourth Industrial Revolution (4IR), the availability of bandwidth in the country is only strong in its major cities (Mashile, Fynn and Matoane 2020). As a result, the majority of DE students in South Africa remain rural, traditional and directly experience the digital divide, still facing challenges of internet connectivity, and with limited access to technological devices. Within this context, the alarm bells were raised on the extent to which an ODeL institution such as Unisa can adequately support its students (Baloyi, Chapter 11). Ironically, and as a positive outcome of the pandemic over the past years, this country witnessed how Covid-19 served as an accelerator for training and technology adoption by academics in ODeL institutions (Modise and Van den Berg, Chapter 12).

Overall, this book has captured a diverse range of scholars' continuous engagement in lively and constantly evolving debates. Education has repositioned itself as "a major

impetus behind fundamental change or transformation in many societies" (COL 2002, 5). The challenge remains for scholars globally to continue to forge new debates on emerging aspects within the ODeL research environment. Apart from the need that "new research projects should focus on building stronger bridges between scientists in the global South" (Athumani 2022), a renewed challenge has been set by these authors. The invitation to future scholars is to not only open up global linkages, but also to widen and deepen the level of scholarly debates engaging with the ODeL environment.

References

Athumani, H. 2022. "Q&A: Science 'Needs to Listen to African Voices'." SciDevNet. Accessed October 10, 2020. https://www.womeninscience.africa/qa-science-needs-to-listen-to-african-voices/

CoL (Commonwealth of Learning). 2002. "Open and Distance Learning in Sub-Saharan Africa: A literature Survey on Policy and Practice." ADEA. Accessed October 10, 2020. https://www.adeanet.org/clearinghouse/sites/default/files/docs/dol_02_openlrn_en.pdf

Mashile, E. O., A. Fynn and M. Matoane. 2020. "Institutional Barriers to Learning in the South African Open Distance Learning Context." *South African Journal of Higher Education* 34 (2): 129–145. https://doi.org/10.20853/34-2-3662

Playfoot, D., L. L. Wilkinson, and J. Mead. 2022. "Is Continuous Assessment Inclusive? An Analysis of Factors Influencing Student Grades." *Assessment and Evaluation in Higher Education* 1–13. https://doi.org/10.1080/02602938.2022.2150834

TUKO. 2021. "Top Distance Learning Universities in Africa to Enroll in 2021." Accessed October 10, 2020. https://www.tuko.co.ke/408497-top-distance-learning-universities-africa-enroll-2021.html

Index