Assessment through Digital Platforms within Higher Education Studies

Editors

Labby Ramrathan
Ruth Hoskins
Veena S. Singaram

*Alter*nation African Scholarship Book Series #12

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Labby Ramrathan
Ruth Hoskins
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Email: cssall123@gmail.com
Editor-in-Chief: Prof J.A. Smit
University of KwaZulu-Natal
Email: smitj@ukzn.ac.za

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Preface

Following on from the effects of COVID-19 and its disruptions to the teaching, learning and assessment within higher education nationally, and indeed, globally, this volume of the *Alter*nation African Scholarship Book Series (AASBS) focuses on assessments using digital platforms during the time of COVID-19. The digital platform was the major technology that allowed the academic enterprise, and especially assessment, to continue during the pandemic period. Having produced seven volumes of the book series on the impact of COVID-19 on higher education, this additional volume shifts the focus to assessment within higher education and engages with academic staff's accounts of their experiences and insights using digital platforms for assessment. So, the chapters in this volume emerged from experiences across South African and regional institutions of higher learning, which were shared at a colloquium hosted by the University of KwaZulu-Natal, College of Humanities in 2021. As such, the volume, therefore, also wishes to contribute to the missing element in the triad of teaching, learning and assessment.

Noting the impacts of COVID-19 on the Higher Education sector, at all levels, and the publication of the mentioned seven volumes of the AASBS, a gap related to assessment was noted in the series. This volume, therefore attempts to address this gap by contributing to the discourse and debates on digital platforms beyond the centrally focused matter of the continuation of teaching and learning using digital media, during the pandemic. While digital platforms for assessment has been used in the past, the grand scale rapid introduction of assessment using digital platforms warranted a capture of the first experiences and impressions of academics who, many of them, have used these platforms for the very first time. This volume, then, captures some of these experiences, views and theorisations of their rapid transitions to using digital platforms, to conduct their assessments for their respective modules.

The research produced and published through the AASBS, and also the participants in this project, provide a space, and academic leadership, for the critical assessment and related planning associated with the acceleration of academia into the digital era. This volume, under the excellent leadership of Labby Ramrathan, Ruth Hoskins and Veena Singaram, is significantly contributing to this unfolding and growing scholarship on higher education teaching, learning and assessment. Under the leadership, the volume importantly

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brings to the fore some of the key issues and considerations for the future developments of research on the utilisation of digital platforms in tertiary assessment studies. And while COVID-19 formed the broad-based globally complex space in terms of which this research focus originated, the sheer speed in terms of which academia, and all its branches of study and research, accelerated into the digital, online, cyber or virtual age confronts us with both opportunities and challenges. So, as tertiary education accelerates from this point forward, in this newly-founded space, we will certainly also have to think through the optimal uses of digital technologies, in coming unfolding contexts and times.

Education beyond the pandemic, and especially with the primary objectives to deliver the highest levels and quality of education, research and assessments to even the most remote areas of our country, continent and planet, has certainly profoundly gained through the development and applied uses of new teaching and learning and research software and technologies. And, given the huge role that the whatsapp app has played in South Africa and Africa in this regard, we may just imagine the role apps will also play in research-led teaching and learning in future. It is our sincere hope that the related possibilities will also play a central role in how the Humanities and Social Sciences apps of the future, will transformatively impact the wellbeing and the improvement of the quality of life of communities. We hope that individuals and communities benefitting from online education will then not only benefit through their access to and experiences of excellent education, but also internationally benchmarked assessments, qualifications, and capabilities development. We also hope that it will also benefit both the quality and quantity of future contextually-relevant African scholarship research outputs in South Africa, and abroad, and so, contribute to the growing and advancing the profile of the AASBS, as well as knowledge formation and development in the disciplines articulated with research in Higher Education Studies.

Prof. Johannes A. (Jannie) Smit
Chair: Humanities Institute
University of KwaZulu-Natal

Contents

Contributors

Dr. Mandana Arfa-Kaboodvand is a lecturer, Department of Academic Communication Skills, University of Eswatini. She holds a PhD in TESOL from the University of Exeter, UK. She has worked as a language teacher, university lecturer and teacher trainer for more than 30 years in Iran, Uzbekistan and Eswatini. She regularly presents in international conferences. Some of her works have been published in well-established magazines and journals. Her research interests include language teacher education, language teaching and culture, and EAP. m_arfa@yahoo.com; https://orcid.org/0000-0002-0617-2060

Professor Sarah Bansilal, Department of Mathematics Education, University of KwaZulu-Natal, Durban. She is a full professor of Mathematics Education in the School of Education at the University of KwaZulu-Natal. She is the Cluster Leader for the Mathematics and Computer Science Education cluster. Bansilals@ukzn.ac.za; http://orcid.org/0000-0002-5445-5612

Mr. Adrian Hugh Bellengère, is a senior lecturer, Faculty of Law, University of KwaZulu-Natal, Durban. bellengerea@ukzn.ac.za; https://orcid.org/0000-0003-1575-7594

Sakyiwaa Boateng is a lecturer at the Walter Sisulu University. She holds a PhD in science education from Wits University. Sakyiwaa is an early career researcher and passionate about science teacher professional development, especially looking at those affective aspects that science teachers consider as making teaching as a profession worthwhile. She is also looking at breaking down the disjunction between science/ culture and meaning and focusing on 21st-century teaching, science education and science teacher training Walter Sisulu University**.** sboateng@wsu.ac.za; https://orcid.org/0000-0002-1604-5487

Alex Boateng is an educator with extensive experience within the field of education. He holds a Master's degree in psychology and is currently a PhD student at UNISA. Alex is currently also a full-time educator, teaching at a

high school level. He has also worked as a teaching assistant for the University of South Africa and liaises with other professionals to write research articles. His research interest is interdisciplinary research, and covers the field of education, psychology and commerce. https://orcid.org/0000-0003-1995-1431

Dr. Dusty-Lee Donnelly, is a senior lecturer, Faculty of Law, University of KwaZulu-Natal, Durban. She is an admitted advocate of the High Court of South Africa, and joined the School of Law after practicing first as an attorney and then as a member of the KwaZulu-Natal Society of Advocates in the areas of civil litigation and maritime law. She is a presenter on the LLM Maritime law program and has supervised a number of Masters students in maritime and business law. donnellyd@ukzn.ac.za; https://orcid.org/0000-0002-5574-7481.

Willy Hannes Engelbrecht completed a PhD in Tourism Management at the North-West University in 2015 and an MEd: Educational Management with the University of Johannesburg (UJ) in 2021. Willy is currently the Dean: Research and Postgraduate Studies at The Independent Institute of Education (IIE) where he also served in various other managerial positions within the Faculty of Commerce. Willy has teaching experience in both undergraduate and postgraduate programmes in both local and international institutions. Willy actively participates in research and has presented and published a number of papers at both national and international conferences and journals related to tourism and education. He has contributed to various textbook publications and is editor of 5 textbooks and serves on academic advisory boards for various higher educational institutions. He furthermore supervises at Masters and Doctoral level and also acts as an external examiner for master's and doctoral theses. He is also an external reviewer for both national and international academic journals. wengelbrecht@iie.ac.za; https://orcid.org/0000-0002-6983-0032

Professor Karen Ferreira-Meyers is an Associate Professor and Coordinator of Linguistics and Modern Languages, Institute of Distance Education, University of Eswatini, Eswatini. She teaches French (language, literature, culture), researches in a wide range of domains (Open Education, Distance and e-Learning, Teaching and Learning of Languages French-English-Portuguese, Autofiction and Autobiography, Crime and Detective

Fiction, African Literatures). She publishes regularly, is a keen editor, proof reader, translator and interpreter. kmeyers@uniswa.sz; https://orcid.org/0000-0002-4418-269X

Professor Ruth Hoskins is a full professor and the current College Dean of Teaching and Learning in the College of Humanities, University of KwaZulu-Natal. HoskinsR@ukzn.ac.za; https://orcid.org/0000-0002-9099-5544

Professor David Lokhat is an associate professor and the Academic Leader for Chemical Engineering at UKZN. He is also the head of the Reactor Technology Research Group within the School of Engineering. His research interests are in catalysis and chemical reaction engineering, specifically process intensification in reactor technology with a focus on the development and application of advanced materials for more efficient and environmentally benign reaction and separation systems. lokhat@ukzn.ac.za; https://orcid.org/0000-0002-1604-0627

Professor Meahabo Dinah Magano is a full professor in the Department of Psychology of Education at the University of South Africa (UNISA), specialising in psychology of education, with a passion for teacher education. Professor Magano spent 22 years as a high school educator, head of department and deputy principal and acted as a principal. She joined academia in 2007 as a senior lecturer at UJ where she got promoted to Full Professor in 2015. She was the chairperson of the Education Association of South Africa 2016 - 2017. Currently, she is the Chairperson of Unisa Women's Forum 2021 - 2023. maganmd@unisa.ac.za; https://orcid.org/0000-0001-7562-0333

Makeresemese Rosy Mahlomahola is a lecturer in Commerce Education, UKZN, Pinetown. She has a PhD in Curriculum Studies where she advances boundaries of knowledge around what is termed critical accounting education. To date, as a lecturer, she uses transformation as the backdrop against which she paints the tapestry of her research. The Fourth Industrial Revolution with its attendant concepts of Adaptive Learning, block chaining, use of sensors and sophisticated mathematical algorithms has taken her to new heights. QhosolaM@ukzn.ac.za; https://orcid/0000-0002-0543-1948

Professor Sechaba M.G. Mahlomahola is a Professor of Education, Univer-

sity of Mpumalanga, Siyabuswa. His area of research lies in the creation of sustainable learning environments in terms of teaching, learning curriculum and governance. Theoretically he experiments with all the eight moments of a bricolage, from the traditional through to the fractured futures, to bring to light deeper understanding of multiperspectival and multilayered approaches to education. He is a graduate of the Universities of the North, Western Cape and Harvard and has guested several accredited Education journals nationally and continentally. Geoffrey.Mahlomaholo@ump.ac.za; https://orcid.org/0000-0002-6811-1626

Frank Joseph Mensah, is a lifelong educator and development practitioner. His current research looks at transformation in both basic and higher education. He holds a D.Ed. from the University of Zululand and currently a high school principal. joemenscrow2@gmail.com; https://orcid.org/0000-0002-4966-0638

Lina Methi is a Senior Lecturer in the Department of Psychology of Education at the University of South Africa. She was previously an education specialist for the Department of Basic Education, supporting and training teachers on inclusive education and addressing barriers to learning. Her responsibilities, presently, include teacher training (tuition), postgraduate supervision, research, and community engagement projects. Her research interests include building resilience in support of learners, psychological assessments, counselling, and qualitative research. Her first book chapter is currently under review and she also presented papers at various national and international conferences. Emethilm@unisa.ac.za; https://orcid.org/0000-0002-8584-9243

Professor Vusi Mncube is the Dean of the Faculty of Education, University of Fort Hare. He has published intensively on democracy and education. His research focuses on good governance, with a special focus on school governance, democracy and education, democracy for education and social justice. Within this area of good governance and democracy he has published a number of research articles in reputable academic journals and has supervised to completion a sound number of masters and doctoral studies. He is also an expert on research on Violence in schools having published several research reports, articles and a book, a 2nd edition of such a book is to be published soon. He is the co-author of three books, the most recent being,

Violence in Schools: South Africa in an International Context (with CR Harber, 2018, UNISA Press). In 2018, this book won the prestigious 'Hiddingh-Currie Award' at UNISA. In 2012, he published *Education, Democracy and Development: Does Education Contribute to Democratisation in Developing Countries?* (With CR Harber, Symposium Books, Oxford, United Kingdom). In the same year (2012), Vusi Mncube and Professor Clive Harber co-authored a Unisa report entitled: *The Dynamics of Violence in South African Schools*, which was published by UNISA (Pretoria: UNISA Press). In response to Covid-19 pandemic, Prof Mncube published a number of articles looking at the integration of ICTs in teaching and learning in higher education institutions. Vusi also serves as peer reviewer for a number of national and international journals. vmncube@ufh.ac.za; https://orcid.org/0000-0003-2103-2530

Dr. Gill Mooney is the Dean: Academic Development and Support at The Independent Institute of Education. Before joining the IIE, Gill lectured in the Department of Psychology at the University of the Witwatersrand. Her PhD is in the area of teaching and learning in higher education in South Africa, specifically developing higher order skills in a large, diverse range of first-year students. She is a member of the Editorial Advisory Board for the *Independent Journal of Teaching and Learning*. Gill has published several journal articles in teaching and learning in higher education and Vygotskian theory. She has written numerous book chapters in a range of areas, including an instructors' guide for teaching first year students and Developmental Psychology. She has presented a number of papers at both national and international conferences and has supervised many postgraduate students at the honours, masters and PhD levels. gmooney@iie.ac.za

Dr. Siphiwe Motloung Dr Siphiwe Motloung is a Social Work lecturer at the University of KwaZulu-Natal's School of Applied Human Sciences, South Africa. She holds a Doctor of Philosophy in Social Psychology from the University of KwaZulu-Natal, Master of Social Work (Clinical Practice) from the University of Natal and a Bachelor of Social Science (Social Work) from the University of Cape Town. She has a wealth of experience as a social worker in different organizations. She has served as a board member of a KZN-based NPO since 2010. Her research interests are race and racism, trauma, mental health and social work education. motloungs@ukzn.ac.za; https://orcid.org/0000-0002-8921-0367

Mr. Bongane Mzinyane, is a Social Work lecturer at the University of KwaZulu-Natal's School of Applied Human Sciences, South Africa. He graduated with a Master of Social Sciences in Social Work and Bachelor of Social Work degrees from the University of KwaZulu-Natal. Mr Mzinyane is currently pursuing his Doctor of Philosophy degree in Social Work, with a research focus on adult diversion and restorative justice. Prior to joining academia, he has worked for more than 8 years, in social work fields that are closely related to crime management and crime prevention. His research interests include restorative justice, therapeutic jurisprudence, social work education and socio-legal issues. Email: MzinyaneB@ukzn.ac.za; https://orcid.org/0000-0003-0684-0644

Shepherd Ndondo is a postdoctoral research fellow in the Faculty of Education, University of Fort Hare. Shepherd has a keen interest in democracy and education issues, as well as the use of African philosophies in addressing contemporary problems in education. ndondosh@gmail.com

Emmanuel Olawale, is postdoctoral research fellow in the Faculty of Education, University of Fort Hare. His research interest is in democracy and education.

Babawande Emmanuel Olawale is a postdoctoral research fellow in the Faculty of Education, University of Fort Hare. bolawale@ufh.ac.za; https://orcid.org/0000-0001-5265-1583

Dr. Shamola Pramjeeth is the Deputy Head of School of Management at the IIE's Varsity College, a brand of the Independent Institute of Education (IIE). She is responsible for the academic management of the higher certificate and postgraduate qualifications within the school across 9 campuses. Shamola is a seasoned academic with over 17 years of experience in academia. Her career spans across both academia and industry, allowing her to bring a wealth of industry knowledge and practical experience into her classroom. Her qualifications include a Bachelor of Commerce Degree in Marketing and Business Management (University of KwaZulu-Natal), a Bachelor of Commerce Honours in Marketing (University of KwaZulu-Natal), a Master of Commerce in Management (University of KwaZulu-Natal), and a PhD in Leadership with the University of KwaZulu-Natal. In addition, Shamola is actively involved in her community and drives fundraising initiatives to assist

the most vulnerable people within her community. Shamola is a published author, lecturer, supervisor and external examiner for Honours and Masters dissertations and a reviewer for two accredited DHET journals.
spramjeeth@varsitycollege.co.za; https://orcid.org/0000-0002-8673-1634

Priya Ramgovind is a Senior Head of Programme in the Faculty of Commerce at the Independent Institute of Education (IIE). Priya completed a Bachelor of Business Science and a Master of Commerce in Supply Chain Management from the University of KwaZulu-Natal and a Postgraduate Diploma in Higher Education with the IIE. Priya contributes to the broad supply chain management discipline through the development of academic qualifications, the authoring of textbook chapters, as well as curriculum development and contributing to research publications.
pramgovind@iie.ac.za; https://orcid.org/0000-0002-3171-7050

Labby Ramrathan is a full professor in the School of Education at the University of KwaZulu-Natal. RAMRATHANP@ukzn.ac.za
https://orcid.org/0000-0001-9963-0675

Professor Veena S. Singaram is an Associate Professor and Academic Leader of Research in the School of Clinical Medicine, University of KwaZulu-Natal, Durban. She is responsible for research-related matters, including postgraduate examination processes. Prof Singaram has also actively contributed to capacity building and development of Health Professions Education and research that has led to novel innovations and significant contributions to the training of healthcare professionals. Her scholarly interests include: doctoral research, mentoring, technology-enhanced learning, formative assessment feedback, and collaborative learning environments within a transformative learning paradigm.
singaram@ukzn.ac.za; https://orcid.org/0000-0002-6974-7423

Dr. Upasana Gitanjali Singh is a senior lecturer in the Discipline of Information Systems and Technology. She is also Academic Leader, Information Systems & Technology, University of KwaZulu-Natal, Durban, South Africa. She has a keen interest in Digital Teaching, Assessment and Learning Practices. She successfully implemented the first formative e-assessment in the School of MIG at UKZN in 2014. In 2019 she completed a 2-year training program in the 'Teaching Advancement in Universities'

(TAU) Fellowship. Singhup@ukzn.ac.za; https://orcid.org/0000-0002-9943-011X

Editorial:
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Labby Ramrathan
ORCID iD: https://orcid.org/0000-0001-9963-0675

Ruth Hoskins
ORCID iD: https://orcid.org/0000-0002-9099-5544

Veena S. Singaram
ORCID iD: https://orcid.org/0000-0002-6974-7423

Introduction

This book is a collection of responses from academics of higher education institutions (within and outside of South Africa) to the Covid-19 pandemic, with a focus on assessment within digital platforms. (For examples of collective writings as alternate genres in publications see Peters et al., 2020 and Waghid et al., 2020.) The intent of the book is to illuminate possibilities, challenges, concerns, insights and solutions, on assessment using digital platforms during the pandemic conditions, through research and personal accounts of academics from a range of disciplines and institutions. Extending Le Grange's (2021) notion of platform pedagogy, the experiences and insights on assessment using digital platforms enhance the integration of teaching, learning and assessment.

Having foregrounded teaching, learning and experiences of academic staff during Covid-19 in a number of publications by the *Alternations African Book Series* on their migration into the digital spaces for continuing with the academic programme at universities across institutions within South Africa, we

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turn our attention to assessment in this volume of the series. Drawn from a colloquium hosted by the College of Humanities of the University of KwaZulu-Natal in 2021, the chapters in this publication presents an eclectic account on assessments using digital platforms that were grounded in practicality, experimentation, appreciative insights and relevance to academic programmes that unfolded during Covid-19. The intended learnings arising out of this edited collection of chapters do contribute to learning on digital forms of assessment as an on-going exploration of hybrid teaching, learning and assessments possibilities that have unfolded a few decades ago.

Noting the territorialisation of assessment by measurement, standardisation, accountability and performativity regimes (Le Grange et al., 2022), Covid-19 opened up spaces for academics to challenge these regimes in times of crises and in so doing prise open possibilities that centre on learning through assessment strategies and processes. Noting further that summative assessment as one of the three types of assessment, i.e. assessment of learning, assessment as learning and assessment for learning (Kanjee and Bhana, 2020), has dominated this neoliberal perspective on education, the Covid-19 conditions provided an exciting opportunity to shift the assessment as measurement and accountability discourses into assessment for learning discourses that have since gained traction in South Africa and globally, as evidenced in the pandemic scholarship on school and higher education. Moreover, Fataar and Badroodien (2020), argue that the future of education post- Covid-19 provides opportunities for new and emergent imaginaries within a social justice agenda taking note of the huge disparities prevalent within our societies and institutions of learning. Noting Soudien's (2020) notion of systemic shock brought about by the Covid-19 pandemic, treading the learning complexity requires a just and moral step when considering that learners are different. Hence the place for our usual ways of assessment must be re-imagined, using the affordances of technologies at our disposal to be inclusive, just and responsive. The chapters in this volume attempt to contribute to imaginative ways of conceptualising and utilising alternative forms of assessment beyond the standardisation, measurement and accountability regimes only. The chapters focus on skills and conceptual framing informing assessments using digital platforms, types of assessments that have been used by academics during the pandemic period, experiences of assessing students using digital platforms and reflections by academics on the use of digital platforms for assessments. The chapters in this book has been double blinded peer reviewed.

Chapter Summations

Upasana Singh's chapter on *A Self-Assessment of Academic Empowerment in the Transition to the Digital Space with the ASSET© Framework* foregrounds the academic skills set needed for conceptualising assessment using digital spaces. She argues in her chapter that when educating online, where lecturers no longer have immediate, face-to-face engagement with their students, the academic skills set is vastly different from the skills set required in a traditional face-to-face environment. She offers the ASSET© (Academic SkillSET) framework for online teaching, learning and assessment as a possible conceptual framework for academics in higher education. The framework was developed from her interaction with academics at ground level and includes practical, rather than theoretical elements. In Lina Methi's chapter on *Exploring the personal factors that mediate the resilience of students during online assessments*, she engages in a systematic literature review to respond to the question, 'What we do not know is how individual students' personal factors influence their transition to online assessment?' The strengths-based approach was used as a lens to highlight constructs that depict the personal protective factors that have developed the strengths and capabilities of students in positive ways. She argues that the six key personal factors that emerged from the study could be targeted in terms of intervention. They can also provide data that could be used in future studies to explore the integration of personal factors and contextual resources in building the resilience of students in an Open and Distance e-Learning environment. Her study could also serve as a baseline for understanding the various character traits of the students.

Using Foundation-Phase teacher education learning environments, Makeresemese R Mahlomaholo and Sechaba MG Mahlomaholo's chapter on *Formative virtual assessment towards sustainable Foundation Phase Teacher Education learning environments* proposes forms of virtual formative assessment strategies, based on the conceptualisation of assessment of, for and as learning, geared towards the creation of sustainable Foundation-Phase teacher-education learning environments. This focus has become necessary, because limited resources like time, skills and requisite human capital at many universities threaten to lead to surface learning where only the bare essentials are learnt and taught. Among these are ways in which pre-service teacher education in South Africa in particular is assessed virtually, continuously and formatively. Extending on these limitations, David Lokhat, in his chapter on

Scenario assignments within a digital platform: A superior assessment tool?, compares conventional tests with scenario assignments to determine their effectiveness in the learning cycle. He argues, based on this research, that conventional tests still test at low cognitive levels; plagiarism and collusion in online assessments are rife; and the type of assessments offered creates an enabling environment for this. There is also often poor alignment between the course content and assessments, and no tangible use of taxonomies. He proposes scenario assignments to counteract some of these challenges.

Sarah Bansilal, in her chapter on *Second-chance assessments: social justice action or assessment disruption,* raises concerns about inequitable access to online platforms for teaching, learning and assessment which led to her university recommending that they offer students a second chance to improve their marks. Using a mixed-method approach, she sought to investigate the effect that the second-chance assessments have on the overall marks. The purpose was to examine how second-chance intervention impacts on the marks in two modules. The findings show that in both cases the outcomes significantly changed, raising issues about whether second-chance intervention offers equitable access or whether it in effect lowers the quality of the assessment. Turning to staff issues, Dusty-Lee Donnelly, in his chapter on *Here be dragons: A critical reflection on the experience of using formative assessments to teach professional drafting skills,* suggests that formative assessment remains an unexplored territory for many academics, and although its importance has long been recognised, its features are not well understood. Scaffolding, self-assessment and feedback are, amongst others, the key issues in on-line assessments, which he established in his case study of assessment of an aspect of the Law curriculum.

Examples of assessment forms within the digital platforms include mobile-based formative assessment, which Veena Singaram explores in the chapter on her work in progress to establish the rigour and efficiency of this form of technology. Her chapter on *Mobile-based Formative Assessment and Feedback in Medical Education – work in progress* reports on the preliminary development and design of this mobile-based feedback application prototype to facilitate and create opportunities to prompt self-assessment and constructive formative feedback conversations between trainers, trainees, and peers in the clinical training environment.

The efficiency of assessments through digital platforms cannot be established outside of students' experiences and insights. In this cluster of

chapters, we explore student and staff experiences of using the digital platforms for assessments, especially within a rapid learning curve brought about by Covid-19. In the chapter on *The Digital Shift in Higher Education and the Aftermath of Covid-19: A Wellness Perspective case in an ODeL Institution,* Meahabo Dinah Magano presents a student wellness perspective on assessment. Using ODeL experiences she found that the ICT challenges experienced during the uploading of assignments and examination papers on the side of students affect the academic wellness of students. The blended approach that was used at an institution which claimed to be an ODeL for years, had to realise that there is an '*e*' in the ODeL. The shift to online examinations brought doubts and concerns on authenticity of qualifications for students. Academics' career wellness was also affected, since they had more administrative work.

Karen Ferreira-Meyers and Mandana Arfa-Kaboodvand highlight concerns of compatibility of online learning and assessment with independent, self-directed and autonomous learning, and whether students can benefit from the sudden change in content delivery (from face-to-face to virtual) and learning facilitation mode. Their chapter on *Rethinking Formative Assessment in Times of COVID-19: A Critical Analysis of University Assessment in Eswatini* makes the point that in order to benefit from the given circumstances and use assessment for learning, rapid and fundamental changes in the delivery and practice of teaching are also essential. They conclude with some suggestions regarding the use of the advantageous aspects of e-learning and assessment.

Frank Joseph Mensah, Sakyiwaa Boateng and Alex Boateng note that it is commonly accepted in the contemporary context that online assessment is no longer a choice, but a necessity for measuring knowledge and ensuring that learning outcomes are reached. In their chapter on *Assessments during the Covid-19 pandemic: The experiences of students in higher education institutions within the South African context* they used a mixed-method approach to determine students' assessment experiences during the pandemic. Mixed results were recorded, indicating that students were optimistic and motivated by their assessment experiences during the Covid-19 pandemic. They argue that online assessments are a significant technical innovation that should be incorporated into the educational system. In the past, students used assessment data to improve their well-being, but in an increasingly competitive enrolment landscape exacerbated by the Covid-19 pandemic, an impactful student assessment experience has become more critical than ever.

Having experienced conducting on-line assessments during the rapid

transition to remote teaching, learning and assessment, academic staff reflected critically on their experiences. The last of the chapters in this edition pay attention to academic staff's reflections on the migration of their assessment processes using digital platforms. Using a case study of a private higher education institution that employs a centralised model in which all curriculums are developed, quality-assured and distributed from the central support office to the multiple delivery sites across South Africa, Shamola Pramjeeth, Willy Engelbrecht, Gillian Mooney & Priya Ramgovind suggest policy changes to institutional practices. In their chapter on *A rapid forced adjustment in assessment strategy in a time of disruption: the idea, the impact and the change*, they suggest that the lockdown necessitated changes to two primary policies: the assessments and management of intellectual integrity policies, referring to them as 'pandemic policies'. Of note are aspects of the policies that deal with cheating and sanctions. While the institution had previously included cheating in their policy, it revised the intellectual policy to clearly demarcate different forms of contract cheating. It also includes severe penalties for students who either facilitate or who use contract cheating platforms. Their focus also shifts from plagiarism (the use of published sources) to cheating (the use of student sources). These policy changes were necessary to address the substantial challenges that their institution faced when transiting assessments onto the digital platforms.

The people-centred nature of social work presented unique challenges for the summative assessment process. As a result, the digital shift required of social work academics to reflect and rethink summative assessments. Digitisation made these issues even worse because of the 'digital poverty' of students, where they could not afford the necessary information technology hardware for them to study effectively from home. Based on the academic staff's experiences, Bongane Mzinyane and Siphiwe Motloung, in their chapter on *Reflecting on Digital Summative Assessments during Covid-19 lockdown at a South African University: the accounts of Social Work academics,* argue that marks are a commodity for social work students and serve as motivation for them to participate in assessments. In this final chapter on *Chronicling lecturers' and students' experiences in using digital technologies for continuous assessment practices at some South African universities*, Vusi Mncube; Shepherd Ndondo and Emmanuel Olawale reveal that these rampant inequalities in the society have incapacitated lecturers and students in the use of digital technologies. They also argue that such rampant inequalities amongst students

have also hampered the proper implementation of assessment pro-cedures. They conducted a desktop review by surveying literature from books, journals and websites to examine the nature of digital assessment at higher education institutions, as well as the experiences of lecturers and students. The review also examined the extent to which lectures and students succeeded in the use of digital technologies in assessment and ways of enhancing digital continuous assessment. This study also revealed that, although digital technologies were used in assessment, the socio-economic inequalities pre-valent in society have led to a lack of institutional support in the use of digital technologies.

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Professor Labby Ramrathan
School of Education and
President of SAERA 2019 - 2021
University of KwaZulu-Natal
Durban
ramrathanp@ukzn.ac.za

Professor Ruth Hoskins
School of Social Sciences
University of KwaZulu-Natal
Pietermaritzburg
hoskinsr@ukzn.ac.za

Veena S. Singaram
Clinical and Professional Practice
University of Kwa-Zulu Natal
Durban
singaram@ukzn.ac.za

Chapter 1

A Self-Assessment of Academic Empowerment in the Transition to the Digital Space with the ASSET© Framework

Upasana Gitanjali Singh
ORCID iD: https://orcid.org/0000-0002-9943-011X

Abstract

Just as a flower cannot blossom without sunshine, so too academics at Higher Education Institutions (HEIs) cannot be successful in the sudden transition from face-to-face lectures to adopting an online learning space, necessitated by the Covid-19 pandemic without, amongst other prerequisites, re-skilling. These unprecedented times required of academics to adapt to this unexpected change, sometimes with minimal digital teaching skills and capabilities. This sudden shift was compounded by the forced work-from-home (WFH) scenario, which brought with it its own set of challenges. It became evident that academics need to equip themselves with a new skills set for successful navigation of the online teaching, learning and assessment spaces now created. When educating online, where lecturers no longer have immediate face-to-face engagement with their students, the academic skills set is vastly different from the skills set required in a traditional face-to-face environment. Bringing these skills together has led to the development of the ASSET© (Academic SkillSET) framework for online teaching, learning and assessment. The framework outlines eight basic skills that academics need to develop/possess to support a smooth transition from the face-to-face to the online space, which will most likely find its balance in a blended space post the pandemic. This paper aims to validate the framework developed with a selected group of academics at a South African Higher Education Institution.

Keywords: academic skills, online learning, digital space, transition

Introduction

The sudden transition from face-to-face lectures to adopting an online learning space, necessitated by the Covid-19 pandemic, required that academics at higher education institutions (HEIs) adapt to this unexpected change, with minimal digital teaching skills and capabilities. This sudden shift was compounded by the forced work-from-home (WFH) scenario, which brought with it its own set of challenges. Through the facilitation of Digital Teaching and Assessment workshops, during the pandemic, the researcher has been exposed to the challenges faced by academics at HEIs in the modification of the learning spaces they traditionally worked with. It became evident that academics lacked the skills, capabilities and mindset for successful navigation of the online teaching, learning and assessment spaces now created. When educating online, where lecturers no longer have immediate, face-to-face engagement with their students, the researcher came to the realization that the academic skills set required during online teaching, learning and assessment is vastly different from the skills set required in a traditional, face-to-face environment. Through the validation of this framework, this study will assist academics individually to identify their strengths and weaknesses in the online space, as well as provide institutions with a gauge of their collective academic capital.

Background

While the researcher acknowledges that online learning has been around for a number of years, the unprecedented recent events gave rise to remote teaching and emergency online learning (Singh *et al.* 2020). Typically, there has been a lot of resistance to the adoption of online teaching (Mitchell, Parlamis & Claiborne 2014; Rienties 2014; Vivolo 2016; Veronica 2020), by academics. However, in these unprecedented times, academics were left with no choice – even if they resisted the online space – but to transition, in an effort to save the academic year. The researcher identified that lecturers need to recognise that they are not operating as before; many academics are teaching from their personal spaces, and this will have its challenges – there may be a baby crying in the background during a lecture, or disruption if technology fails. Thus, the framework was developed from the researcher's interaction with academics at the ground level and includes practical rather than theoretical elements.

The first and foremost skill required to succeed in the online environment is that of *digital literacy* – the skills required to navigate the online space;

connect with students and colleagues; as well as the ability to access information through digital platforms like the internet, social media, and mobile devices. Academics need to become familiar with tools to professionalise their online delivery of lectures and actively engage students in the virtual learning space.

Figure 1: The ASSET Framework

The second skill necessary is that of *digital pedagogy* – commonly referred to as the application of contemporary digital technologies in teaching and learning. The third skill, *communication skills*, while being important in

the face-to-face environment, is even more essential in an online learning environment as students require regular, clear and concise instruction. Success for the online academic requires the development of a strong *emotional intelligence* (Skill 4) as being cognizant of students' emotions, well-being, and struggles, can reduce interpersonal conflicts and contribute to the students' emotional and social development. Further, academics must also be kinder and more patient with each other during these unprecedented times. Effective *time management* (Skill 5) is essential when delivering an online course, as time is a finite resource and lack of time management may result in burnout for the academic. Supporting one another is critical in this environment, so if someone has learnt one useful tool, it is important to try and share this knowledge with others in your discipline, institution and academic network, thus developing *communities of practice* (Skill 6). *Recognising diversity* (Skill 7) in the online environment can aid in promoting student growth and reflection, foster a sense of empathy for others, and bring about open-mindedness, thus ensuring an inclusive environment for all of our students. Academics have to manage their *digital identity* (Skill 8) and master useful tools to navigate online teaching cautiously but in an exploratory manner. The extension of the digital identity skill extends to inducting students in their online learning space and teaching their students new skills to ensure success in online learning such as harnessing persistence, independence, technical skills reading and writing skills, motivation, time management, communication skills and empathy.

Thus, it can be seen that the ASSET Framework outlines eight essential skills which make up the 'new' academic skills set required to engage successfully in online teaching, learning, and assessment spaces. These skills extend beyond just knowing and learning the technology.

This research aims to validate the framework developed by outlining the minimum skills required by academics to embrace the digital environment during the unprecedented shift to online teaching, learning and assessment. The study is based on the researcher's own experience and interaction with faculty during the early stages of the pandemic. Bringing these skills together has led the researcher to develop the ASSET© (Academic SkillSET) framework for online teaching, learning and assessment. The initial version of this framework outlines eight basic skills that academics need to develop/possess to support a smooth transition from the face-to-face to the online space, which will most likely find its balance in a blended space post the pandemic. The final aim is to develop this into an electronic framework that academics can use to evaluate

their own ASSET© value automatically in the digital teaching, learning and assessment space. This chapter focuses on the assessment of academics' digital skills to survive in the digital space they were forced to work in, irrespective of the digital platform(s) they chose to adopt.

Literature

Human history has often been flooded with pandemic diseases that leave catastrophic ruins and bring about havoc in their wake (McLaren & Jandric, 2020; WHO 2020; Chaka 2020). These ancient human plagues and the Covid-19 illness of the current pandemic for the novel coronavirus disease are not an exception (WHO 2020; UNESCO, 2020). Covid-19 disrupted every sector in the economy, including higher education (Boggs *et al.* 2021). Both students and staff involuntarily had to transition to the online space, adopting varying forms of emergency remote teaching, emergency online teaching, and uncontrolled online assessments in an attempt to save the academic year (Adedoyin & Soykan 2020; Xie, Siau & Nah 2020). Some higher education institutions (HEIs) around the world accessed and embraced e-learning almost seamlessly, using online educational tools and resources to ensure the continuity of delivery of teaching and learning during the pandemic (Chaka 2020). However, despite the location of HEIs, it seems that the common challenges experienced by academics worldwide in this unprecedented shift to the online environment include the well-known issues of access to data and devices, connectivity, lack of a conducive working space, and limited social interaction (Bhagat & Kim 2020; Cleophas 2020; Paterson 2021; Smalley 2021). Additionally, many academics are suffering from burnout, fatigue and social isolation, as well as anxiety and fear of the pandemic (Flaherty 2020; Van Niekerk & Van Gent 2021). While the mental health challenges facing academics have gained prominence in the media in the recent past (Nguyen 2020), the pressure placed on academics during the pandemic has starkly highlighted the need for a systemic approach to change. Additionally, many academics were not ready to transition to the online environment due to a lack of digital readiness and inadequate digital competencies. Others struggled due to deficiencies in infrastructure, inexperience, the information gap, and the complex environment at home (Murgatrotd 2020). Transitioning from the digital readiness of teachers to the eventual execution of successful online teaching and learning infrastructures is a gap that needs to be strategically

filled. Encouragingly, according to Ali (2020), 'large-scale, efforts to utilize technology uniformly to support remote learning, distance education and online learning during the Covid-19 pandemic are emerging and evolving quickly'.

Kereluik *et al.* (2013) identify the essential skills academics require to be successful in the online environment as the knowledge of technology, creativity, innovativeness, problem-solving, and digital information and communication technologies. Similarly, Chalkiadaki (2018) highlights the need for academics to possess digital capital, which includes individual, social, organization of information, and digital literacy skills. He explains each of these skills as individual skills, including self-confidence, creativity, problem-solving and critical thinking adaptability, managing complex situations, and taking risks; social skills that include communication and collaboration (skills of speaking and writing in mother tongue and foreign languages, etc.), cultural and global awareness (being able to know different cultures, being able to appreciate their values, being capable of establishing cross-cultural relations, etc., leadership (incentive, taking initiatives, entrepreneurship, power to have influence); organization of information skills include learning (self-reflection, self-assessment, self-learning, e-learning, independent learning, knowledge structuring), information management (information literacy, access to data, data management, data analysis, adapting data to new situations, knowledge of content); and digital capital to include digital literacy and using media and information technologies, digital tools, knowledge of tools for establishing mutual communication, thinking critically while using digital devices. In the move to the online space, the skill of using technology effectively and competently is most significant in the field of designing interactive online learning (Voogt & Roblin 2010; Griffin *et al.* 2012; *Dicerbo 2014*;). This is supported by Joynes *et al.* (2019), who state that the skills of using information technologies need to be a significant part of the education process in the twenty-first century. Specifically in the online environment, the ability to use technologically interactive tools is imperative (National Academies of Science 2012; World Economic Forum Report 2015; OECD 2005). Ultimately, digital capital literacy is one of the mandatory survival skills academics should have to thrive in the new normal days of the pandemic and beyond.

From the student perspective, the significant factors that dealt with African students' ability to engage online included unavailability of the access to network and devices; lack of technological competency; and low levels of

emotional and social capital. The study by Singh and Nair (2021) suggests there is a significant need to ponder on the pillars proposed by the Khan octagonal e-learning framework, which comprises eight components: institutional, pedagogical, technological, interface design, evaluation, management, resource support and ethics. Rajkoomar and Raju (2016) posit that each component of the framework signifies a category of issues that needs to be tackled to create a meaningful learning experience.

Singh and Nair (2021) suggest that the Khan framework remains a holistic structure to analyse the effect of African higher education's abrupt shift to online teaching, learning and assessment in an unprecedented situation like Covid-19. The typical Khan framework can be adapted to enable educators to choose the appropriate tools and infrastructure for online learning environments.

Blewett (2016) suggests that the five digital-age pedagogies that enhance the affordances of technology, techno-savvy students' approaches to learning, and the development of key 21st-century soft skills force academics to move away from the passive ways of teaching (consumption) to the more active approaches (curation, conversation, correction, creation and chaos).

Methods

This study adopts a quantitative methodology where the conceptual framework developed was tested on a selected group of academics at a South African HEI. Participants in the study were selected through purposive sampling. The target population of the study was 85 academics who attended training sessions offered by the researcher on digital teaching and assessment in 2020. An online survey was designed to present the eight categories of skills identified in the ASSET framework, and the extent to which an academic meets each skills category is measured through a set of carefully developed criteria following the researcher's interaction with and digital empowerment of over 1 500 academics in the early stages of the pandemic. Gatekeeper consent and ethical clearance was obtained as per Protocol Reference Number: HSSREC/ 00002193/2020. The questionnaire was distributed through the institution's notice system. The final sample obtained was 47 academics. Participation was completely voluntary and respondents were assured that their identity, as well as that of the institution, will be confidential.

Results

Demographics

The demographic profile of the 47 respondents in this study, as summarised in Table 1, were mainly digital immigrants – between the ages of 41 to 60 (65.9%), majority male (66%), lecturer level (44.7%) academics. All respondents held a postgraduate degree (100%), with a small percentage being on contract (25.5%) tenureship. Just over half (57.5%) of them had more than 10 years' experience in academia.

Table 1: Demographic Profile of Respondents

Variable	Categories	N(%)
GENDER	*Male*	31 (66.0)
	Female	16 (34.0)
AGE	*21-30*	3 (6.4)
	31-40	9 (19.1)
	41-50	12 (25.5)
	51-60	19 (40.4)
	>60	4 (8.5)
ACADEMIC ROLE	*Full professor*	3 (6.4)
	Associate professor	9 (19.1)
	Senior lecturer	8 (17.0)
	Lecturer	21 (44.7)
	Tutor	4 (8.5)
EXPERIENCE IN ACADEMIA	*up to 5 years*	12 (25.5)
	6-10 years	8 (17.0)
	11-15 years	6 (12.8)
	16+ years	21 (44.7)
TENURE	*Permanent*	35 (74.5)
	Contract	12 (25.5)
QUALIFICATION	*Postgraduate degree*	47 (100)

Online Teaching Background

To ascertain the background which these academics possessed in online teaching, the research explored their experience (Figure 2), measured in number of years and proficiency (Figure 3), using a self-rating measurement of 'Novice', 'Intermediate', or 'Expert', in online teaching.

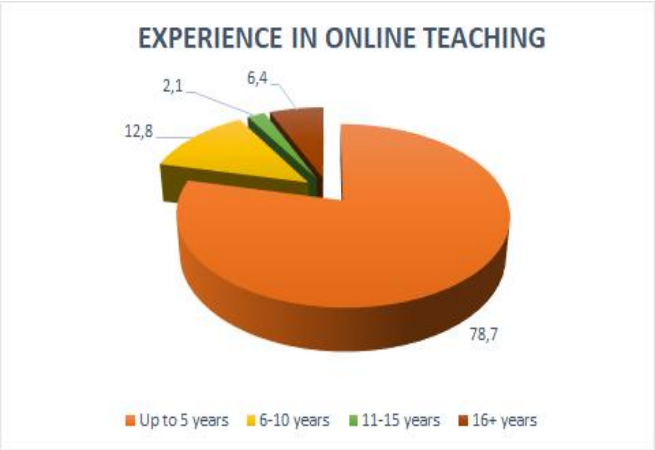

Figure 2: Experience

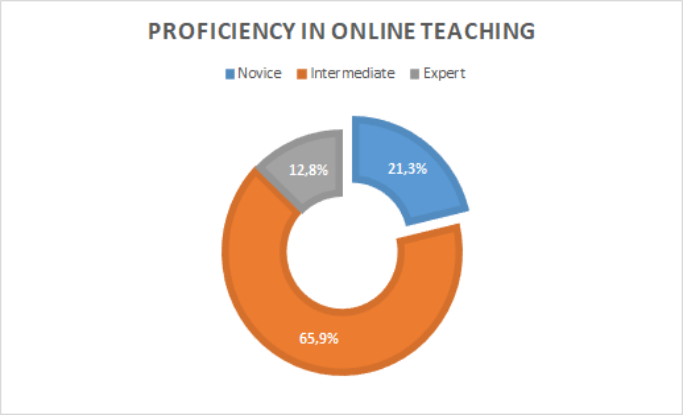

Figure 3: Proficiency

It was noted that while a significant 21 (44.7%) have in excess of 15 years' experience in academia, p=.010, only a significant 37 (78.7%) have up to five years' experience in online teaching, p<.0005. The majority of the sample (31; 66%) rate their proficiency as 'Intermediate', p<.0005. Only a small percentage (21.3%) consider themselves 'experts' in online teaching.

Constructs of the ASSET model

For each of the constructs of the ASSET model, an analysis was conducted on each item individually, and then the construct was analysed as a whole. A consistent rating scale ranging from 'Strongly Disagree' to 'Strongly Agree' was used on all construct items.

The one sample t-test was used to test for significant agreement or disagreement to the statement by testing if the average agreement score is significantly different from the central score of 3.5 (for the individual item analysis for each construct) resulting in significant agreement with the item if the mean score is >3.5, or significant disagreement with the item if the mean score is <3.5.

Construct 1: Digital Literacy

The first construct aimed at measuring the digital literacy skills of the respondents, specifically in relation to their confidence in technology-based skills to implement online teaching and assessment, by presenting 14 items (Figure 4). This construct focused on aspects of familiarity with concepts of digital identity and the digital footprint; privacy and security in online delivery; confidence in the development and delivery of digital materials; and the extent to which student engagement was facilitated in the online classroom.

There is significant agreement (p<.0005) with all items in the *digital literacy* construct, except for the use of technology to professionally edited recorded videos; securing their personal digital identity; and promoting their digital academic identity. For these three items there is neither significant agreement nor significant disagreement.

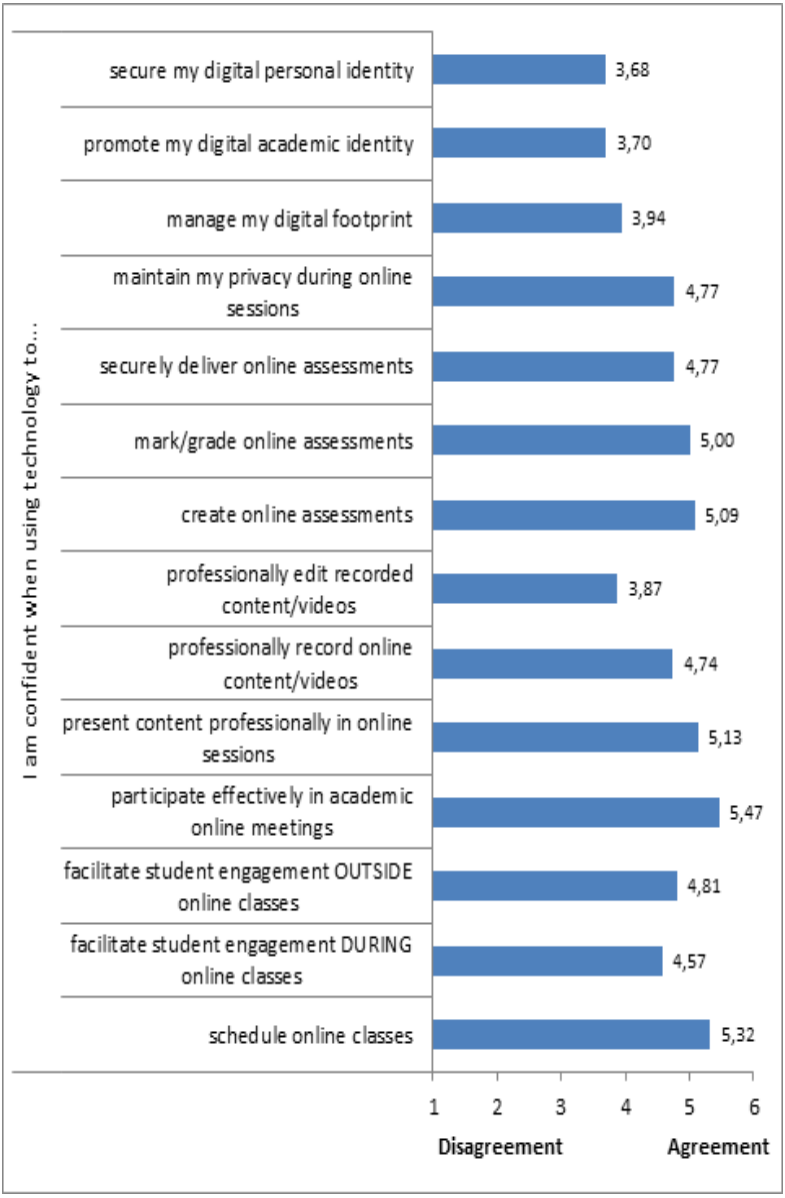

Figure 5: Measuring Digital Literacy

Construct 2: Digital Pedagogy

The second construct presented respondents with 11 items (Figure 6), which prompted them to interrogate what their teaching approach/philosophy is. The respondents were asked to consider practical concepts such as backup delivery plan; regular breaks during delivery; length of recordings and online sessions; student engagement activities; and the role of the lecturer in the teaching/ learning process.

There is significant agreement ($p<.0005$) with to all items in the *digital pedagogy* construct, except for their role as 'the sage' on the stage; their teaching approach being more 'teacher' than student centric; and the use of regular body breaks.

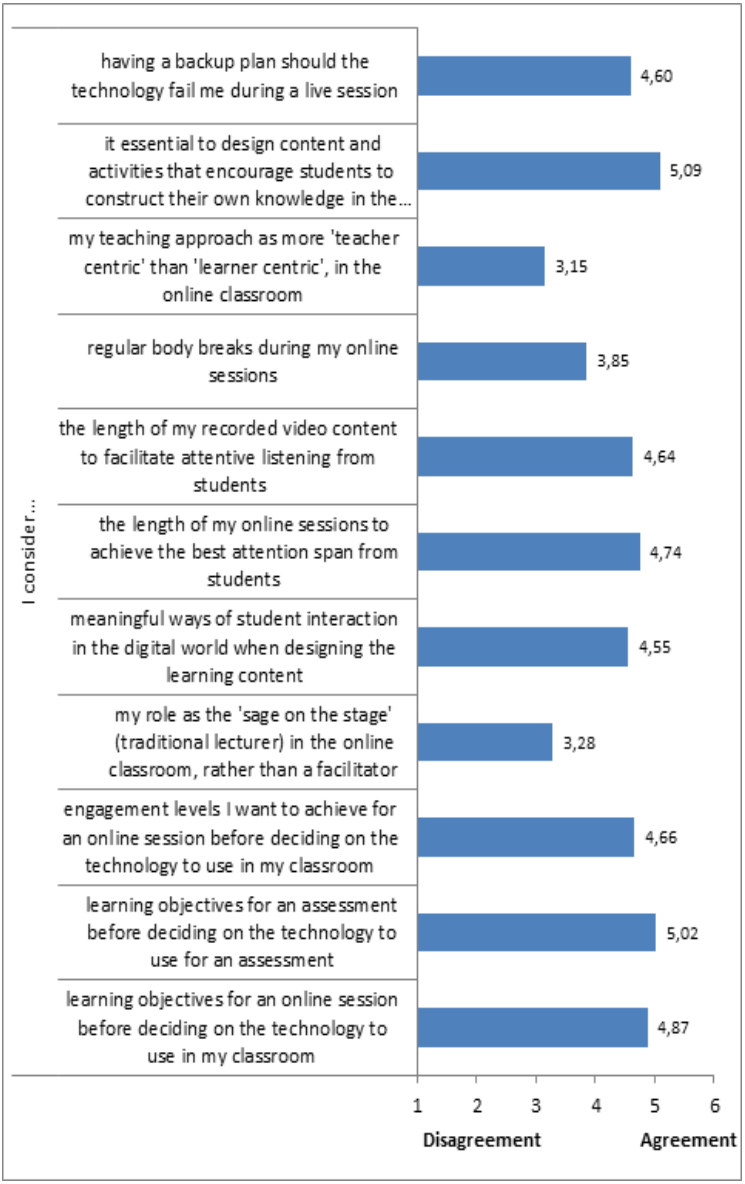

Figure 6: Measuring Digital Pedagogy

Construct 3: Communication Skills

This construct measured the respondent's proficiency in communicating with their students in the online space by presenting them with eight items. Here aspects of communication such as regular, informative and clear communication and guidance were investigated, as well as communication methods adopted.

There is a significant agreement ($p<.0005$) with all items (Figure 7) in the *communication skills* construct.

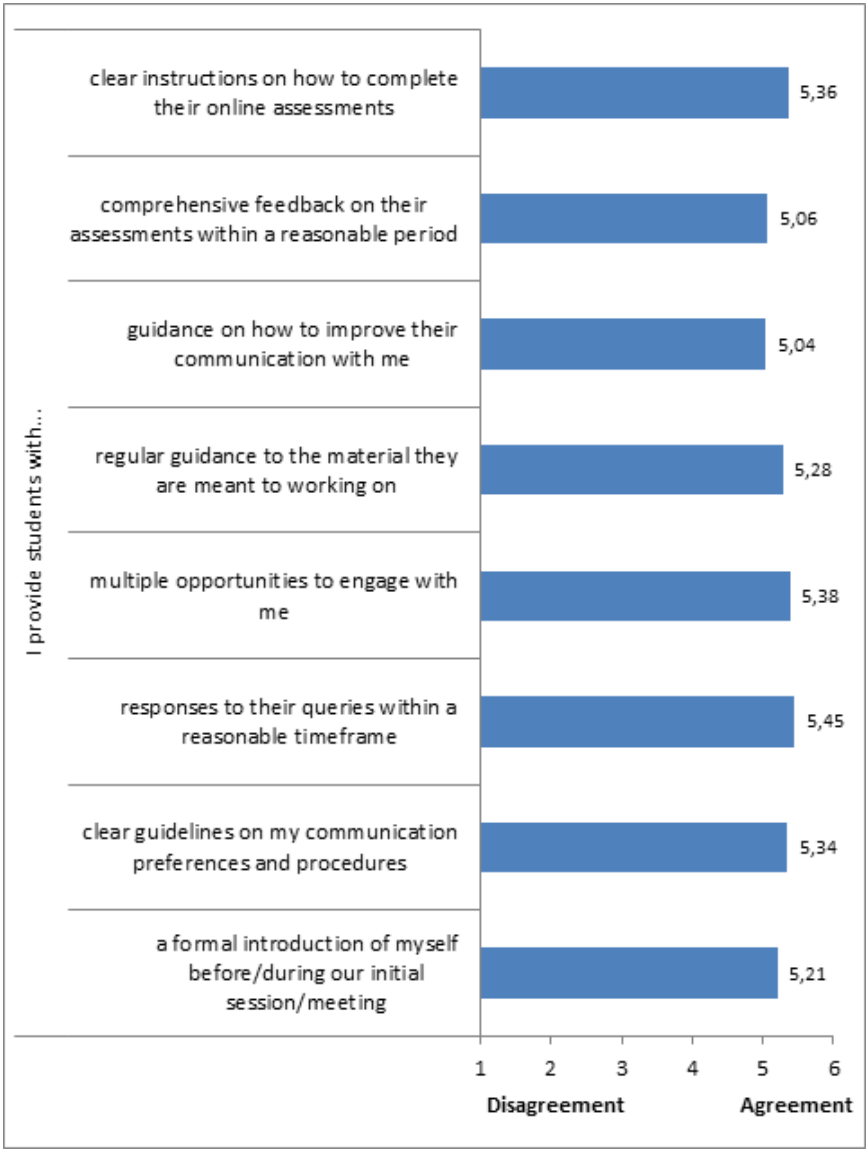

Figure 7: Measuring Communication Skills

Construct 4: Emotional Intelligence

Construct 4 investigated the presence of emotional intelligence to both students and colleagues. This construct focused on the level of empathy respondents had for students (Figure 8) and colleagues (Figure 9) who were facing difficulties in the transition to the online space.

There is significant agreement ($p<.0005$) with all 7 items (Figure 8) in the empathy for students. The results of empathizing with colleagues revealed a significant agreement ($p<.0005$) to all but one item (Figure 9), the lack of self-motivation in the online environment.

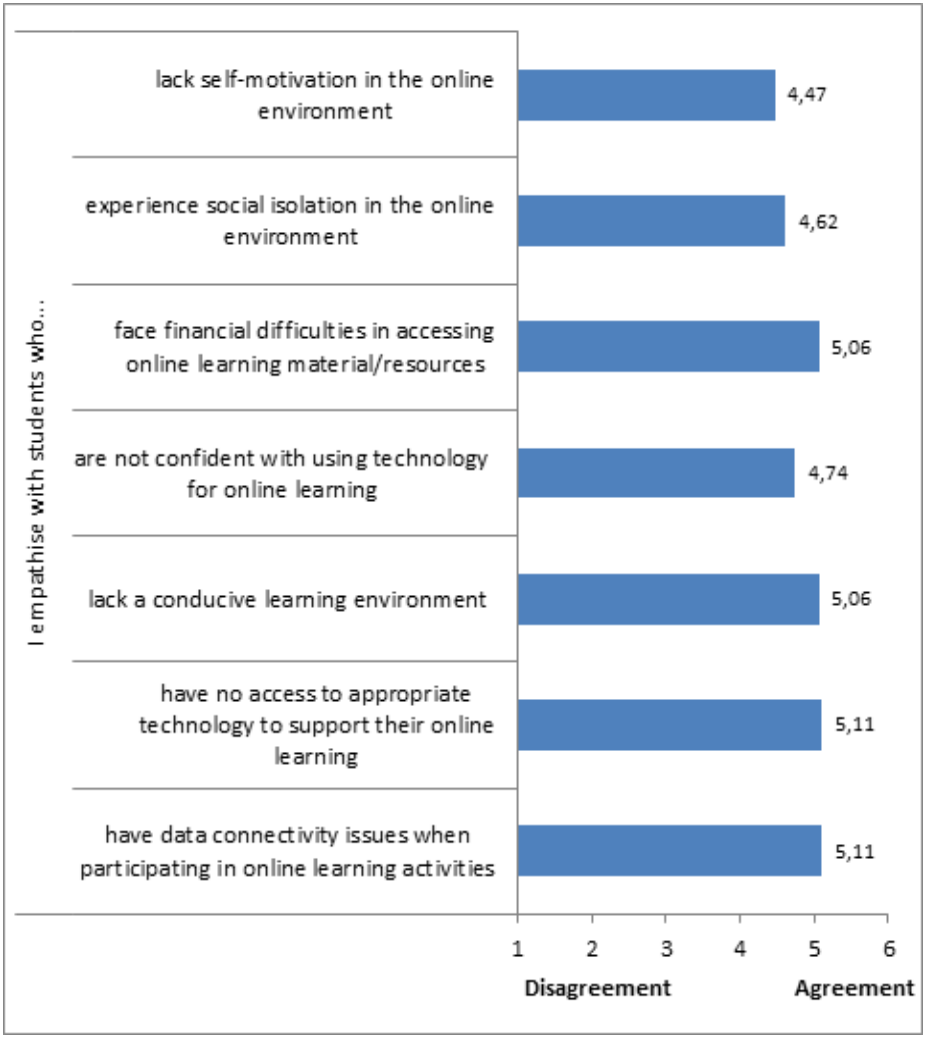

Figure 8: Measuring Emotional Intelligence for Students

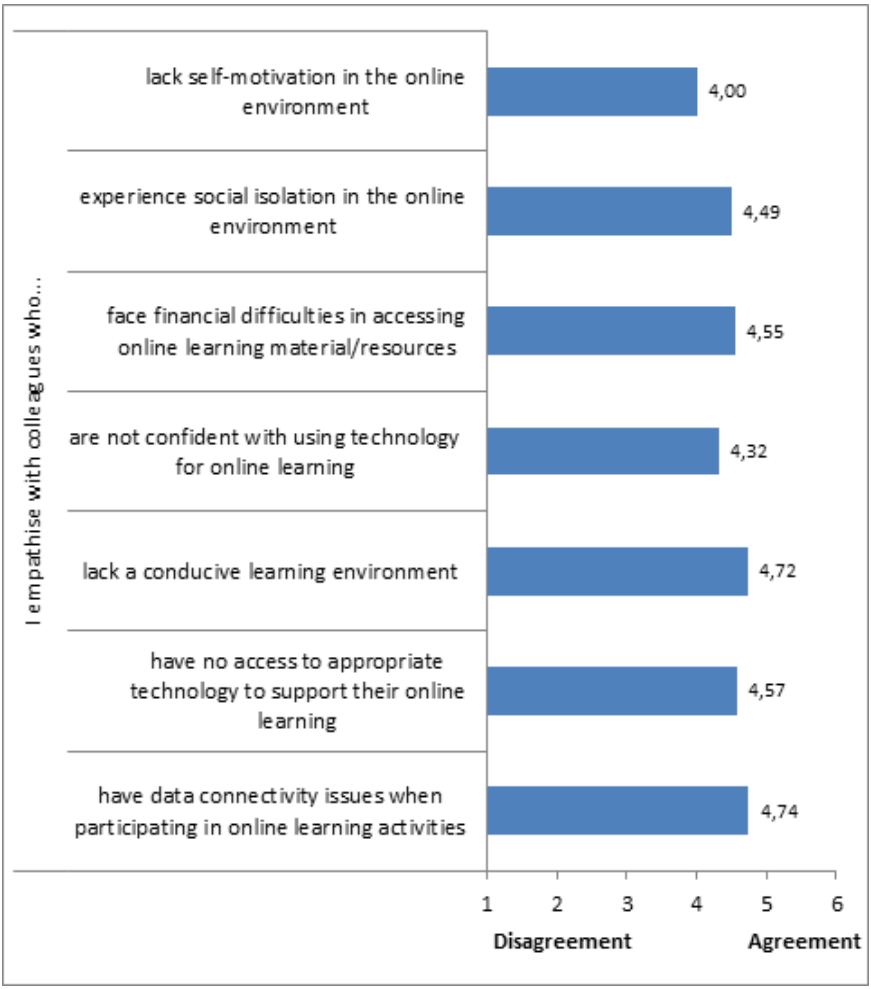

Figure 9: Measuring Emotional Intelligence for Colleagues

Construct 5: Time Management

Eight items, investigating academics' ability to avoid burnout while working in the online environment, are presented in Construct 5. This construct asked respondents to consider aspects such as a personal schedule, balancing work and family responsibilities.

There is significant agreement ($p<.0005$) with only one item in this construct, the ability to define clear times for student consultation/engagement. There was neither significant agreement nor significant disagreement with the other items listed.

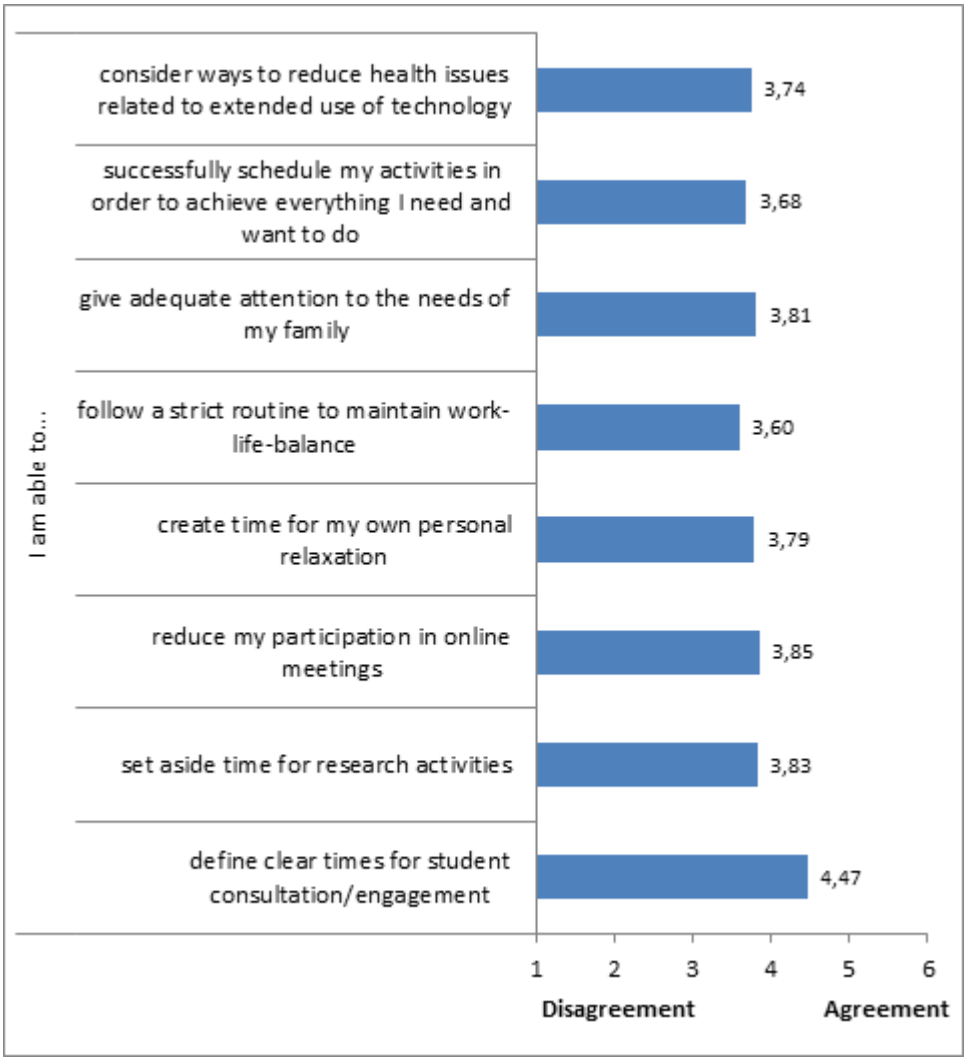

Figure 10: Measuring Time Management

Construct 6 – Communities of Practice

The concept of willingness to share what was self-learnt or through self-initiative, in the online environment, was measured by seven items listed in Construct 6. Here the questions focused on mentoring and willingness to assist colleagues; collegiality in learning from others; and the extent to which they will share new online practices.

There is significant agreement ($p<.0005$) with all seven items in this construct.

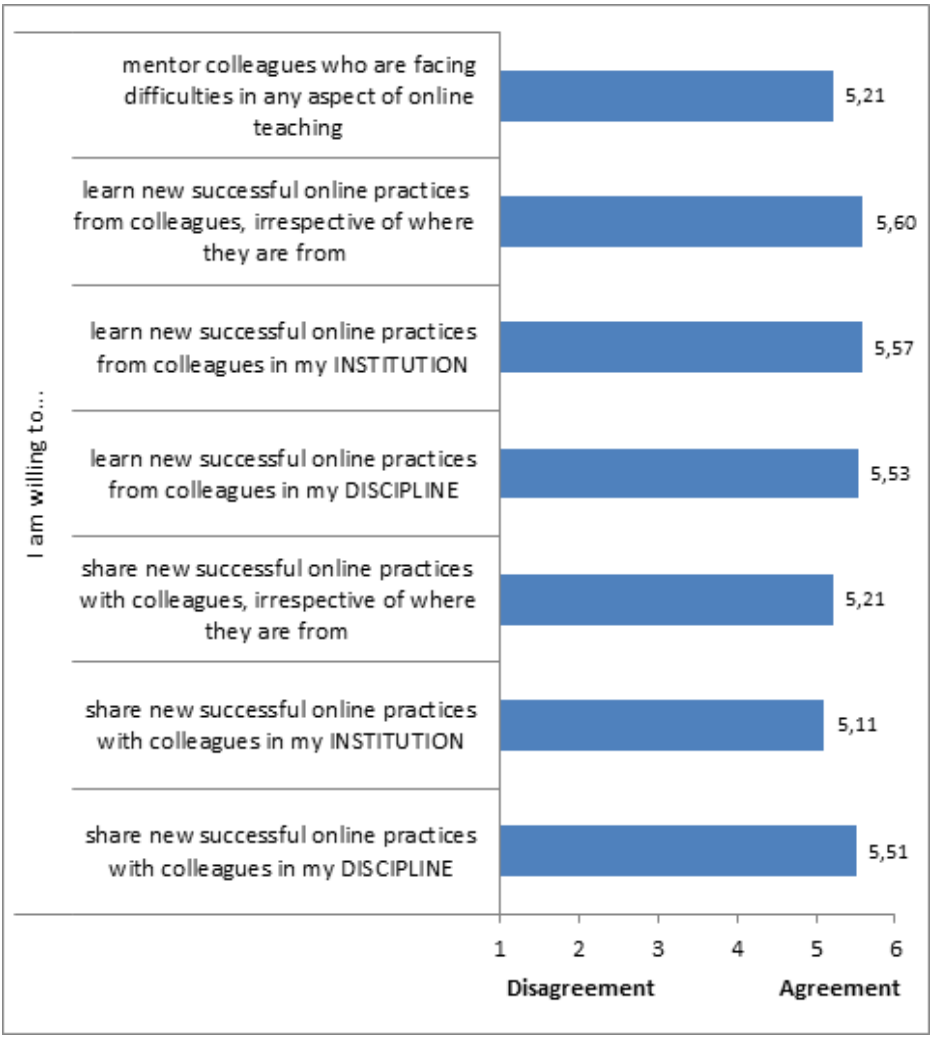

Figure 11: Measuring Communities of Practice

Construct 7 – Recognising Diversity

Six items were presented to the respondents to what extent they took the initiative to understand who their students are/determine the diversity present in their online classroom. Factors such as age, race, gender, ethnic origin, language preferences and learning styles were presented.

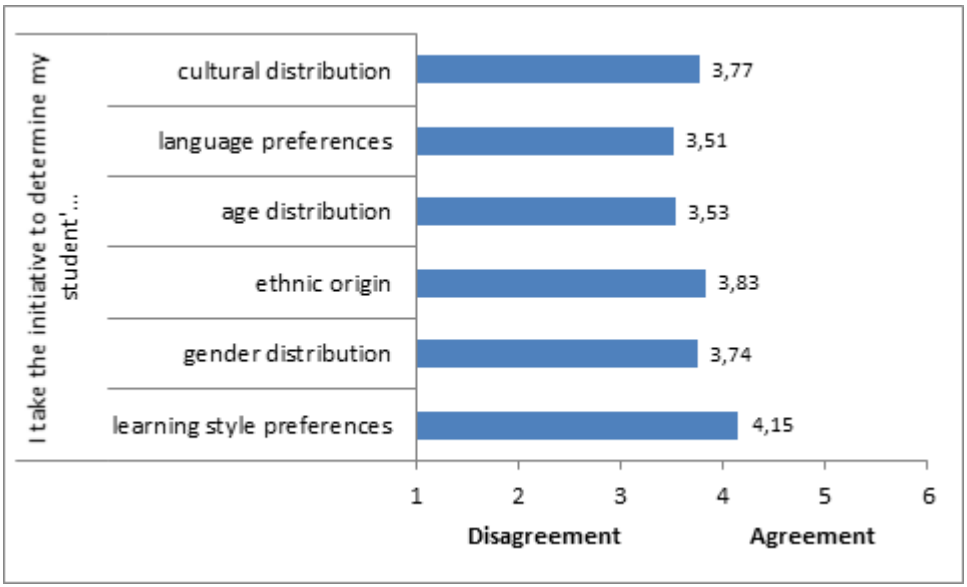

Figure 12: Measuring the Recognition of Diversity

There is significant agreement ($p<.0005$) with only one item in this construct; the ability to recognise learning style preferences. There was neither significant agreement nor significant disagreement to the other items listed.

Construct 8 – Digital Identity

Five items were presented in Construct 8 to understand the respondents' awareness of managing their digital identity in the online space. Aspects investigated include distinguishing between one's professional and personal digital identity; posting thoughtfully on social media; and maintaining one's privacy online.

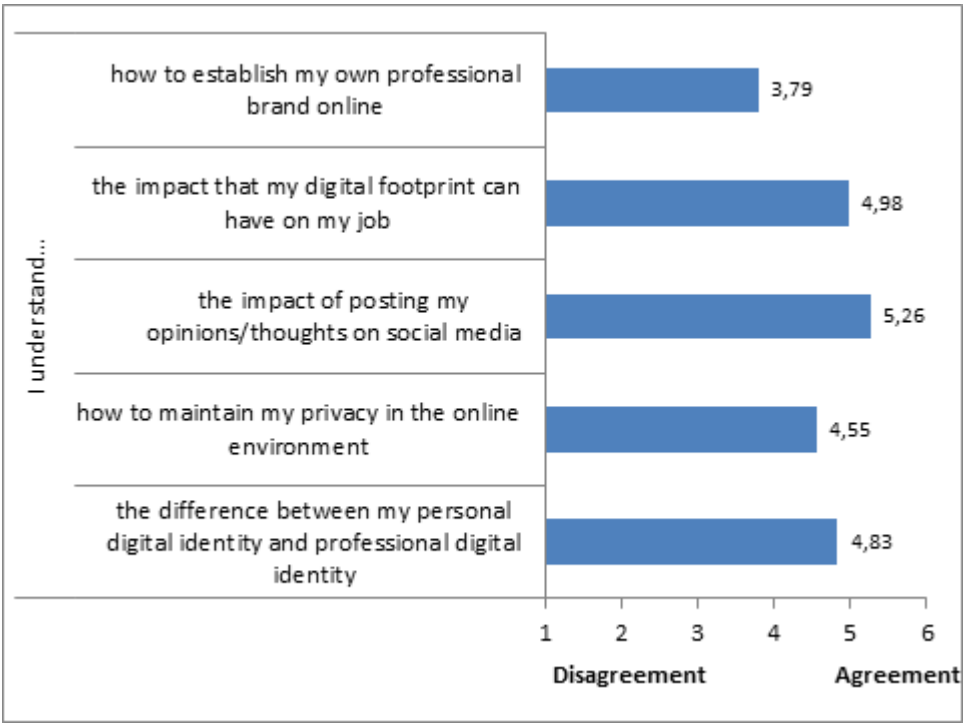

Figure 13: Measuring Digital Identity

There is significant agreement ($p<.0005$) with all except one item in this construct - the ability to establish my own professional brand online.

Analysis of the Eight Constructs in the ASSET Framework

To look at each construct as a whole, an analysis was done to get a single, reliable, composite score that will measure the construct. First, factor analysis was applied to make sure that the items all loaded well enough onto a single factor. If more than one factor was indicated, the feasibility of that factor was then explored. Finally, the reliability of each composite factor was checked/analysed using Cronbach's alpha. An alpha >.7 indicated reliability. The results of the factor analysis and reliability analysis are summarised in a single table (Table 2).

Table 2: Factor & Reliability Analysis of Constructs

Construct	Label	Items included	KMO	Percentage variance explained	Cronbach's alpha
Digital Literacy	DIGLIT	10.1 – 10.14	.862	57.614	.947
Digital Pedagogy	DIGPED_General	11.1 – 11.3, 11.5, 11.10, 11.12	.710	71.175	.881
	DIGPED_TimeMan	11.6 – 11.8			.804
	DIGPED_Approach	11.4, 11.9			.703
Communication skills	COMM	12.1 – 12.8	.817	65.057	.925
Emotional intelligence-students	EI_STUD	13.1 – 13.7	.823	78.712	.960
Emotional intelligence-colleagues	EI_COLL	14.1 – 14.7	.898	73.046	.944
Time management	TIMEMAN	15.1 – 15.8	.905	68.888	.944
Communities of Practice	COMMPRAC	16.1 – 16.7	.746	53.441	.861

Recognising diversity	RECDIV	17.2 – 17.6	.826	80.884	.954
Digital identity	DIGID	18.1 – 18.5	.763	58.116	.862

For each sub-construct, the agreement scores are averaged to produce a single agreement measure. Analysis was then done on each of the above constructs to ascertain the extent of the agreement/disagreement that each skill set is present.

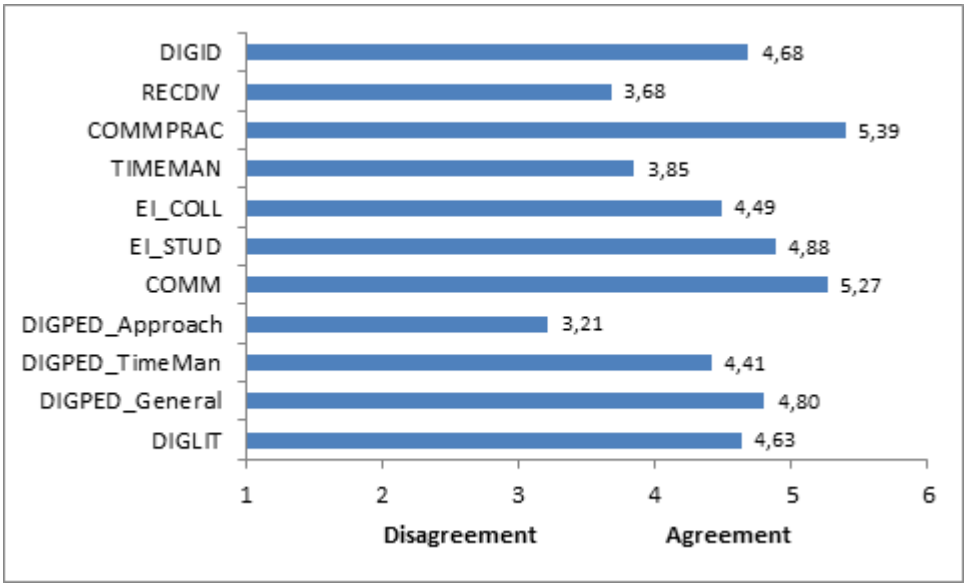

Figure 14: Extent of Agreement of Each Skill

There is significant agreement ($p<.0005$) that Digital Literacy (DIGLIT), Digital Pedagogy (DIGPED_General, DIGPED_TimeMan), Communication skills (COMM), Emotional intelligence-students (EI_STUD), Emotional intelligence-colleagues (EI_COLL), Communities of Practice (COMMPRAC), and Digital identity (DIGID) are present. However, for the remaining Digital Pedagogy (DIGPED_Approach), Time management (TIMEMAN), and Recognising diversity (RECDIV), there is neither signifi-

cant agreement nor significant disagreement that these skills are present.

Significant positive correlations were found between perceived proficiency and digital literacy (r=.673); digital pedagogy (general) (r=.380); time management (r=.531) and digital identity (r=.630). In each case, more perceived proficiency is associated with more agreement that they possess the skills.

Discussion

A small number of respondents considered themselves experts in the online environment, which is expected, as traditionally this institution is a face-to-face HEI, and academics would not have experimented with any forms of online teaching and assessment, unless they possessed an intrinsic motivation for the same – essentially there was no motivation to adopt any form of online delivery or engagement. The respondents displayed confidence in securing their personal digital identity; maintaining their digital footprint; securing the privacy and security of students, content and materials in the online environment; the development and delivery of digital materials; and the extent to which student engagement was facilitated in the online classroom. This shows that despite not having much formal training in digital teaching and assessment, academics were fast to adapt to this new delivery method. It is encouraging to note that respondents indicated that the role of the teacher has evolved from the traditional 'sage-on-the-stage' role to that of a facilitator of learning. Besides the concept of including regular body breaks, all other aspects of digital pedagogy were considered by the respondents when designing their content and delivery. Respondents adopted multiple methods of communicating with their students, as well as provided regular, clear and timely guidance and feedback. There were consistent results for empathy shown to both students and colleagues who faced social isolation; lacked access, connectivity or technology; financial issues and lack of working space. However, respondents were not empathetic towards colleagues who lacked self-motivation. Respondents are clearly struggling to find that work-life balance, especially in the forced work-from-home scenario. The only aspect of time management they are succeeding in is providing clearly defined consultation times for students. The levels of collegiality indicated by respondents were high, with willingness indicated in sharing with, helping and learning new successful practices from colleagues. Diversity was only identified with

respect to learning style preferences by the respondents. The demographic diversity was neglected. Respondents were confident in managing their digital identity and footprint but were not familiar with how to establish their professional brand online.

The research acknowledges that digital pedagogy, as defined by Blewett (2016), includes curation, conversation, correction, creation and chaos. In this study, the researcher focused only on the practical implementation of basic digital pedagogy for teaching, in the sudden unprecedented transition to the online space. It is understood that digital assessment, which slides to curation and correction by Blewett (2016) cannot be considered separately from pedagogy and content. This will be included in future iterations of the framework as an essential skill for academics to possess.

Conclusion

This paper presents a framework developed by the researcher to identify academics' strengths and weaknesses in the online space. The paper then reports on a survey, which presented a series of quantitative questions completed by 47 academics to validate the framework developed. Through the validation of the framework developed, the data from this study suggest that academics transitioned well into an evolving environment where they had to move from a face-to-face mode to a fully online mode, without much training or academic empowerment. While academics were forced to adapt to ensure the continuity of academic activities. While the study suggests academics were confident of their digital delivery skills, the softer skills need to be developed.

Limitations and Future Research

Data were collected during the initial stages of the lockdown in South Africa. This was a busy period for academics, having to transition into a fully online environment. Hence the findings cannot be projected onto the general population due to a low response rate.

The body of literature on the impact of Covid-19 on HEIs is still developing. The author acknowledges that the data collection involved a self-reflection process. Thus, it reflects a personal analysis at one HEI in South Africa. Future research would look to extend the dataset to academics at other SA and international HEIs.

The framework will be expanded to include essential elements of digital assessments and digital pedagogies.

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Upasana Gitanjali Singh
Academic Leader
Information Systems & Technology
University of KwaZulu-Natal
Durban, South Africa
singhup@ukzn.ac.za

Chapter 2

Exploring the Personal Factors that Mediate the Resilience of Students during Online Assessments

Lina M. Methi
ORCID ID: https://orcid.org/0000-0002-8584-9243

Abstract

Trends in the Open Distance e-Learning (ODeL) environment are encapsulated in the shift from print-based to online delivery, both in teaching and learning as well as assessment practices. Lecturers and students may find the rapid transition to online delivery and e-assessment distracting and frustrating. The introduction of online technologies has centred consideration on the relevant contextual adjustments, neglecting the flexibility of students to adjust to the changes within the ODeL environment. This study explored the personal factors that mediate the resilience of students in the implementation of online assessment in the current ODeL environment. In order to characterise the personal factors of students, literature within the past decade in which advancement and the widespread use of educational online assessment practices have grown rapidly was reviewed. The strength-based approach was used as a lens to highlight constructs that depict the personal protective factors that have developed the strengths and capabilities of students in positive ways. The six key personal factors that emerged from the study could be targeted in terms of intervention. They can also provide data that could be used in future studies to explore the integration of personal factors and contextual resources in building the resilience of students in the ODeL environment.

Keywords: mediate, resilience, protective processes, personal factors, online assessment practices

1 Introduction

The Open Distance e-Learning (ODeL) framework uses contemporary innovation for teaching, learning and assessment to empower a combination of synchronous and asynchronous communication between students and lecturers who are physically isolated from one another (Ngubane-Mokiwa & Letseka 2015). The online system can be applied to e-learning of any scope, including assessments. However, it must be planned systematically. Flexibility in learning is therefore dependent on the openness of the system and the availability of learning resources distributed in various locations. Since the recruitment objective of higher education institutions is to increase diversity in its student body, the development of support programmes for students with diverse personality traits should be put in place to prepare students to adapt more easily to the context of their studies, despite adversity.

The e-learning framework is sought to be an innovative way of providing instruction to diverse students. It is learner-centred, an enabler of the learning process where technology is used like pen and paper in the education setting (Aparicio, Bacao & Oliveira 2016). Reference is made to the extent to which college students remain vigorous, committed, and absorbed in their studies while withstanding the challenges experienced within the ODeL context. However, the gap between students' attributes and their capacity to understand online assessment, goes unnoticed. Previous studies have reported a concern related to the number of students struggling with social, emotional, mental and behavioural problems that are possible risk factors affecting their well-being and impeding their success (Oberle 2018; Mushonga & Henneberger 2020; Moawad 2020). Within the context of this study, resilience focuses on how personal attributes can be resourceful when specific challenges ensue during online assessment. What is not clear is how processes like downloading of question papers, saving, and converting of scripts to a more acceptable and secured format, and uploading of answer sheets, which can be stressful, can be influenced by the personal factors affecting students' resilience. However, such attention shifts the academic paradigm away from narrow focus on multisystem, organisational resilience processes (Ungar 2021b) to strengths in student's inherent traits.

The purpose of this chapter is to identify the diverse personal traits as factors enabling students to manoeuvre the online assessments platforms. This paper begins by introducing the context of the study before a review of

literature. The findings lead to six key personal factors raised in the discussion. In closing, recommendations for future interventions relating to enhancing the resilience of students in the implementation of online assessment are outlined.

2 Literature Review

Resilience amongst students is said to be the result of a navigation technique that enables them to discover pathways that lead to resources that sustain their well-being and their physical and emotional ability to negotiate resources accurately (Ungar 2006; 2007; Masten 2011). In an ODeL context, there is a physical distance between students and the university, which suggests that it is the students' responsibility to take charge and negotiate the resources provided for their educational success and personal growth. Students come from diverse disadvantaged backgrounds with diverse capacities and experiences. I perceive such students to be helpless and crippled in managing their uncertainties in terms of their innovative capacities. However, students have diverse personalities and abilities to mitigate the e challenges that accompany online assessment practice. It is important that these factors be explored in order to understand resilience and to make recommendations on how to develop these traits in all students.

2.1 The Transformation to Online Assessment in Higher Education

Online assessment is a trend that is rapidly growing at an unexpected rate for both students and educators. Although the transition to online learning and assessment started gradually pre-Covid-19, to date, authors, researchers, theorists, and educators have defined how online assessment in developing and developed countries have impacted academics in many ways and from different perspectives and disciplines (Ngubane-Mokiwa & Letseka 2015; Makoe 2012; Kunene & Barnes 2017; Reedy, Pfitzner, Rook & Ellis 2021). Online assessments have proven to be more efficient than traditional forms of assessment, due to the fact that academics are able to reach a large number of students quickly and immediately, providing meaningful and timely feedback to students regarding the quality of their work (Ngubane-Mokiwa & Letseka 2015). On the contrary, research has paid little attention to connections between the personal factors of students and how they influence them in the

implementation of online assessments. This is demonstrated by the provision of a range of options for students' engagement in the provision of synchronous e-assessment practices through web-based technology, as discussed in the following paragraph.

2.2 Assessment Practices

Higher institution programmes and modules are developed based on specific learning outcomes that students need to achieve. The basic principle in implementing various assessment tools is to enable students to demonstrate their learning and development. Prior to the unprecedented Covid-19 pandemic, institutions across the higher education sector had already started to implement online delivery as a strategy to address challenges in their teaching and learning activities (Guangul *et al.* 2020). Increasingly flexible delivery modes were made available to university students globally to provide multiple pathways and opportunities through online assessment practices. Effective assessment techniques include projects, portfolios, self-assessments, continuous assessment, MCQ, take-home exams, and formative and summative assessment.

Although online assessment practices are found to be the best option to control academic integrity and can accommodate assessing all types of learning, it poses the risk of cheating (Gamage, Silva & Gunawardhana 2020) and plagiarism (Rowe 2004). For better management of academic integrity during online delivery and assessment Gamage *et al.* (2020) recommend that academic staff need to be equipped with procedural training that provides moral support for students. Online proctoring has the potential for students to take an online exam at a remote location while ensuring the integrity (security and trustworthiness) and reliability of the online exam (Hussein, Yusuf, Deb, Fong & Naidu 2020). Typically, proctoring is thought to involve supervision of an assessment by an instructor using the remote monitoring software as a countermeasure (Dendir & Maxwell 2020). However, online proctoring requires students to have access to suitable technological infrastructure, without which the option will not work reliably (Hussein *et al.* 2020).

Although online delivery was gradually rolled out at most institutions, the unprecedented Covid-19 pandemic fast-tracked conducting assessments remotely (Guangul *et al.* 2020). A variety of remote assessments are made available, using diverse innovative assessment practices to evaluate students'

online learning (Guangul *et al.* 2020). Previous formal examinations that were scheduled to take place as face-to-face examinations have now taken the form of take-home online examinations (Gamage *et al.* 2020). These exams can be completed by students in the comfort of their homes with access to subject notes, texts and resources (Morris 2010). Podcasts, e-portfolios and continuous assessment are utilised as forms of assessment. Morris (2010) contends that the benefits of podcasts are that it augments the clarification of specific details in the learning content and enhances understanding. In addition, Guangul *et al.* (2020) share alternatives to proctored remote exams to prepare students for online assessment practices. Proctored exams are done remotely by using various learning management software (Guangul *et al.* 2020). With time, different tools have been developed to assess at higher education institutions, but how effective they are implemented and how well they evaluate sustainability, and its impact are still an open question.

2.3 Personal Enabling Factors that Mediate Resilience

Personal protective factors are attributes that are intrinsic by virtue of their inherent predisposition or by external acquisition (Theron 2004). They can be in the form of processes, actions or objects that empower humans to meet life's challenges successfully, for example, systems that provide social, emotional, and material support (Masten 2005). Protective factors are resilience enablers that help to increase students' optimism as well as their positive emotional image, self-concept, good interpersonal relationships, and academic achievement (Oberle 2018). According to Masten (2001), resilience emphasises qualities rather than deficiencies. In the relevant available literature, Masten (2014) describes resilience as the ability of state of mind to solve problems that threaten health, prosperity, and success. State of mind could refer to the capacity to cope and adapt successfully to new situations. (Ungar 2011) defines resilience as the capacity to adapt, navigate and negotiate resources, despite adversity. The ability to adapt could be activated by means of stimulating a sense of curiosity and tapping into one's cognitive capacities.

Personal traits appear to have significant impact on how individuals interpret and deal with crises (Ledesma 2014). Research has identified additional factors present in people, including sympathy, understanding, scholarly fitness, toughness, feeling of cognisance, profound vitality, constructive emotionality, inspiration, and self-control (Masten 2001; 2005; Ungar 2004; Oberle

2018). On the contrary, documented studies reveal instances in which vulnerability in adapting to the ODeL circumstance generally worsen and resilience becomes less likely as risk factors multiply and persist (Obradović, Shaffer & Masten 2012). It should, however, be noted that resilient individuals are not immune to life's challenges; it has been shown that they have the capacity to adapt well in the face of adversity (Masten 2001) as they continue to strive and thrive in moving towards self-actualisation and positive learning outcomes.

Students require a high level of adaptability to realise qualities that promote resilience. It is assumed that students at the same institution share cultural practices and values that include, but are not limited to, problem-solving skills, critical thinking, a sense of humour, emotional intelligence, assertiveness, and orientation to time, as well as self-concept and self-esteem. State of mind and qualities that are produced early in life constitute the social foundation of students and influence the degree to which they will adjust to their interaction with the organisation, course programme, relationships with peers and lecturers and their individual impact on distance learning (Theron & Liebenberg 2015). Strengthening protective factors, in addition to reducing risk, may enhance the successful development of students, especially those from disadvantaged life circumstances (Jessor, Turbin & Costa 2017). Threats to an ability to adapt are described as risk, adversity, and disturbing life events. Masten (2001; 2014) and Hobfoll (2011) attribute psychological stress to relationships between students and their friends or lecturers as well as their household circumstances, including the absence of early nurturing, family stability and protection, as well as institutional systems, as predominant predictors of resilience in college students from high-risk environments.

2.4 Provision of Institutional Support to Students

The provision of student support contributes to developing learning through tutoring, discussion forums, blogs, podcasts, and assessment. These practices enhance student commitment and self-esteem, as well as establishing user-friendly information management systems. Considering the extent of collaboration and interaction required for effective online learning and assessment, integration of student support into assessment design should be accorded more attention rather than just delivery. This is to reduce students' anxiety about ICT. The study conducted by Van Wyk (2020) clearly outlines online academic support e-tools and collaborative learning efforts designed to achieve the

objectives for ODeL. Van Wyk identifies the following e-learning tools that are easily accessible for students: the online tutorial letter compiled with specific instructions related to attending online seminars, tasks and examinations, as well as support in the course, and a study guide that contains planned content for the module, all encapsulated in myUnisa for students to access at their convenience. Additional contextual academic supporting learning materials available include mass open online courses (MOOCs), open education resources (OER), YouTube videos and e-mails that were used during lockdown (Van Wyk 2020; Mphahlele 2020). Van den Berg (2020), Makoe (2012) and Mphahlele (2020) also allude to the use of e-blogs, LMS, interactive forums and social media, such as WhatsApp and Facebook as valuable resources within an Open Distance e-Learning context where others can observe, comment, and contribute. In some instances, lecturers might make use of electronic discussion forums to promote collaboration, synthesis, and reflection (Ngubane-Mokiwa 2017).

3 Purpose of the Study and Research Questions

Prior to the onset of the Covid-19 pandemic, there has been a test of organisational transition from blended to full digital instruction on the part of the higher education institutions globally and locally, and assessment practice has moved online at an alarming pace. The process had already started before Covid-19, but the advent of Covid-19 made it imperative to move assessment online. Before Covid-19, this was done to respond to the issues involving a number of students enrolled to be able to access their study environment and material wherever they are. Other reasons for the transition from pre-Covid-19 include the fact that lecturers are able to provide feedback on students' assignments through a click of a button from any location in the world through on-screen marking (Ngubane-Mokiwa 2017) and staff who are unable to attend their local campus due to health issues (Bhagat & Kim 2020).

Although online learning and assessment are challenging, there are benefits cited in the literature. Different resilience theories focus on inherent qualities that individuals possess, which include adaptation skills, the capacity to make realistic plans, the ability to carry out plans, the ability to manage one's feelings and impulses effectively and in a healthy manner, good communication skills, and confidence in one's strengths in the face of danger, and the way these assist them to defeat exposure to hazards in normal life (Zolkoski &

Bullock 2012). What we do not know is how individual students' personal factors influence their transition to online assessment. The purpose of this chapter is thus to explore personal factors that mediate the resilience of students when using different e-assessment practices. The key research questions that guided this research are:

- What are the inherent personal factors which mediate the resilience of students despite their life challenges?
- What are the acquired factors which mediate the resilience of students despite their life challenges?

The study will serve as a baseline for understanding the various character traits of the students. It will help institutions of higher learning moving forward, to make informed decisions about various students' attributes when planning interventions.

4 Theoretical Framework

This chapter draws on strength-based approaches that are rooted in the belief that (1) people have existing competencies to identify and address their own concerns; (2) people are capable of learning new skills and solving problems; and (3) people can be involved in the process of discovery and learning. Strength-based approaches present a new worldview that abstains from labelling and accepts control by the youth and their families to help themselves when faced with adversity (Saleebey 1996; 2008). The strength-based approach arises from findings related to positive psychological perspectives that move away from focusing on risks and maladaptation and instead strive to understand the factors that enable individuals to flourish and achieve using e-assessments (Oberle 2018). Although Ungar (2015) maintains that students are at risk due to their unmet mental, physical and psychological needs, strength-based approaches acknowledge the real problems that affect individuals and examine individuals in terms of their capacities, talents, competencies, possibilities, visions and hopes (Saleebey 1996). Saleebey (1996) is passionate in encouraging people to build on their strengths. He strongly believes that somewhere within all humans there is an urge to be heroic; to transcend circumstances; to develop their powers; to overcome adversity; and to stand up and be counted (Saleebey 2008).

Within the context of this study, the issue of resilience brings into consideration several questions such as: Why are some students underperforming, debilitated by setbacks, poor performance, stress and telephobia whereas others are able to navigate e-assessment practices and succeed with their studies? The implementation of assessments varies, depending on the teaching and learning environments and it is concerned with personal growth in affective areas of self-concept, values, and emotions (Mphahlele 2020). Processes that assist students to recognise and act on their strengths are relatively new in the field of ODeL and are adopted to improve student achievement (Galloway, Reynolds & Williamson 2020). Students should be made aware of available resources and processes to be followed and negotiated for them to control their online teaching, learning and assessment processes successfully. Students should be encouraged to identify their strengths and apply them in roles that suit them best; they should invent ways to apply their strengths to everyday teaching and learning. Mphahlele (2020) contends that when students are self-motivated to learn, have a strong sense of self-belief and are energised to perform, it will be easier for them to use mobile technologies to access course content and assessment activities and knowledge creation and sharing within the network of their peers.

5 Research Methodology

The research design used in this chapter is qualitative by nature. The study was conducted in a developmental sequence of key publications revealing the students' personal factors that mediate the resilience of students that can be prominent for enhancement of students in implementing online assessments in an ODeL context. This was done to get a good overview and understanding of the diversity of students' traits registered at Unisa. A distinction was then made between the significant enabling factors and basic assumptions in the contemporary and earlier versions of literature with regard to the resilience of students in the implementation of online assessments.

The literature search was conducted to identify research conducted on personal attributes of students from different perspectives and processes of remote assessment practices. Articles from 2010 to 2021 were searched from the database by using the key terms, 'online assessment' and 'resilience' to distinguish what has been undertaken and what needs to be undertaken, identify variables that are relevant to the topic, identify relationships between theory/

concepts and practice, avoid unintentional and unnecessary replication, identify contradictions and inconsistencies, and identify strengths and weaknesses of the various research approaches that have been utilized (Onwuegbuzie, Leech & Collins 2012). However, any relevant input outside the timeframe was also considered, depending on its validity. The findings of articles were perused to determine their relevance for the purpose of our study. The criterion for screening articles for further review was that both inherent and acquired personal factors that mediate the resilience of students should be distinguished from strength-based theory and are applicable to online assessment practices.

6 Analysis of Reviewed Data

Students' resilience has been examined over the years through a variety of constructs. This review was then used as a basis for analysing the overall strengths and limitations of students' personal factors with regard to informing intervention plans to promote the resilience of students in the implementation of online assessment. A review of student personal factors that mediate their resilience was evaluated and analysed systematically to elicit the distinct attributes through studies between the years 2010 to 2021. By reviewing the literature, the following student personal attributes, both inherent and acquired, were identified. I used the strength-based approach as a lens to organise, categorise and analyse data.

6.1 People have Existing Competencies to Identify and Address their Own Challenges

The strength-based initiatives help students to identify their natural talents, engage in productive activities to develop them into strengths, and empower students to mobilise their strengths in everyday situations (Saleebey 1996). Students need to display their willingness and preparedness to be involved in the process of discovery and learning. The following section reflects the results of the literature reviewed on core competencies as enablers that can help students to mediate their resilience.

6.1.1 Technological Competencies

Online assessment relies solely on technology and requires of students to be

literate in navigating technological devices to enhance their remote learning and assessment. Thus, technological competencies are compulsory skills students must possess to be successful in implementing online assessment. However, Albrahim (2020) argues that there is no imperative need for students to be technologically advanced. The technological skills required, specifically for online assessment, relate directly to the possession of, and accessibility to, physical resources (laptop, mobile phone, or tablet), as well as competencies in implementing e-assessment (downloading, converting paper to PDF and uploading answer script). Research argues that the fact that students use electronic devices for social networking does not mean they have the skill required for online assessments (Khan & Khan 2019). To actualise their potential ICT support and capacity building, efforts are required.

6.1.2 Self-directed Learning (SDL)

The study conducted by Bhandari, Chopra, and Singh (2020) argue that students should be focused, motivated and stress-free, have time-management skills, and be able to search learning resources for the successful implementation of online assessment through SDL. The SDL is consistent with the strength-based approach because it allows students to identify their personalised learning style by diagnosing their needs, learning goals, plan, ability, identifying e-learning materials, and implementing and evaluating the outcomes (Lalitha & Sreeja 2020; Geng, Law & Niu 2019). Hiemstra and Van Yperen (2015) acknowledge the significance of nurturing students' self-directed learning capabilities through student mentoring, tutoring and study skills classes, self-reflection, and goal-selection strategies to assess their learning needs. SDL processes contribute to the use of Internet communication technology for collaborative learning (Lee *et al.* 2014). Various educational research emphasises on learning motivation and its relationships between self-directed learning and technology (Geng, Law & Niu 2019).

SDL, in keeping with the strength-based approach, has a relationship with self-efficacy. According to Geng *et al.* (2019), self-directed students possess adequate self-efficacy traits in order to meet new challenges. Literature shows that sharing personal experiences with others also enhance self-reflection. It also helps in to encode knowledge in new ways (Butcher & Sumner 2011). Thus, these studies promote an integration of variables as protective factors and their effect on enhancing the resilience of students.

6.1.3 Motivation

The Self-Determination Theory (SDT) (Ryan & Deci 2020) distinguishes between two main types of motivation as two extreme points of a continuum: intrinsic motivation, also known as self-determined or autonomous motivation, and extrinsic motivation. SDT provides a framework for understanding the factors that promote motivation and healthy psychological and behavioural functioning (Ryan & Deci 2017). In line with the strength-based approach, students generally display willingness and preparedness to be involved in the process of discovery and learning if resources are available and accessible.

6.2 People are Capable of Learning New Skills and Solving Problems

Ledesma (2014) argues that personality factors appear to have a significant impact on how individuals interpret and deal with crises. The movement towards online assessment, including the use of online proctoring is becoming a major challenge to many higher education institutions. The scale of the movement to online exams was expedited by the unprecedented pandemic. To meet this challenge, many institutions outsourced the examination aspect of their education to online proctoring service providers. The situation provided a context where institutions' resistance to embrace online assessment was fast tracked, leading to drastically capacitating both academics and students on their technological educational skills (Reedy *et al.* 2021). The strength-based approach acknowledges that people have inherent competencies embedded in their personality, and these allow them to confront life's challenges (Saleebey 1996). However, strengths-based approaches are not without their critics. Negative emotions and mental illness may pose inherent vulnerabilities to narrow cognitive, attentional, and physiological resources to deal with an immediate threat (Rashid 2015).

6.2.1 Personality Traits

Personality can be defined as the combination of characteristics or qualities that form an individual's distinctive character. Articles reviewed on theories of personality provide an understanding on human behaviour and interaction with their environment. Personality traits can be articulated through different learning styles (auditory, visual, reading/writing, kinaesthetic) which facilitate

students' better understanding and learning, aiming to achieve the desirable learning outcomes or goals. Literature on learning styles provides additional evidence that the usual teaching styles should be redefined for online assessment where the styles corresponding to the capacities of students are accommodated (Idrizi, Filiposka & Trajkovik 2019; Costa *et al.* 2020). The strength-based approach acknowledges the role played by personality traits in the overall development and contends that networked learning and assessment materials should be aimed at the learning achievement and course satisfaction. In previous studies, most scholars investigated the relationship between personality and work satisfaction, and they found individuals with high agreeableness were easy to get along with and cooperated with others (Kohli & Bhatia 2021). The results of study conducted by Keshavarz and Hulus (2019) suggest that students' personality and learning styles play a significant role in increasing their motivation for using blended learning. Thus, based on these findings, it is suggested that in order to increase learners' motivation, teaching materials and methods should be tailored according to their needs.

6.2.2 Adaptability

From the articles reviewed, students require a high level of adaptability to realise qualities that promote success in online assessment. It is assumed that students at the same institution share cultural practices and values that include, but are not limited to, problem-solving skills, critical thinking, a sense of humour, emotional intelligence, assertiveness, and orientation to time, as well as self-concept and self-esteem. However, beyond this assumption, studies of resilience contend that the students' state of mind and qualities are produced early in life and constitute the social foundation, influencing the degree to which students will adjust to their interaction with the organisation, course programme, relationships with peers and lecturers and their individual impact on distance learning (Theron & Liebenberg 2015). Thus, strengthening protective factors, in addition to reducing risk, may enhance the successful development of students, especially those from disadvantaged life circumstances with minimal exposure to technological gadgets (Jessor *et al.* 2017).

6.2.3 Self-efficacy

Researchers have attributed self-regulated and self-directed learning, locus of

control, and academic self-efficacy as student-related factors that play an important role in student performance and readiness in online learning and assessment (Martin, Stamper & Flowers 2020). Students who have a strong sense of self-belief are energised to perform; they are motivated and believe in their ability to succeed (Bandura 1993; Mphahlele 2020). Mphahlele (2020) argues that academic resilience comprises self-belief (confidence), a sense of control, low anxiety (composure), and persistence (commitment) in their study.

Self-efficacy promotes an opportunity for students to feel competent to do things that make a real difference in their lives. The literature indicates that academic self-efficacy affects academic persistence, performance, and motivation. The strengths approach alludes that people are capable of learning new skills and solving problems (Saleebey 1996). Although Masten (2001) suggests that protective factors appear to be the building blocks of resilience, Oberle (2018) contends that the development of resilience depends on multiple transactions between the individual's internal and environmental protective factors.

6.3 People can be Involved in the Process of Discovery and Learning

Oberle (2018) asserts that resilience enablers serve as protective factors that improve students' optimism, positive emotional image, self-concept, good interpersonal relationships, and academic achievement. Positive interpersonal relationship is regarded as the core skill that predicts successful development and adjustment in the face of adversity (Liew *et al.* 2018). This is consistent with the assertion that students are keen to take charge of their responsibilities and have the desire to rise above adverse conditions; to build up their forces; to defeat difficulty; and to stand up and be counted (Saleebey 2008). Similarly, Walsh (2015) declares that social networks that are made up of mentors, friends and educators serve as protective factors that inspire energetic participation and enhance the resilience of students. Students who are able to form positive relationships with staff members and are given opportunities to make appropriate decisions about interventions and programmes are more likely to achieve better outcomes. Makoe (2012) also highlights the importance of the need for academics to embrace the digital learning process of their students and provide the desired support. However, it is important to acquire sufficient knowledge of personal traits that mediate the resilience of students to inform

planning and designing of online assessments and provide appropriate support.

7 Discussion of Findings

In this article an attempt has been made to outline the personal factors – inherent and acquired – that mediate the resilience of students in the implementation of online assessment within an ODeL context qualitatively. The central focus was on identifying personal factors that helped students to cope with the transition to synchronous online assessment. The findings reveal that students possess unique character traits that facilitate their resilience to navigate the contextual challenges of the ODeL environment. The study indicated that students' inherent factors are crucial in contextualising their resilience.

It is found that attributes such as good coping skills, assertiveness, subjective well-being, and relational competence contribute positively towards enhancing students' resilience. The SBP regards such traits as the positive personality traits needed to succeed (Saleebey 1996). Other factors noted are self-efficacy, self-confidence, and problem-solving skills (Ungar 2021a). It may be concluded that positive personality factors and higher thinking capacities of cognitive functioning are crucial resilience enablers. These traits are unique to individuals and are deemed generally imperative to succeed in life (Oberle 2018; Masten 2001). Research also revealed that people do best when they focus on their strengths, rather than on their weaknesses (Saleebey 2006). Similarly, the strength-based practice (SBP) pioneer, Saleebey (2008), believes that all humans have the urge, somewhere within themselves, to be heroic; to transcend circumstances; to develop their powers; to overcome adversity; and to stand up and be counted.

From the reviewed literature it can be deduced that the balance between a person's own traits (personality traits) that support adaptability, competencies, and skills (acquired technological skills, student support systems and social skills), and coping with levels of stress induced by online assessment are significant in promoting resiliency. Generally, resilience is used to describe how a system is managed to thrive on adversity (Ungar 2021a). Ongoing training and broadening of skills repertoires also empower student capacity to do well, increase their level of motivation and confidence, and promote creativity and knowledge skills to cope with online assessment practices (Bartusevičienė, Pazaver & Kitada 2021). Thus, exploring and understanding personal factors that mediate the resilience of students are significant

in implementing online assessment.

8 Conclusions and Recommendations

This study could contribute positively to the development of student support programmes to mediate student resilience in relation to the implementation of online assessment. It is also important for lecturers at the various education institutions to understand what determines students' resilience. The study bears evidence that students who do bounce back from adversity have connected to parts of their environment that provide support, encouragement and opportunities that nurture their development. Masten (2001) states that resilience does not come from rare and special qualities, but from the everyday magic of ordinary, normative human resources in the minds, brains, and bodies of individuals, and in their interpersonal relationships. Skills needed to deal successfully with one stressor in navigating various assessment processes in the ODeL context may differ from those needed to cope with another separate situational process.

In order to develop effective resilience-enhancing interventions that are informed by an understanding of these complexities, experts need to work together and carefully consider the promotion of computer literacy to empower students and to prepare them for online assessments. Computer literacy is significant and no longer a luxury, but a necessary skill to succeed with online learning and assessment. This could suggest that, although student attributes and technical competencies are significant, it should be taken into account when planning online assessments. Students should be provided access to support devices and services that can help them solve technical problems, especially during assessment. (Bartusevičienė *et al.* 2021) argue that ensuring the uplifting of students' personality traits and competencies in their technological skills is significant in alleviating their anxiety.

A plethora of literature focused on identifying the students' perception of the use of online assessment without paying attention to connections between the students' personal factors and online assessments, which is significant to this study (Astani, Ready & Duplaga 2010; Ncube 2015; Khan & Khan 2019; Das 2020; Wills & Hillier 2020; Muin & Hafidah 2021; Topuz 2021). While acknowledging that no human is invulnerable or able to conquer all levels of stressors that place one at risk of succumbing to stress or failing, online assessment programmes require increased student participation in the

ODeL space (Ngubane-Mokiwa 2017; Bhagat & Kim 2020; Mphahlele 2020). It is suggested that higher education institutions need to accommodate with regard to comprehensive support that take into account the different personal factors that mediate the resilience of students.

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Dr. Lina M. Methi
Lecturer
Department of Psychology of Education
University of South Africa
Pretoria
Emethilm@unisa.ac.za

Chapter 3

Formative Virtual Assessment towards Sustainable Foundation Phase Teacher Education Learning Environments

Makeresemese R. Mahlomaholo
ORCID iD: https://orcid/0000-0002-0543-1948

Sechaba M.G. Mahlomaholo
ORCID iD: https://orcid.org/0000-0002-6811-1626

Abstract

The Minimum Requirements for the Bachelor of Education Foundation Phase Teaching qualification are pitched at the National Qualification Framework – NQF Level 7. Graduates of this qualification are expected to have a sound knowledge at least of the learners in Grade R to 3. This includes their physical, physiological, psychological and sociocultural growth and development so that they can provide them with adequate support. They also have to know the backgrounds they come from, especially the many vulnerabilities that might be afflicting them. These graduates must be competent with theories and applications of language development, mathematics and literacy acquisition of Grades R to 3 learners. As such, they have to be able to manage the experiences of these learners effectively so that learning can be optimised. Unfortunately, due to the advent of the Covid-19 pandemic, all this learning has to take place mostly through remote technologies in observance of the lockdown regulations that include social distancing. Assessment under such circumstances has proven to be a huge challenge, which this chapter attempts to grapple with in order to maintain and even enhance its quality. Therefore, this chapter, based on the conceptualisation of assessment *of*, *for* and *as*

learning, proposes forms of virtual formative assessment strategies geared towards the creation of sustainable Foundation Phase teacher education learning environments. This focus has become necessary, because limited resources like time, skills and requisite human capital at many universities threaten to lead to surface learning where only the bare essentials are learnt and taught. Thus, the paper argues that formative virtual assessment can still reach its goals by complying with the already available NQF level descriptors, as they provide the principles for good teaching.

Keywords: Formative assessment, formative virtual assessment, sustainable learning environments, foundation phase teacher-education, emergency remote teaching and learning technologies

1 Introduction and Background

The Covid-19 pandemic has forced societies around the world to reconsider how they conduct all their affairs (Leach *et al 20*21). In many instances, variations and gradations of the lockdown, from the hard to the soft levels thereof and back, depending on the number of infected people, were instituted. These were aimed at preventing the spread of Covid-19 (Prodjomaroeto & Muhyidin 2020). In compliance with these, instances of civil society, where a significant number of people would congregate, were closed down and had to resort to emergency remote measures of conducting their activities (Cairns 2020). Among these are ways in which pre-service teacher education in South Africa in particular is assessed virtually, continuously and formatively (Mashitoa 2020). Summative virtual assessments are still conducted, but in this chapter our focus is on *continuous and formative virtual assessments* that are widely used at most institutions of higher learning where teacher education takes place. Currently teacher education happens remotely through advanced virtual technological platforms that enable academics to design learning outcomes, and facilitate and assess them through a bouquet of strategies mounted on these platforms. The student-teachers who are assessed at their remote homes and/ or usual places of residences, require that assessment also be virtual (Van Schalkwyk 2021).

When the assessment as described above is summative, it means that

it is about determining the final level of competence at which the student-teacher is (Ahmad 2020). It is a form of ultimate assessment that does not provide for any improvement or change of the grade of the level beyond the respective assessment activities themselves (Edwards 2020). On the other hand, formative assessment is more developmental in its approach (Cañadas 2021). It is more or less diagnostic and checks whether learning as envisaged has taken place, including the extent to which it has taken place. The intention here is to provide supportive guidance and motivation towards the ideal performance (Cañadas 2021). This can be described as assessment *for* learning as well as assessment *as* learning, while the summative assessment is the ultimate assessment *of* learning (Price-Dennis & Sealey-Ruiz 2021). An example of assessment *for* learning is where a student is assessed formatively during the lesson to ensure that s/he has learnt a particular aspect and/or unit well, such that s/he can remember what it was all about (Price-Dennis & Sealey-Ruiz 2021). Here assessment is for ensuring that learning has taken place and that students are not merely 'cruising' in the class and lesson without any understanding of what is being taught (Cañadas 2021). Assessment *as* learning is very close to assessment *for* learning, because the emphasis here is on assessment being an integral part of what is learnt (Cañadas 2021). The student is assessed in such a way that s/he is able to raise similar questions when s/he ultimately teaches her/his learners, and able to respond to them (Cañadas 2021). In this chapter the focus is on assessment *for* learning and as an opportunity for student-teachers to learn even more how to assess virtually and formatively (Granberg, Palm & Palmberg 2021). The variation of formative assessment which this chapter investigates is the one that is conducted remotely via virtual technologies, as in the university's chosen Learning Management System like Moodle or Blackboard. Sometimes student-teachers use WhatsApp and other such platforms to access the assessment tasks and to provide answers.

However, concerns have been raised regarding the quality of assessments in these virtual and remote preservice teacher-education interactions (Demir, Bruce-Kotey & Alenezi 2021). These concerns, among others, include the fact that many student-teachers do not have the requisite devices like smartphones and/ or laptops that will enable them to participate in virtual and remote learning and assessments effectively and efficiently. Again, due to unfavourable socio-economic backgrounds at some of their homes, student-teachers sometime struggle to secure the data bundles that are necessary for

their Wi-Fi and internet connectivity (Phillips 2021). Another vexing problems affecting the virtual and remote teaching, learning and assessment is the provision of internet connectivity as well as the availability of electricity, especially to student-teachers learning from their homes located within the contexts described above (Leuthold 2021). Many students – even those who have the necessary devices – sometimes struggle with accessing Learning Management Systems [LMS] used by their universities. Just like their lecturers they require training in the use of these programmes (Price-Dennis & Sealey-Ruiz 2021). They require conducive and quiet spaces where they can learn virtually undisturbed. In some instances, their homes are crowded and/or noisy (Hawkins 2020). They also cannot study, nor be assessed meaningfully virtually because of the household chores they have to perform on a daily basis. In many instances, their parents do not have the skills and knowledge to provide them with support and tutoring while they are at home (Hawkins 2020).

On the other hand, they are totally dependent on their remote lecturers, who are only accessible virtually, and this invariably leads to fears and anxieties, resulting in them resorting to rote memorisation with very limited understanding of what is being learnt (Lancaster & Cotarlan 2021). At times, student-teachers themselves lack the necessary motivation and 'staying power' to read and study by themselves. Some are not sufficiently self-regulated, as they easily get distracted (Lancaster & Cotarlan 2021). On top of this, they may also lack the requisite *information literacy skills* to enable them to read, store, retrieve and write with ease in response to their assessment tasks. They may also struggle to manage their time effectively (Lancaster & Cotarlan 2021). Their lecturers further require extensive and intensive training in strategies to teach and assess remotely by means of virtual technologies. This is over and above being able to upload the learning content meaningfully onto the university's website and/or the LMS. Lecturers require specialised skills to collate and sequence content as well as to facilitate it meaningfully, such that student-teachers can learn ubiquitously without their in-person presence. This content requires that it be uploaded in such a way that it is interesting, accessible and challenging to the students and enables them to achieve the learning envisaged at their level of study (Saleem, Saleem & Batool 2021). Among others, learning content has to be sufficiently interactive and geared to the learning styles of student-teachers in those remote contexts. Lecturers thus have to be competent in terms of virtual and remote learning content, facilitation strategies and assessment thereof. They have to know how to package

the curriculum and its units for virtual and remote delivery and understanding (Nilson & Goodson 2021).

Assessments – whether in person or remote and virtual, summative or formative – in pre-service teacher education programmes are of a varied kind. These depend on the respective programmes' graduate attributes, relevant level descriptors, critical cross-field outcomes, programme and learning outcomes, as well as the theory of teaching and learning adopted therein (Țălu 2019). Furthermore, in the Foundation Phase Teacher Education programmes at the two universities constituting the focus of this study, teaching and learning are organised that the highest levels of learning as captured in Bloom's Taxonomy are achieved. These are operationalised through the Minimum Requirements for the Bachelor of Education Foundation Phase Teaching qualification (Hackmack 2019). These imply that graduates from these programmes are able to know the content and pedagogies of the subject. They are also expected to know the kind of learners they will be teaching, and how they learn. This includes knowing their backgrounds and all relevant contextual factors for their learning. They must know effective classroom management strategies well (Hendricks & Harrison 2020). However, above all, they should be able to analyse, synthesise and evaluate the information and data generated in the areas mentioned above for informed decision-making. Assessment thus involves determining the extent to which student-teachers have advanced towards achieving all these (Hendricks & Harrison 2020).

When the above do not take place, then we are not able to talk about quality in formative virtual assessments. The latter, among many outcomes, also aims at creating sustainable Foundation Phase Teacher Education learning environments (Rus-Casas *et al 20*21). These are attached to, and underline quality maintenance and enhancement, as envisaged in the relevant documents referred to earlier. Sustainable learning environments in this paper are defined as those remote and virtual interactions among lecturers and student-teachers geared towards enhanced learning through formative assessment contexts (Rus-Casas *et al 20*21). Getting closer to the focus of the chapter then, such learning environments are those contexts where, among others, the above take place (Ben-Eliyahu 2021). This chapter, therefore, based on the understanding of assessment *for and as* learning, proposes forms of virtual formative assessment strategies, ensuring and advancing the above in keeping with the Minimum Requirements for the Bachelor of Education Foundation Phase Teaching qualification pitched at NQF Level 7.

Literature Review

In response to the challenges of devices, data and connectivity, the Department of Higher Education and Training [DHET] as the relevant literature demonstrates, has tried almost everything within its power to address some of these through the provision of laptops to all students, especially those coming from remote, rural and/or impoverished backgrounds (Sosibo 2021). Negotiations among the DHET and Eskom, traditional leaders and municipalities in order to provide reliable electricity, is an ongoing concern (Jantjies 2020). Even the data were provided to the student-teachers in terms of the agreements between the DHET, the various universities and the mobile phone companies. Data used for learning and assessment were zero-rated so that the student-teachers would not incur huge costs (Prinsloo & Singh 2021). Students in areas outside the reach of internet connectivity received their study materials on USBs and sometimes in hardcopies delivered to their nearest post offices, churches and police stations in instances where working addresses were not available in rural areas (Jantjies 2020). Over and above these measures, students who could not be accommodated through any of the measures described above were allowed and actually invited to stay in university residences where connectivity was assured (Landa, Zhou & Marongwe 2021). In turn, they were to observe very strict Covid-19 protocols. The students in those rural areas with unreliable connectivity could do their assignments and tests in hardcopy, capture these on their mobile phones using their cameras and then forward them to their respective lecturers. Furthermore, the notion of community classrooms is still just muted, but should the pandemic persist, this could be explored further and formalised (Jantjies 2020). This is an approach whereby the university negotiates with various communities where its student-teachers reside to identify centres or homes in the neighbourhood with reliable internet connectivity where student-teachers could come together during specified periods to access learning materials and be assessed remotely (Tamrat & Teferra 2020).

Participatory and Appreciative Action and Reflection – PAAR as the Theoretical Framework

In order to make sense of the formative virtual assessment strategies gleaned from the literature and the empirical data generated for this paper, we decided

to make use of Participatory and Appreciative Action and Reflection [PAAR] as the theoretical framework couching the study (Ghaye *et al 20*08). This framework focuses on developing insights into the 'root causes of success and sustaining strengths-based discourses' (Ghaye *et al 20*08:363; Kenyon 2019; M El Ebyary 2019). As reported in the findings, lecturers managed to mount an effective approach of conducting virtual formative assessments by moving away from summative assessment-oriented approaches Their strategies focused on what the student-teachers were good at and could achieve, in spite of the pandemic (Ghaye *et al 20*08:364). This represented a departure from high stakes in terms of assessment to focusing on real, practical and demonstrable competencies acquired through learning (Kenyon 2019; M El Ebyary 2019). These strategies, as discussed in detail later in this chapter, are similar to the 10 strategies that Rutgers University adopted during the pandemic. These, as informed by the student-teachers themselves, seemed to have been effective in enabling them to demonstrate their competencies (Earl 2013) in handling Foundation Phase learning, because they allowed all to be creative in using and responding to the quizzes, putting together presentations, using open-book strategies and group projects, including self-review as well as peer-review techniques, among others (Ghaye *et al 20*08). As PAAR dictates, these 10 strategies discussed later in the chapter advocate collective learning where student-teachers collaborate in responding to the assessment tasks like working together to craft a presentation, putting together a group project or responding to the open-book tasks (Ghaye *et al 20*08). These ensured introducing multiple perspectives to the handling and performing of tasks at hand (Ghaye *et al 20*08:368). As PAAR would quip, this enabled the framework to mirror the human experiences closely. The human experiences are not unidimensional, but multi-perspectival, dynamic and geared towards the utilitarian intents (Ghaye *et al 20*08:372). PAAR, as our theoretical framework highlights, enabled our study to unearth practical wisdom of the lecturers and the student-teachers as they still achieved quality in virtual formative assessments in spite of the pandemic and the lockdown, and they continued to move on with their learning. This way of seeing enabled us to develop an understanding that went beyond the challenges of the day presented by remote and virtual learning and assessment, to see how industrious and effective the student-teachers were in acquiring new skills presented in the BEd programme.

This framework also enabled us to develop an appreciative insight into how academics try very hard to maintain high academic standards when for-

mative assessments are conducted, in spite of the huge challenges of doing so remotely and virtually (Kenyon 2019; M El Ebyary 2019). In fact, the entire chapter does not come across from a deficit perspective trying to find fault with how academics at their respective institutions attempt to assess in compliance with the NQF Level 7 criteria. The above implies that formative virtual assessments are looked at in terms of their intent and not so much the percentages and/or marks obtained by student-teachers, although these too are not ignored (Chaaban & Sawalhi 2020; Darling-Hammond, Schachner & Edgerton 2020; Ellis-Hill, Pound & Galvin 2021). Functional knowledge is that knowledge that can be applied and thus be put to better use. Assessments have to lift these out by requiring that students show their appreciation of them, and how they would apply them (Blomkamp 2021; Sargent & Casey 2021).

Methodology and Design

The approach to generate and collect data in this chapter is qualitative. As a starting point we used the academic performance on the five first-semester virtual formative assessment tasks of 10 BEd Foundation Phase student-teachers at each of the two universities in this study. One of the two universities is situated in the northern part of the South Africa, while the other is in the central part. The marks used were averages obtained in the five assessments, as mentioned. One of these universities is located in the rural and predominantly poor part of the country, while the other is in an urban setting with relatively better resources like electricity and access to internet cafes, among others. Student-teachers at both institutions were in their third year of study in the BEd Foundation Phase Teaching Programme (Jansen *et al 20*21; Shaik 2021). These students were chosen randomly on an individual basis, but with an understanding that Foundation Phase Teacher Education is the backbone of any nation. If better ways can be found to continue with, and even strengthen learning and assessment at this level, given the context of the pandemic, almost half of the battle for better education would be won. Student-teachers at this level carry the future of the nation and of the entire humanity in their hands; hence the decision to focus on this cohort in this study.

For ethical reasons, their names and those of their respective institutions are kept confidential. Ethical clearance to conduct the study was obtained from the Faculty Research Ethics Committee where we undertook to protect the identity of the lecturers and student-teachers while focusing on the

patterns of the data emerging. We also promised to anonymise, as far as possible, the identities of the institutions in our study as we strive towards respectful research that does not harm anybody, in whatever manner possible. This included being mindful of, and complying with the Protection of Personal Information Act – PoPIA (RSA 2020), which indicates that personal data should only be included in research and its reports when it is absolutely necessary to reveal them (RSA 2020). In this chapter, there seems to be no need to reveal such.

The 20 students were interviewed via a WhatsApp call by the authors over a four-week period. Like we have indicated, they were selected randomly from the lists of the two institutions, respectively. Their performances were almost similar, irrespective of the institution. Even the manner in which they responded to our questions, which mainly focused on how their formative assessments were conducted during the pandemic and what their views were about them, was almost similar. Each interview lasted between 15 to 30 minutes. We used Ineke Buskens' (2011) Free Attitude Interview Technique where we focused on one question, followed by either the clarifying question or reflective summary. The clarifying question was used where the student-teacher was reluctant to talk about certain issues. This was thus used by way of encouraging more sharing while the summary was used to refocus the conversation when the respondent was digressing (Buskens 2011).

Each interview was transcribed verbatim and the data were analysed using Teun Van Dijk's Critical Discourse Analytic Technique (Johnson & MacClean 2020) that enabled us to focus on the spoken word as text and then to deepen the analysis further at the discursive practice level until we got to the socio-structural level of analysis (Johnson & MacClean 2020). In the actual practice of the analysis, these levels were not applied separately. We moved from one level to the next and back until the meaning became clearer. This analysis and interpretation are thus also guided by the PAAR, which alerted us to be sensitive to the strong points of the student-teachers, and to valorise those good points away from the negativity of the pandemic and the fears it engendered in terms of remote teaching and assessment.

Findings

When analysing the formative virtual strategies that were used at both universities, they seemed similar to the 10 suggested and actually used at

Rutgers University (2021), which we use in this chapter as basis to organise our discussion and presentation of our findings on. These 10, while not exhaustive, present the most effective and widely used by many academics at these two universities in particular.

Series of Quizzes

The most popular mode of formative virtual assessment was the use of quizzes during synchronous and asynchronous teaching, according to the student-teachers. In order to captivate and sustain the interests and focus of the student-teachers, the lecturer would occasionally present a quiz to test the student-teachers' levels of comprehension, understanding and retention of the subject-content. The quizzes were easy to mark and provided feedback almost immediately. Student-teachers also expressed their likes and preferences for this mode of assessment, as they argued that it kept them on their toes. The quizzes were not made up only of recall questions, although most of them were. What is important is that they were, and had to be pitched at the level that would show the understanding of Foundation Phase learners' levels of cognitive functioning and general emotional development.

Student-developed Quiz Questions

The quizzes referred to above were designed by lecturers. However, the student-teachers were also given the opportunity to design such as they too were aspirant teachers. They were required to collaborate online as they discussed different questions. This looked like play – as some of the student-teachers explained – but they found them challenging and forced them to read far more than they would otherwise have done, because they had to formulate the questions and know the answers that were almost correct and most similar, with only one of them being the most correct. Formulating these quizzes generated a lot of debate as well as 'to-and-fro' reflections when small teams of student-teachers disagreed and sometimes reached consensus on which question(s) to include and which to exclude. This created the golden opportunity for the student-teachers to know more about their subject content from a multiplicity of perspectives. The student-teachers concurred that they had to be creative as they designed new questions, and that they had to find good reasons for choosing one question over others.

Open-book, Take-home Assessments

Formative virtual assessments created more and more opportunities for the use of the open-book and take-home modes. Although some students thought that these would be easy, because they could just refer to some pages and then pick an answer, this proved not to be the case. When open-book and/or take-home assessments were given, the academics had to make sure that most questions would only be those of the highest cognitive order. Such questions would require that more than one source of information is used and that the answer is an integration of multi-layers of data presented in a very sophisticated manner. The open-book and take-home assessments required that student-teachers should think long and hard about the responses they would provide.

Professional Presentations or Demonstrations

Formative virtual assessments gave students the opportunity to really go out of their normal way and become innovative. They were sometimes required to provide interesting and convincing presentations to their peers and the wider audience. The amount of preparation required involved being familiar with a number of media to create particular effects. These were in the form of pictures, videos and songs that would appeal to particular emotions on the part of the Foundation Phase learners in order to make a point. The presentations and demonstrations online refined their skills as teachers, especially of young children in need of excitement through colour, movement and song.

Annotated Anthology or Bibliography

All the above forms of assessments required that student-teachers were able to compile an annotated anthology and/or bibliography. The critical skill that would be cultivated and assessed was information literacy, which involved making pithy, but useful notes so that information could be stored and retrieved with ease. Student-teachers would be required to work out lists of readings on particular relevant topics and themes to show that they do have such important information management skills. It would not be easy to cheat when a student-teacher is required to demonstrate that he/she does have the skills. They had to know what is important and relevant. This could only happen when they could read extensively and intensively to know who the thought leaders are in some area of learning and/or discipline.

Fact Sheet

Sometimes bibliographies are preceded by fact sheets. The latter could be a one-pager summarising an important point or so. Academics would sometimes require of the student-teachers to read on a given topic thoroughly and then summarise the ideas succinctly in a page. The student-teachers confirmed that it was easier to write a long piece and not a one-pager. A one-pager demanded that the student-teachers knew a lot about their subject content, and that they could summarise all neatly without the need for superfluous words.

Peer- and Self-review Activity

Formative virtual assessments shall have achieved their objective when student-teachers individually and collectively could review themselves, such that they could propel themselves and their peers to the next level of performance (Mouza 2021). Self-assessment is one of the hardest aspects of learning because they test one's integrity and demands that one does a thorough introspection and self-reflection. This can be done on almost any activity and every day in order to deepen reflection and understanding without being judged by others (Virarkar *et al 20*21). However, it could also be an indication of the level of the maturity of the student-teacher when he/she can expose him- or herself for review and critique by peers so that she/he can learn from such experiences. As a peer being reviewed by others, one provides support to her/his peers by being 'a guinea-pig' for others to learn to become better versions of themselves. At the same time, the self that is reviewed is pushed to even higher levels of being, such that it can model for the rest what good performance could be about (Virarkar *et al 20*21).

E-Portfolio

All the above-mentioned formative virtual assessments require a clear, logical and long-lasting mode of 'storing' which the e-portfolio provides (Misdi 2020). This could be a deliberate effort on the part of the student-teachers to collect, collate and compile such a portfolio on all artefacts of their work. Such a portfolio requires that it should be informed by a particular self-chosen, but relevant philosophy of teaching, followed by materials produced in pursuance thereof as evidence (Yu 2012). An e-portfolio is normally organised logically so that all aspects thereof are detailed in terms of evidence, which will be

submitted at any given time that such an activity is to be assessed thoroughly. Various aspects of the work are captured in the portfolio in a logical manner that can demonstrate what has been achieved over, say a month, a quarter, a semester or even a year (Das 2021).

Non-Traditional Paper or Group Project

In our view, as informed by the student-teachers, the best form of assessment involves the project and all the artefacts that student-teachers can produce out of that. It is best to see the actual artefact in action. According to the student-teachers, the project must be real and collaborative without minimising the inputs of all. It must be functional and assist them all to respond to a real-life problem from the teaching and learning virtual lessons (Chaaban & Sawalhi 2020). The group project provides all with the opportunity to work together and to showcase best practice. Through the project all members are also given the opportunity to work in a community of peers, to debate and defend a self-chosen position. A rubric is reported to be the most effective as basis for assessment and justification of grading students' work remotely and virtually (Smith-Hawkins 2021).

Discussion

We have already indicated elsewhere in this chapter that the student-teachers and their lecturers need a thorough induction and training in the use of virtual technologies for the above discussed teaching, learning and assessment to be effective (Rahman 2021). Sufficient asynchronous lessons and materials can be posted online or posted via LMS, and these could be followed up by means of live synchronous and interactive teaching activities. Kanjee (2020), using Wiliam and Thompson's ideas (2007), proposes a strategy which served as basis for what we are arguing for in this chapter. In this way, the students can be taken by the hand by the experts through various pre-arranged learning processes. Literature emphasises that lecturers should always take student-teachers in their confidence when it comes to the processes of teaching and learning (Köksal 2019). This means that the lecturer should explain exactly what the learning outcomes of a particular module, unit and lesson are going to be. This should be linked to how the lecturer will take the student-teacher around the learning of each outcome, specifying the minimum required media

and directing and/or providing them to the student-teachers for them to interact with them accordingly (Malm 2020). The lecturer also has to explain what the criteria for assessment of each of the outcomes and learning facilitation strategies are. The lecturer should try all forms of media to reach the diversity of student-teachers learning remotely (Wang, Clarke & Webb 2019). The lecturer must have high up on the agenda the fact that the student-teachers will be on their own, without immediate access to any form of support. This implies that the lecturer will demystify and simplify all learning content so that the student-teacher can gain confidence in a gradual and graded manner as she/he masters subsequent units in the module by himself/herself remotely, with an occasional support (Korucu-Kis & Ozmen 2019). The lecturer should clearly highlight what the student-teacher should do in order to demonstrate mastery. It should not be some hazy idea that cannot be measured and accessed (Kim 2020).

The lecturer should use SMART evidence which is specific, measurable, attainable, relevant and time bound so that everybody would know what will be assessed and how that will be assessed (Ivars-Baidal *et al 20*21). Especially during asynchronous sessions, the lecturers must use accessible language that all student-teachers can understand (Dassa & Nichols 2020). Different media to achieve these could be used, such as pictures, photographs, videos, tables and graphs, icons, etc. These lessons should be recorded for unlimited re-use and/or replay by the student-teacher, who may otherwise miss something. Under these circumstances, lecturers use the techniques and questions that will encourage student-teachers to be involved and to take part and actually engage at his/her highest levels of thinking (Dalinger *et al 20*20). All questions should be based on what the lecturer promised at the start of the lesson. All the time lecturers must ensure that they provide prompt and individualised feedback to enable the student-teachers to learn therefrom as well as from the mistakes that shall have been corrected (Dalinger *et al 20*20). This could be arranged in some kind of a loop that feeds back during the synchronous class sessions as well as asynchronously through assignments and test reports. Assessment feedback should avoid generalised feedback, but it also must be by means of the SMART approach. The lecturers' feedback should focus on content as well as on the effective processes of learning (Ivars-Baidal *et al 20*21).

The student-teachers also have to be empowered to become equally contributing members of the learning community by being given the

opportunities to assess their peers both synchronously during the lectures facilitated virtually and asynchronously on written assessment tasks (Du Plessis 2020). They should be in a position to assign a grade to their peers' work and be able to defend how they arrived at that grade. The opportunity for peers to provide feedback should enable the lectures to be lively with debate remotely, emphasising the diversity of the student-teachers' perspectives and interpretations (Barrable, Touloumakos & Lapere 2020). The aim is to enhance student-teachers' learning through enabling them to assume both their own positions and those of their peers. This strategy has proven to enhance understanding among all student-teachers even more. Student-teachers should also be given the opportunity to assess their own work honestly and critically. This enhances the student-teachers' reflective and reflexive powers, which in turn strengthen their understanding further (Thomas & Molina 2020). They learn to take responsibility for their own learning and their self-chosen positions thereon. They are also enabled to defend their points of view, as well as allow one's voice to come through and be heard (Wheatcroft 2020).

Conclusion

The discussion above has demonstrated that unconventional ways of formative assessment can be adopted to maintain and enhance teaching and learning at any institution, irrespective of its geographical location or band. This virtual assessment can be continuous and formative or even summative in many instances where the grade is afforded for particular levels of performance. Teacher-preparation for the Foundation Phase is a professional training enterprise that requires that graduates should show particular demonstrable skills that the strategies presented above can be assessed effectively without lowering the academic standards. The above strategies managed to deconstruct any notion of cheating, because collaboration and consultation of authoritative sources were strongly encouraged. A higher premium was placed on collaboration, compassion, creativity and critical thinking than on memory and regurgitation**.**

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Makeresemese R. Mahlomaholo
Lecturer
Commerce Education
UKZN
Pinetown
QhosolaM@ukzn.ac.za

Sechaba M.G. Mahlomaholo
Professor of Education
Education
University of Mpumalanga
Siyabuswa
Geoffrey.Mahlomaholo@ump.ac.za

Chapter 4

Scenario Assignments within a Digital Platform: A Superior Assessment Tool?

David Lokhat
ORCID iD: https://orcid.org/0000-0002-1604-0627

Abstract

Contact-based tertiary education institutions faced a significant challenge following the onset of the Covid-19 pandemic. Within a short period, both academics and students were required to migrate to an online teaching and learning platform. The results of this rapid change were manifold and revealed deficiencies that were endemic in many programmes. Conventional tests were still testing at low cognitive levels; plagiarism and collusion in online assessments were rife; and the type of assessments offered created an enabling environment for this. There was also often poor alignment between the course content and assessments, and no tangible use of taxonomies. Within the context of these challenges, two assessment tools were interrogated (viz. conventional tests and scenario assignments) to determine and compare their effectiveness in the learning cycle, characterize the possible extent of collusion in the digital space, and consider the inclusivity of the assessments for variably-resourced students. The experiential study looked at a cohort of 100 students at the third- and fourth-year levels of a professional degree, and at sequential modules that are linked in content and learning outcomes. Scenario assignments, especially within a digital platform, offered the lecturer the opportunity to better assess the students' skills and knowledge of practical application, troubleshooting, optimization and design. These are all particularly important for professional practice. By setting up the scenario with open-ended elements, there was sufficient novelty required in each student submission to deter plagiarism. However, the informal student network and peer-to-peer interaction were also strengthened, which could be valuable from a social perspective. The lack of

access to literature resources, or student motivation to carry out more than a superficial search for such resources, does impact on the overall performance in these assessments. The use of scenario assignments should therefore be carefully balanced against the available notional hours and resources of the students.

Keywords: Scenario assignments, continuous assessment, engineering education, problem solving, open-ended

1 Introduction

Higher education in South Africa, and in fact globally, experienced an unprecedented change during 2020 and 2021, having to migrate quite rapidly to an online mode of teaching and assessment. In many respects it was a disruption of the status quo. Without physical contact lecturers needed to think more creatively about how to engage students in the learning process and how to assess our learning outcomes adequately. From a teaching perspective there are two major things that the Covid-19 pandemic did. Firstly, it accelerated the digital transformation of tertiary education at traditional universities, and secondly, it made necessary the interrogation of current teaching practices. Lecturers needed to reflect on how modules were being taught and whether the existing structure was adequate, even under normal circumstances. Hence there was also a migration away from the conventional LTTE (or lecture, tutorials, tests and exams) approach to the use of multiple and different types of assessment within a continuous assessment framework.

In engineering education, a major criticism of graduates is the lack of problem-solving skills, as well as a lack of flexibility in practice and the ability to cope with ambiguity in the workplace (Wellington et al. 2002). Moreover, there is a strong assertion amongst industry practitioners that examinations do not provide a meaningful measure of real-world skills that graduates are expected to demonstrate in the workplace (Wellington et al. 2002). There also appears to be a deficiency in the way students approach learning within a programme.

Consider the following analogy. Suppose that there is a man on a raft in the middle of the ocean and he comes across a deserted island. He finds on the island various resources, but also detailed instructions on how to build a shelter, gather and prepare food. He survives there for a while and then moves on to the next island where, lucky enough, he finds similar resources easily at hand along

with detailed instructions. After repeating this several times, the man arrives at an island completely unfamiliar to him, with resources not so plainly in sight and no instructions. The man struggles to survive.

Students within engineering programmes and even within individual modules are learning and being assessed on 'islands', and hence find it difficult to apply themselves in unfamiliar situations or to a different problem. Instead of allowing students to learn recipes to solve a specific problem or counter a specific situation, we should provide them with the tools and knowledge to navigate the complex challenges that they will face in the workplace. By placing the learning in an authentic and holistic context, students are better prepared to solve ill-structured, emergent problems that are common in the real world (Jonassen, Strobel & Lee 2006). The use of scenario assignments as an assessment tool may be a means to do this. In this chapter we explore the use of scenario assignments within the context of a final-year module of a four-year professional engineering degree. We consider the modalities for developing and assessing such an assignment, as well as the operational challenges that can have an impact on the students' performance.

2 Theoretical Framework and Literature Review

Engineers in professional practice solve problems through a structured approach. They frame the problem, collect the necessary information, propose a solution based on established theory and practice, and articulate the solution through oral or written means. One of the most desired qualities amongst graduate engineers is the ability to transfer the knowledge gained during undergraduate training to a workplace context, and to solve real-world problems (Mohd-Yusof, Phang & Helmi 2014).

The teaching of the more fundamental concepts in engineering can be achieved, e.g. through the use of shaping to break down information into smaller steps, monitoring the performance of the learner through tutorial engagement, interviews and short tests, continuously intervening with feedback and reinforcement (Aronson & Briggs 1983). Students can also be assigned specific objectives and allowed to practise until mastered. The latter is often assessed through a summative examination. One should also be aware of the internal models that students create and curate during this process, and that these models are the basis for knowledge assimilation and application at higher levels (Tobias 2010). Problem solving, however, is a complex skill that requires a level of

critical and creative thinking and the ability to carry out self-directed learning (Mohd-Yusof et al. 2014). In order to inculcate such a skill properly, the students' previous knowledge needs to be activated and challenged to enhance the complex networks of associations within their minds. The organization of these associations leads to learning with understanding, rather than a superficial knowledge of surface features. Students have to harness a complete cognitive system integrating both internal and external factors (Hutchins 1995). Such a system of distributed cognition would then benefit from a form of situational instruction, embedding the learning in becoming a participant within a community of practice (Lave & Wenger 1991).

Problem-based, or within the engineering context, design-based learning, is a blended cognitive-situative approach (Von Glasersfeld 1989), where the lecturer presents students with design problems upfront to work on, then delivers content that supports discovery and problem solving, playing the role of a facilitator or design consultant. It is an example of active learning, which includes the process of inquiry and knowledge seeking, where students actively investigate and construct solutions to design problems (Gómez Puente & Jansen 2017). The learning approach is supported by a distinct assessment strategy, which is often based on scenario assignments. Scenario assignments have been used to assess various engineering competencies, including problem solving (Daniel & Mazzurco 2019). It is usually comprised of three key elements, i.e. a scenario, a set of questions to guide the inquiry or design, and a scoring system to aid in the assessment (McKenna 2007). The scenario must represent a realistic situation, and the questions are usually open-ended so as to encourage self-directed inquiry, consultation and even debate. In terms of the scoring system, the development of a satisfactory rubric is very important and would often involve at least one independent moderator, to ensure that there is no bias in coding and assessing the students' responses (Daniel & Mazzurco 2019). In fact, the development of the rubric is usually an iterative process involving the lecturer and moderator. The assessment itself can take the form of a report, a series of quizzes, or a presentation (Gómez Puente et al. 2015). Problem and design-based learning typically includes an element of constructive social interaction, i.e. cooperation amongst students to formulate a satisfactory solution to the open-ended design problem (Gómez Puente & Jansen 2017). In most cases, therefore, scenario assignments are undertaken by a group of students rather than an individual.

The global shift to online learning during the Covid-19 pandemic necessitated a thorough interrogation of current teaching practices, including

assessment. The conventional methods, which include tests and examinations, where found to be inadequate given the propensity for collusion. In this study we investigate the use of scenario assignments as the exclusive assessment tool for an applied engineering course, and consider the efficacy of the approach in determining individual student competencies, but also the development of problem-solving skills.

3 Methods

The learning outcomes of most engineering education programmes fall under two broad categories: a) engineering knowledge and problem solving and b) engineering professional skills (Brophy *et al.* 2008). The latter encompasses the soft skills such as technical communication, individual, team and multidisciplinary working, as well as engineering professionalism and management. These are complemented by those in the first category, which include solving complex problems, design, investigations and analysis, as well as the general use of engineering skills and tools. Engineers apply disciplinary concepts (such as the laws of mass, heat and momentum conservation, as well as aspects of thermodynamics, amongst others) to comprehend how systems work, and offer solutions to problems. They have to shift rapidly between two dimensions of problem solving: a) simple problems that can be solved rapidly and efficiently and b) complex problems that require the use of previous knowledge to activate a structured search for new knowledge and identify possible solutions (Schwartz, Bransford & Sears 2005). Activating and developing the latter at the undergraduate level are a challenge. Scenario assignments can be used to good effect in this sense.

Scenario assignments are not a new assessment tool; in fact, it has been used effectively in the past in medical education, for allowing students to gain skills in diagnosis, exploration and testing (McMartin, McKenna & Youssefi 2000). It has also been used in engineering education, particularly in the area of engineering ethics and even engineering design. The scenario assignment is designed for students to respond to an open-ended problem, set within an authentic context and probing an issue of engineering importance. It draws on students' critical thinking skills, problem formulation and management of resources and expertise, and is inspired by situated cognition theories of learning (McMartin *et al.* 2000).

We piloted the use of scenario assignments as the exclusive assessment

tool within the final-year module ENCH4RT Applied Reactor Technology. This was a suitable choice, as it leads on to the capstone design course and has a direct link in terms of content and learning outcomes to a third-year course in reactor technology fundamentals, ENCH3RT. The latter uses tests as the primary assessment tool. Since the cohort of approximately 100 students had undertaken both courses during the online teaching programme, it offered the opportunity to analyse and compare their performance using two different assessment strategies. Table 1 summarizes the learning outcomes of the two modules.

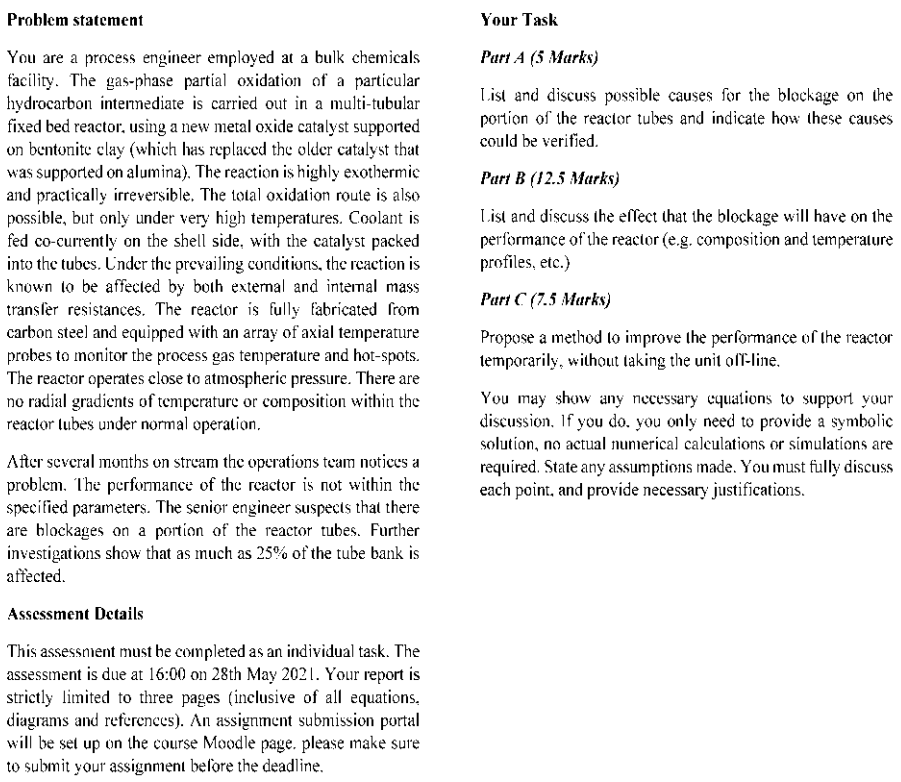
Table 1: Summarized learning outcomes for pilot modules

ENCH3RT	ENCH4RT
Demonstrate the ability to understand and calculate reaction rates, yields and compositions in well-defined chemical reaction systems	Demonstrate the ability to design and optimize complex chemical reactors

During the first semester of 2021, the scenario-based assignments were administered to a total of 114 students enrolled in ENCH4RT, of which 104 participated in the ENCH3RT module the previous semester and form the basis for this study. The students were provided with a module outline which indicated the type and weighting of the assessments, as well as the module and assessment outcomes. The students were given a problem statement, which provided some context for the scenario, partially defining the problem and finally some guidance on what was required, i.e. the students' task. Figure 1 shows a sample scenario used as the basis for one of the assignments. In this example, the students are briefed on a specific reactor configuration and a problem that have been encountered. The specifics of this problem have been drawn out of an authentic industrial case study. The issues have been broken down into various sub-parts to assist in the discovery of the overall solution.

The ENCH4RT module is further based on a case study approach. Each fortnight a different reactor configuration is interrogated through a series of lectures, readings and video exercises (watching online content related to the topic), all grounded in a particular case study of an industrially relevant process. This is book-ended by open discussions on the topic and calculation examples illustrated in class. By making use of a blended approach we are able to centre the learning on the student and facilitate guided inquiry that ultimately leads to

a better understanding of the design process. The students are given the open-ended design problem (the scenario) upfront and are encouraged to discuss, interrogate, brain-storm and share thoughts on the solution. Unlike conventional, problem-based learning pioneered at McMaster and Maastricht Universities (Beddoes, Jesiek & Borrego 2010), each student that participates in the ad hoc group eventually has to propose a unique solution to the problem; therefore, although they collaborate, they are also constructing and being assessed on their own knowledge.



Problem statement

You are a process engineer employed at a bulk chemicals facility. The gas-phase partial oxidation of a particular hydrocarbon intermediate is carried out in a multi-tubular fixed bed reactor, using a new metal oxide catalyst supported on bentonite clay (which has replaced the older catalyst that was supported on alumina). The reaction is highly exothermic and practically irreversible. The total oxidation route is also possible, but only under very high temperatures. Coolant is fed co-currently on the shell side, with the catalyst packed into the tubes. Under the prevailing conditions, the reaction is known to be affected by both external and internal mass transfer resistances. The reactor is fully fabricated from carbon steel and equipped with an array of axial temperature probes to monitor the process gas temperature and hot-spots. The reactor operates close to atmospheric pressure. There are no radial gradients of temperature or composition within the reactor tubes under normal operation.

After several months on stream the operations team notices a problem. The performance of the reactor is not within the specified parameters. The senior engineer suspects that there are blockages on a portion of the reactor tubes. Further investigations show that as much as 25% of the tube bank is affected.

Assessment Details

This assessment must be completed as an individual task. The assessment is due at 16:00 on 28th May 2021. Your report is strictly limited to three pages (inclusive of all equations, diagrams and references). An assignment submission portal will be set up on the course Moodle page. please make sure to submit your assignment before the deadline.

Your Task

Part A (5 Marks)

List and discuss possible causes for the blockage on the portion of the reactor tubes and indicate how these causes could be verified.

Part B (12.5 Marks)

List and discuss the effect that the blockage will have on the performance of the reactor (e.g. composition and temperature profiles, etc.)

Part C (7.5 Marks)

Propose a method to improve the performance of the reactor temporarily, without taking the unit off-line.

You may show any necessary equations to support your discussion. If you do, you only need to provide a symbolic solution, no actual numerical calculations or simulations are required. State any assumptions made. You must fully discuss each point, and provide necessary justifications.

Figure 1: Sample scenario assignment

Assessment of the students' performance in the assignments was based on a comprehensive marking scheme and marking memorandum. The latter

explored each possible solution, but with flexibility to allow for different options from the students. Here the lecturers experience is very important, since he/she should be able to pick up false logic and impractical solutions from the students, but also any specific ideas that are valuable from a practical or industrial perspective. Figure 2 shows an extract from a marking memorandum.

Marking Memo

Part A

- We first note that the catalyst has been changed from the relatively stable alumina-supported catalyst to one supported on bentonite clay. The clay support is unlikely to be resistant to attrition and it is possible that the catalyst was crushed and compacted during operation, resulting in a blockage in several of the reactor tubes. There would be catalyst residue in the effluent piping, which could be isolated and checked. The engineer / original designer should have done some research on the new catalyst prior to installation. There should be expected life-spans and runtimes associated with it from the manufacturer and datasheets available, in order to compare the operation. Maybe it is known that after 3 months new catalyst is needed. It would also be prudent to call in the catalyst supplier to explain why their catalyst performance has started to drop and they must account for their product.

(2 marks)

- Oxidation reactions are prone to catalyst deactivation by both sintering and coking. Compromised catalyst integrity and excessing coking could have also resulted in blockages, but this would have also been picked up early with a corresponding decrease in performance and selectivity.

(1 mark)

- The reactor is fabricated from carbon steel, which is prone to corrosion when exposed to specific chemical compounds. Corroded tubes could have collapsed and resulted in no-flow through a portion of the tube bank. It would be difficult to verify, however the surrounding piping could be isolated and checked for any excessive corrosion. If there has been corrosion, it often occurs on the welds, and on the tube sheet, and minor cracks from stresses e.g. heating/cooling too fast. This would also result in leakage form shell to tubes, or the other way depending on which pressure is highest, which means either the coolant or the product becomes contaminated. Both fluids can be checked for the contamination. Mild steel is also quite ductile, so it can warp out of shape quite easily at high temperatures (>500 °C) if there is a temperature gradient and not well supported.

(2 marks)

Figure 2: Sample marking memorandum

The students were given a comprehensive feedback sheet, with comments on the various solutions posed for each scenario. A sample of the comments for the top 10% and bottom 10% of the student scores are presented below.

Bottom 10%, representative feedback

- Flow in the packed bed unlikely to lead to catalyst redistribution, unless there is breakage and dusting of the catalyst.
- The sticky product that is referred to could be a heavy by-product; this is an interesting point.
- The blockage actually causes a high-velocity condition in the remaining tubes, resulting in low residence time, conversion, rate and heat generation, and hence a flatter temperature profile.
- Coolant blockages are not the issue in this system; the blockages exist on the process side.
- The discussion on part A is inadequate. The first paragraph speaks of the normal operation of a multi-tubular reactor system, and only a brief (and partial) list of causes is given. These should be discussed. Only some, like the process operating conditions, are valid.

Top 10%, representative feedback

- Consideration of effects is excellent, vary in depth and supported by a variety of literature evidence. It appears that some basic simulation work was carried out to determine the effect on temperature and pressure profiles, well above what was required for this question, but very much appreciated.
- Discussion of the effect of the blockages on performance is particularly good, there is a great logical development of the argument. Flowrate related to velocity, related to pressure drop, rate, conversion and yield
- Some interesting proposals for restoring performance focused mainly on the blockages. However, could have considered the process as well. The obvious one is process feed temperature.
- The analysis of the effect on performance is good, but focused a lot on the blocked tubes (which really would have no flow). On the unaffected tubes the increase flowrate and pressure drop have some interesting consequences for performance.

These feedback not only serve as a means to guide the assessment of individual achievement of competency, but also to assist student learning beyond the module.

3 Results

The results of the study are in three parts, viz. external and independent professional opinion, student feedback and student performance. Given the relatively short timeframe, there are concise but nevertheless valuable.

The assessments were subjected to independent moderation by a professional engineer with 15 years' experience in the field. His comments were overall favourable. In particular he pointed out that the student 'had to make critical thinking decisions about how to find the information required for the problem'. Moreover, he said that the 'open-ended assessments gave students the opportunity to show engineering skills such as solving complex problems with many parameters'. The assignments also 'allowed students to demonstrate both technical knowledge and engineering trade-offs, which are common in industry'. Student feedback, although limited, was also positive, with some commenting that the scenario assignments were beneficial and well-received, and that authentic learning had taken place.

The final-year modules in the chemical engineering programme generally have high pass rates, and 2021 was no exception, with over 90% of the students obtaining a pass on the ENCH4RT module. When comparing the difference in scores that the students' achieved against those in other professional modules during the semester (cf. Figure 3 and Figure 4), one can see that in general the student performance was better (only 47 of the original 114 students participated in these other professional modules during the same period). However, there are a number of factors that affect these performances, including the prerequisite knowledge and the type and weighting of assessments used in the other modules, let alone the fact that these are delivered by other academic staff with unique capabilities and teaching styles. This makes direct comparison difficult. It was therefore decided to interrogate the students' performance in ENCH4RT relative to the third-year ENCH3RT module. Both of these modules had been delivered by the same lecturer. Figure 5 shows the relative difference in scores between these two modules. Interestingly, the majority of students scored higher in ENCH3RT, but evidently did not carry over the knowledge gained in that module effectively to the fourth-year module. This may be an indictment of the effectiveness of the test platform used in ENCH3RT in assessing the learning outcomes of these students.

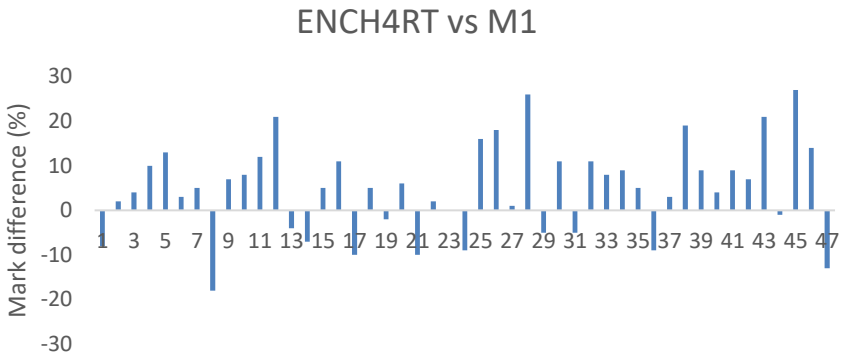


Figure 3: Comparison between student performance in ENCH4RT and contemporary 8 credit exit level module – sample of cohort

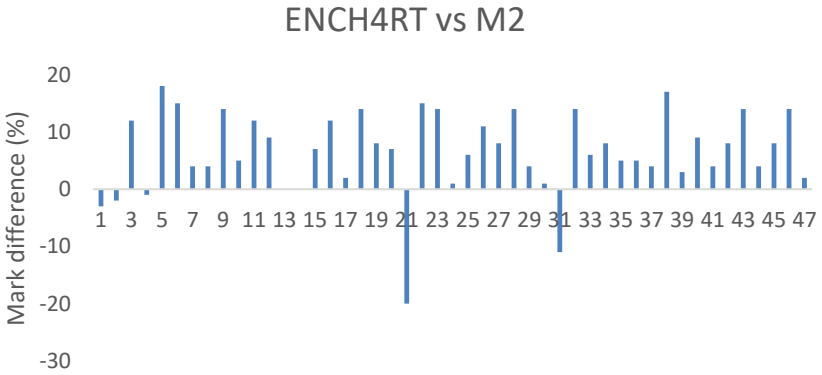


Figure 4: Comparison between student performance in ENCH4RT and contemporary 16 credit module – sample of cohort

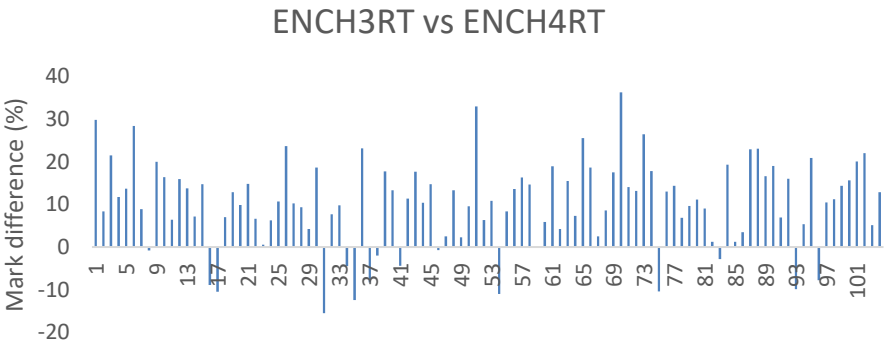


Figure 5: Comparison between student performance in ENCH3RT and ENCH4RT – full cohort

The scores obtained in ENCH3RT and ENCH4RT were further compared against the weighted averages for the degree (cf. Figures 6 and 7). The median value for ENCH3RT was 15% above the weighted average for the degree, whilst the median value for ENCH4RT was 5% above. Comparing these values to the increase in the weighted average over the second semester of 2020 and the first semester of 2021 for the same cohort of students (cf. Figures 8 and 9), it is clear that the student performance in ENCH4RT was more consistent with the student performance over the degree and hence may be a clearer reflection of the students' ability. The results shown in Figures 8 and 9 also reveal an important trend, i.e. students are faring better in their studies during the online programme. It is still unclear whether this is through improved pedagogy or an inflation in performance due to the lack of it. To answer this question would require more data and analysis and is beyond the scope of the present work.

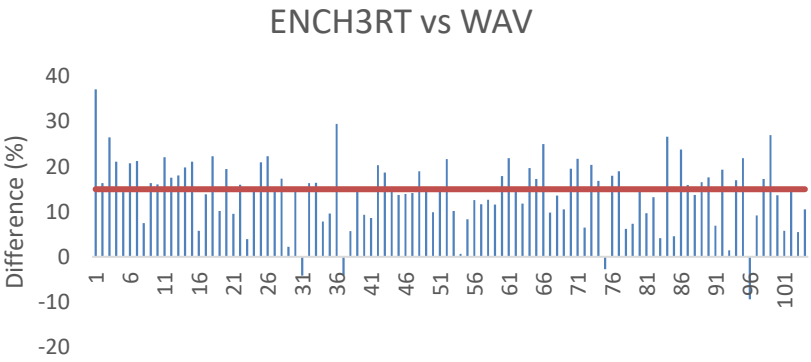


Figure 6: Comparison between student performance in ENCH3RT and weighted average for degree – full cohort (Median = 15%)

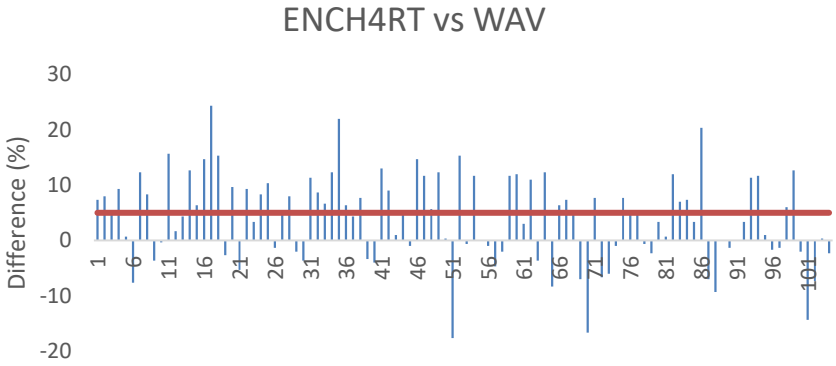


Figure 7: Comparison between student performance in ENCH4RT and weighted average for degree – full cohort (Median = 5%)

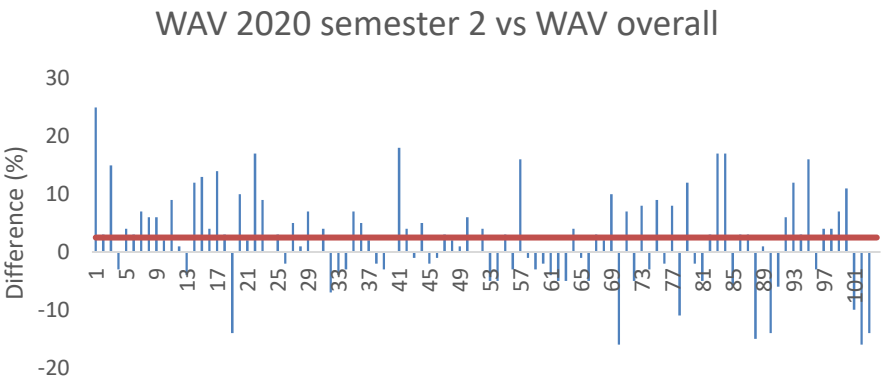


Figure 8: Comparison between student weighted average in Semester 2 (2020) versus weighted average for degree – full cohort (Median = 2.5%)

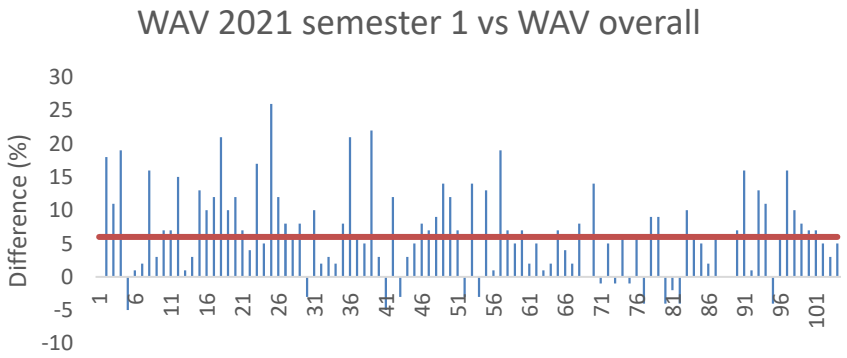


Figure 9: Comparison between student weighted average in Semester 1 (2021) versus weighted average for degree – full cohort (Median = 6%)

As is usual when introducing a new teaching or assessment tool into a programme, there are operational issues that also need to be considered. By their very nature, open-ended problems require of students to look beyond the obvious, beyond the notes and tutorials, and for them to probe the literature to discover new information that could help them in finding a solution. The students' ability to access literature resources has a direct impact on their performance in the assessment. What we also find is that students are often unmotivated to extend their search for information beyond a superficial attempt, and this is something that needs to be encouraged when using scenario assignments.

The constraints on library resources at the institution should be kept in mind when designing the assessments. There has been a recent push towards open-access publishing, with a number of journal and book publishers allowing partial or full access to their content, and full advantage should be taken of this. In the offering of the ENCH4RT module, a peer-to-peer support programme was implemented, incentivizing the uploading of papers and technical reports as well as class summaries that the students were willing to share. Where possible, some literature was made available to students to explore. In this way the students had equitable access to a body of resources that could support their learning. In practice the lecturer should command some oversight on the material uploaded on the Learning Management System, to ensure that only valid information is made available to the cohort.

One of the key aspects to consider when introducing new assessments are the notional hours for the course. Self-study and assessment time should provide adequately for the students to undertake the necessary research and reading, and to summarize the solution in the form of a report. When using scenario assignments as the assessment tool, it is not necessary to ask the student to provide a lengthy document padded with an extensive literature review. In the ENCH4RT module the report length was limited to three pages. The task thus also provided the students with the opportunity to write concisely and with relevance, something that seems to be a challenge amongst engineering graduates, but also a valuable skill.

4 Discussion

Comparisons to Literature and Conventional Assessment Methods

Considering the three key elements of scenario assignments (Mckenna 2007), we have found that for successful use of the assessment tool for the applied engineering course in this case study, all three play a critical role. Although there is a wealth of different scenarios to choose from, these should be regulated according to the educational value and the authenticity they impart to the problem. Students were better engaged in 'feed-forward' design problems, rather than 'feedback' operational troubleshooting problems. This could be as a consequence of the recipe-based approaches that the students were exposed to in developmental modules. In fact, the use of problem-based learning techniques can be challenging when students are surrounded by modules using the typical lecture and assessment approach (Mohd-Yusof et al. 2014).

The open-endedness of the problem has to be carefully aligned against the resources that the students have available. This is congruent with the observations of Gómez Puente et al. (2015). The student discovery process may need to be partially supervised/guided as well, since the students can easily lose focus on the problem.

Implications for Other Engineering Modules in the Curriculum

The scenario assignment can be used as the sole assessment method within a higher-level engineering module, demonstrated most effectively when there are engineering design and operability elements in the problem. It remains to be seen how these assignments can be used effectively at the entry and developmental levels of the programme, where methods such as concept testing may prove more beneficial.

Critique and Future Research

Although we believe that the sample size was appropriate for interrogating the use of this assessment technique for the remote teaching period, it is small to make generalized conclusions. The data collected over several years may further confirm existing trends.

Open-ended problems naturally invite a variety of responses, and there exists the potential to receive responses that are not adequately covered by the existing rubric. It may therefore be necessary to use lecturer, moderator and

student response input iteratively to finalize the scoring system for these assessments.

We aim to track the progress of the graduates that have participated in these modules to monitor how the training has translated into real world practice, using interviews within the three years post-graduation. The analysis would nevertheless be subjective and would depend on the self-assessment of the individual.

5 Conclusion

At this point it is probably worthwhile addressing the titular question of this paper. Are scenario assignments a superior assessment tool within an online framework? It is probably too early to say conclusively. There are also ways to improve the validity of online testing, such as the use of extensive question banks and online proctoring. The pilot study conducted and presented here shows that scenario assignments can be used as an acceptable alternative to conventional tests, especially when assessing the students' ability to apply critical thinking and solve complex problems, and may actually offer a better means of assessing the students' true ability with regard to the second dimension of problem solving. Within an online teaching platform, and with properly designed assessments considering the student resources and time, they allow the lecturer to probe the students' skills and knowledge. Hopefully, as we all transition to a new form of blended teaching in the future, we will be able to embrace the various options for assessment and in this way take full advantage of the provisions that digital platforms in higher education have made possible.

Acknowledgements

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David Lokhat
Associate Professor and Academic Leader
Discipline of Chemical Engineering
University of KwaZulu-Natal
Durban
lokhat@ukzn.ac.za

Chapter 5

Second-chance Assessments: Social Justice Action or Assessment Disruption

Sarah Bansilal
ORCID iD: http://orcid.org/0000-0002-5445-5612

Abstract

With the sudden onset of the Covid 19 pandemic, higher education institutions were forced to move to online systems of learning and teaching. Concerns about inequitable access to online platforms led to our university recommending that we offer students a second chance to improve their marks. It is of interest to investigate the effect that the second-chance assessments had on the overall marks. In this mixed-methods study, I look closely at two modules which offered students slightly different second-chance opportunities. The purpose is to examine how the second-chance intervention impacted on the marks in two modules. Data were generated from the marks of the students enrolled in the two modules. In addition, an unstructured interview was conducted with the student whose marks improved the most, to gain his perspective of the impact of the second-chance intervention on him. The findings show that in both cases the outcomes significantly changed, raising issues about whether the second-chance intervention offers equitable access or whether it in effect lowers the quality of the assessment. The student's perspective suggests that the second-chance intervention was an equitable opportunity for students who were disadvantaged by the current circumstances.

Keywords: Covid-19, pandemic, online learning, performance, assessments, second chance

1 Introduction

Spurred on by a commitment to overturn apartheid legacies, the higher education sector in South Africa expanded dramatically over the past two decades, almost doubling in size. The number of students enrolled in higher education in 1994 was 495 000 (Ramrathan 2016) and this number grew to approximately 984 000 in 2013 (SAIRR 2016). The large numbers are of benefit to many universities, since one of the factors that determine government funding to universities is the use of the numbers of Full-time Equivalent (FTE) students, whereby large numbers of students translate to larger subsidies from the government. However, FTE graduations are also factored into the formula for funding (Pillay 2004). Hence, universities have prioritized the improvement of pass rates. This move can also be seen as a response to the increasing market-driven pressure to improve the competitiveness of the higher education institutions (Mcfarlane & Tomlinson 2017).

With the onset of COVID, and the sudden shift to online learning, universities understandably, fearing an impending cut to subsidies should pass rates suddenly plummet, tried to intervene so as to stop any sudden decrease in the pass rates. There was concern that many students would be disadvantaged because of inequitable access to digital platforms and hence the performance of the university would be affected. The university where I teach instituted a wide range of interventions to enable students to continue with their studies within the online mode. However, there were still many problems and when the lockdown levels were moved to Level 3, most students were allowed to return to the student residences, which provided more reliable access to Wi-Fi. Lecturers were encouraged to offer students opportunities to improve their scores, especially for those students who were considered to be at risk of failing.

With the removal of the supplementary examination that is traditionally offered as a second chance to pass, our teaching and learning offices encouraged lecturers to offer students who were at risk a second chance at assessments. The second chance could be in the form of giving students an opportunity to repeat an assessment, or to do another, similar assessment. However, it is important to consider whether this second chance could have led to students gaining higher marks than they would have received under normal circumstances. Research from across the world suggests that with the move to online platforms, it has become easier to pass and to do well (Gonzalez *et al.* 2020; Hale 2021; Karadag 2021).

In this chapter, I look closely at how marks changed in two mathematics methods modules after students had been granted a second chance to complete assessments. The purpose is to examine how the second-chance intervention impacted on the marks in two modules, and to pose the question whether it is in fact making it easier for students to pass, or whether it is rightfully offering disadvantaged students an equitable opportunity to pass.

2 Literature Review

In this literature review I first consider the neoliberal context within which universities have been working and how this influences the drive to improve pass rates. This is then followed by a closer look at the move to online platforms as a response to the Covid challenges. The second part of the literature review focuses on perspectives of assessment.

It is assumed that university education has a humanistic approach that values individuals and their aspirations and helps students to transition to the adult working world. However, in recent times, many scholars have noted that higher education has increasingly developed a performativity culture driven by neoliberal values (Kenny 2017; Mcfarlane & Tomlinson 2017). Neoliberalism is a school of thought that is driven by the idea that 'profit seeking would lead to efficiencies' (Maistry & Africa 2020:2). A central assumption of neoliberalism is that the role of the state is to govern and to create the policy conditions for markets to thrive. Across the world, neoliberal policies have led to corporate management styles that prioritise efficiency and productivity in teaching and research (Kenny 2017). This has led to an increased focus on graduation rates and levels of student achievement (Mcfarlane & Tomlinson 2017). This is especially the case in South Africa where the higher education sector has increased dramatically. Universities in South Africa have become complicit in advancing the neo-liberalist policies, because part of their funding from government is based on formulae related to the number of FTE students as well as FTE graduations. However in recent years, a large part of the university funding comes from external sources, thus making it more important that the university is seen as competitive and efficient. The reforms in higher education have been driven by policies which seek to make the universities more efficient by improving the rate of completion of degrees and success rates in the courses (Mcfarlane & Tomlinson 2017).

When faced with the pandemic, universities, on the one hand, were con-

cerned that the sudden forced movement to online learning would lead to lower graduation rates which would have a negative impact on their reputation and ability to attract funds and students. Universities tried to implement a range of interventions to mitigate against this perceived drop in engagement levels of students, one of which is the focus of this study. On the other hand, there have been concerns that online learning in fact leads to grade inflation.

Mark inflation or grade inflation refers to the allocation of higher marks for work that should have received lower marks, so that the averages or overall class marks of students are higher than expected (Berezvai, Lukats & Molontay 2020). This creates the appearance that they performed better in a course than they actually did.

In the UK, there was concern that the proportion of top degrees awarded in recent years has been increasing and universities have agreed to try to monitor the trend (Hussain 2020). Some practices that lead to the grade inflation include rounding up of grades or ignoring the lowest marks so that the overall grade could seem higher. With the onset of the pandemic, universities made changes to policies so as to transition to online learning and assessments (Hale 2021). Universities tried to offer increased support to mitigate the 'digital poverty' experienced by mainly disadvantaged students (Hale 2021). Digitally poor individuals lack access to digital technologies because of a lack of knowledge, or because of financial considerations (Barrantes 2007). Hale (2021) notes that there was a 6% increase in the upper awards in 2020, which is important to understand and interrogate as we move forward in these unprecedented and challenging times. In Turkey, Karadag (2021) carried out a study with five universities and found an increase of 9.21% in the average lecture grades during the pandemic when compared to those of the previous year. The grade inflation occurred as the move to online learning took place. A study conducted in Spain with 458 students from three universities found that there was a significantly positive effect of the Covid-19 confinement on the students' results (Gonzalez *et al.* 2020). Here at UKZN, most clusters in the School of Education recorded increases in the pass rates between 2019 and 2020 (Bansilal & Rosenberg 2021). In the Mathematics and Computer Science Education and the Science and Technology Education clusters, there was an overall increase of 10% and 8%, respectively, which may be seen as grade inflation. This trend of increasing pass rates motivated me to look at how the second-chance intervention resulted in higher pass rates during the shift to online learning at my university.

Blackley *et al.* (2021) remind us that online learning during the time of

Covid-19 was not a new phenomenon, but it was different from the kind of online learning that was available before the pandemic. During the pandemic, online learning was forced, and can be described as emergency remote learning or crisis-prompted online learning (Hodges *et al.* 2020; Gacs, Goertler & Spasova 2020). This move was not planned and took place before the necessary engagement and training could be done to ensure its success. Blackley *et al.* (2021) note that the forced transition with the limited planning time may inadvertently have resulted in simply transferring the traditional teaching to an online setting.

Although educators may feel that the introduction of technology-based engagement intensified their teaching duties (Kenny 2017), we need to be mindful of our role in advancing social justice. Teaching is a political activity and requires that teachers rise above the everyday demands of teaching (Kumashiro 2008). Advancing social justice pedagogies requires the development of critical consciousness in students and teachers, which involves 'learning to perceive social, political and economic contradictions, and to take actions against oppressive elements of reality' (Freire 1970:35). Hence, in conceptualizing critical consciousness, critical reflections need to be accompanied by critical actions (Kokka 2020). We are reminded by Kokka (2020:4) of Gutstein's (2006) goals of teaching mathematics for social justice, which includes 'succeeding academically … on standardized tests' as well as 'gaining conceptual understanding' in mathematics. These goals make it clear that teaching mathematics for social justice includes the goal of helping your students succeed academically in the traditional sense, while also attending to broader goals such as taking action to change the world, and developing positive identities (Kokka 2020). During the crisis-prompted online learning, as social justice practitioners, it is important for us to engage in critical reflections to identify inequities which may be perpetuated by the situation and if necessary, to take critical actions to reduce these inequities.

Almost 90 years ago, Dewey (1933:118) described reflective action as involving 'an active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds supporting it', and it is as relevant today as it was then. As social justice practitioners, it is important for us to take cognizance of Dewey's words and examine the assumptions upon which our pedagogic decisions are made. Furthermore, we should be prepared to take critical actions when called upon to do so, as in this instance of allowing additional opportunities for assessments to students who may have been otherwise disadvantaged.

This chapter represents my interrogation of the module assessments done

during the pandemic using the online platforms as well as the critical actions that were taken in response to the university's request for second-chance assessments.

In trying to understand issues related to overall scores, we need to look first at the underlying process of assessment that is used to determine these scores. All assessment tasks should be measured against the basic education principles of content, learning and equity if they are to derive the best outcome from the learners (Messick 1989). For a mathematics assessment to meet the content principle, it must reflect the key mathematics concepts that are crucial for learners to learn (Messick 1989). Besides the content principles, mathematics assessments should also be measured against the extent to which they reflect the learning principles which are based on how learning has improved. Assessment should cater for all groups of learners in terms of supporting their learning process, allowing them to engage with mathematical tasks while developing proficiency in mathematics. Equity principles are based on the question of whether an assessment favours one group over another group for reasons that have nothing to do with the purpose of the assessment, whether comparisons with performance standards are justifiable and whether the tasks are accessible to students (Frederiksen & Collins 1989). In the online environment brought on by the Covid pandemic, the equity principle requires of instructors to provide students with the opportunity and necessary support for their learning. The online teaching environment has brought digital and social inequalities to the fore and instructors need to ensure that students are not disadvantaged regarding digital access (Stoykov & Yilmaz 2021)

Knight (2002) asserts that student achievement is related to the extent and quality of engagement that the student has done. The engagement is not the same as the amount of time spent on, and involvement in a task, but should include involvement and participation within communities of practice and in varied networks. Knight (2002) is of the view that the strongest influence on learning is the assessment procedures. We often distinguish between formative and summative assessment as assessment for learning and assessment of learning respectively. Yorke (2003) describes formative assessment as assessment whose main purpose is to enhance learning through the provision of feedback. Hannafin, Hannafin and Dalton (1993) distinguish between four types of feedback, namely task feedback, process feedback, self-regulation and self-feedback. The first type involves clarifying the instructions and activities entailed, while process feedback provides information on how a student can proceed with the task. Self-regulation is focused on how students can monitor the strategies that they use

while self-feedback focuses on personal attributes of the student such as how well they have done. Yorke (2003) describes a study where engineering students made a marked improvement which was attributable to the time spent on the task, as well as the promptness of the feedback that was received.

When assessment involves using evidence to make inferences about what was learnt or achieved, this is referred to as a feed-out function of assessment (Knight 2006). In improving the feed-out function, we must ensure that the evidential basis of the inferences is sound (Matters 2009). The assessment process often involves a jump from performance to inference, which may not always be apparent (Matters 2009). Judgements are made based on how well the evidence matches the criteria. Inferences that students have met the outcomes of the course based on their assessment results may not hold true if the assessment was not well designed or properly administered to measure those outcomes. If the evidence is not solid, and we do not recognise the gaps, then the inferences we make will not hold, which is related to the validity of the assessment.

Nitko (2001) explains that the concept of validity applies to the ways in which we interpret and use the assessment results and cautions that the use you make of your assessment results are valid only to the degree to which you can point to evidence that supports their correctness and appropriateness. Reliability refers to the consistency of assessment results and is defined as 'the degree to which students' results are the same … when they complete different but equivalent tasks on the same or different occasions' (Nitko 2001:63). If we take an assessment tool as being reliable, it will mean that the score generated is one which a learner would be able to obtain under other circumstances as well. For large-scale, decontextualised mathematics test items, the reliability criterion could be judged by using statistical methods such as Cohen's kappa coefficient or Kronbach's alpha (Gaur & Gaur 2006), but it is harder to establish reliability for open-ended assessments and one that is scored by different people. Knight argues that it is easier to establish reliability in the case of uncontentious evidence, as in the case of simple and unambiguous assessment processes which have a lower cognitive demand. Hence, instructors may resort to using simpler assessments, because it is more straightforward to establish what is correct and what is not.

3 Methods

This study is a mixed-methods study, because it includes both quantitative and qualitative research methods. As a mixed-methods study, it takes on a sequential

explanatory design where the quantitative data (assessment scores) were collected first, which informs the qualitative data collection (Creswell 2013). For this study I downloaded the quantitative data from the Learning Management system of the university. I first considered the assessment records as they were being tallied for the original scores of the module once the teaching was completed and then again at the end when the final scores were tallied for submission to the exams board. The records of 94 students from the Algebra, Functions and Calculus Methods of Teaching module, and those of 23 students who were enrolled in the Geometry Methods of Teaching module were considered. Qualitative data were sourced from an interview with one student whose marks showed the greatest improvement. The purpose of the unstructured interview was to understand why the student was so far behind and how he was able to catch up on the work.

The statistical tests that were conducted were paired-sample t-tests, also known as repeated-measures t-test. These are used when you have one group of people and you collect data from them on two different occasions or under two different conditions. If the p-value of the test is $< 0,05$, then we can conclude that the difference between the two sets of scores is significantly different (Palant 2010).

3.1 Details of the Modules

The first semester of 2021 started on 8 March because of the delays in the previous year due to the Covid pandemic.

There were 94 students enrolled in the Algebra Method module, which consisted of 17 assessments in total made up as follows:

Table 1: Details of the algebra method module

Assessment (Algebra method module)	Weighting
Nine tutorial tests (mc)	10%
Five classroom activities (open-ended)	10%
one video presentation	10%
Major test 1	35%
Major Test 2	35%

The Geometry Method module is a third-year pipeline module, currently

being phased out as part of the old BEd. There were 23 students in the class, of which 43% were in the fourth or later years, adding an extra dimension of pressure to pass the module and exit the system. There were 14 assessments in total, made up as follows:

Table 2: Details of the geometry method module

Assessment (geometry method module)	Weighting
Nine Tutorial tests (mc)	20%
Three classroom activities (open-ended)	10%
Major test 1 and Major Test 2	70%

4 Results

The university management encouraged lecturers to give students multiple opportunities to complete the assessments so that students would not be disadvantaged by circumstances beyond their control. Hence students were given a second chance to improve their marks in the module, using a different approach in each case. For the Algebra module, students requested a second chance in selected assessments, while in the Geometry module, everybody was allowed to do any of the assessments again.

I now discuss the results for each module.

4.1 Changes in the Marks for the Algebra Module

With the Algebra Method module, students who requested a second chance on any of the assessments that they had failed, were granted that opportunity. The mean of the marks for the algebra module before the second chance was 56,7%, and 59,7% after the adjustments, representing an increase of 5% on the original mean.

The graph in Figure 1 shows the distribution of the marks in the original total and in the final total (after a second chance).

The categories are those who failed outright (0–39%); those who would have qualified for a supplementary under normal conditions (40–49%), those who just

managed to pass (50–59%), those who coped well (60–74%), and those who did very well (75–100%).

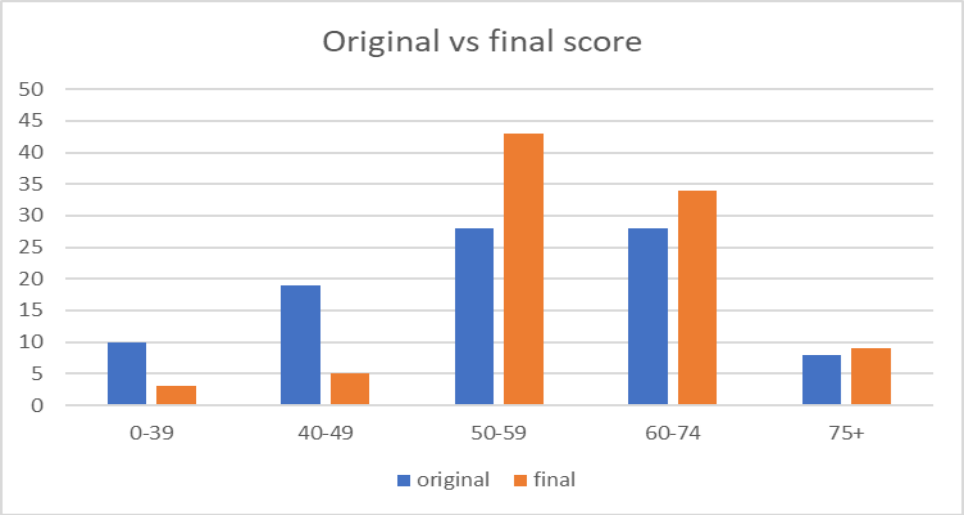

Figure 1: Bar Graph showing distribution of marks before and after second chance in algebra module

The graph shows a spread of the marks with a large number of students clustered at the 45–50% mark band – this is the result of the remarking, as shown by the distribution before re-submission was allowed. As seen in the graph above (Original total) the large cluster from below 50% has moved to the large cluster that lies between 50–55% (Final total). The details are presented in Table 3.

Table 3: Distribution of marks in the Original and Final total for the algebra module

Categories	Original Total	Final total
0–39 (outright fail)	10	3
40–49 (previous supp condition)	19	5
50–59 (just passed)	29	43
60–74 (coping well)	28	34
75+ (very good)	8	9
Mean mark	56.7	59.7

The mean of the marks improved by 5%. The paired samples t-test show that there was a significant increase in the marks from the original total (M= 56.72, SD=12.39) to the final total (M= 59,75, SD=10.45), t (92) =5.41, $p < 0.005$.

Here is a scatter graph showing how the individual students' scores changed after the second chance.

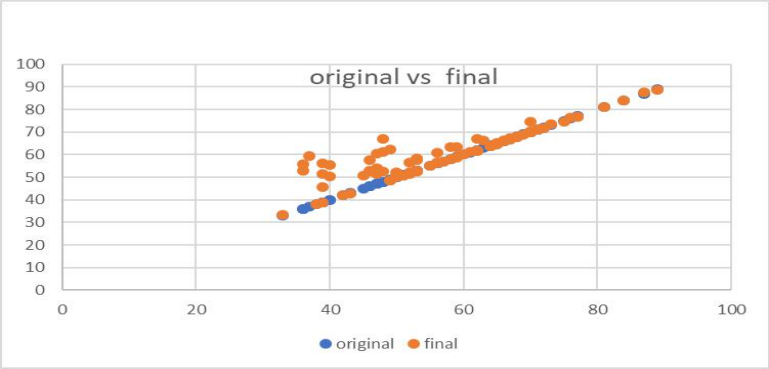

Figure 2: Graph showing the original versus the adjusted (final) total for each student for algebra

As is evident in Figure 2, most of the marks after adjustment were close to the original, since only 62 marks remained unchanged. Table 4 presents the distribution of the changes in the marks for each student. For each difference, the number of students who had that difference is given.

Table 4: Frequency of differences in scores for the algebra module

Change in Score	Frequency
0	62
1-5	13
6-10	7
11-15	6
16-20	4
>20	1

Table 4 shows that there was one student whose mark increased by more than 20 marks, which is quite a steep increase.

4.2 Changes in the Marks for the Geometry Module

In Table 5, the original scores (Original Total) represent the marks of students at the end of the first deadline, when all the assessments were due. When the marks were calculated, it was found that more than half the class would not pass. Consistent with the Covid interventions of allowing students multiple chances to attempt their tasks again, I then decided to distribute the marks so that for the major tests, we took the better of the two scores. At this stage, although the marks improved, 40% of the class still did not pass. I then decided to open up all the tasks for students to try again, allowing them a full week to complete the multiple-choice quizzes and to submit outstanding open-ended assessments. Table 5 presents a distribution of the three sets of marks – the original total, the rescored total – where the higher of the two major test marks was taken and the final total after the second chance. The categories considered are the same as those for Figure 1 and Table 3.

Table 5: Distribution of marks in three scenarios for the geometry module

Categories	Original Total	Re-scored best of MT	Final Total
0-39 (outright fail)	6	2	1
40-49 (previous supp condition)	6	7	2
50-59 (just passed)	6	7	7
60-74 (coping well)	4	3	8
75+ (very good)	1	4	5
Mean mark	45.9	53.8	60.0

Figure 3 shows the distribution of the marks in the original total (before), intermediate and the new total (after).

These clustered bar graphs show that although there were six students who originally fell into the outright fail category, after the two stages this was reduced to one student, who did not participate at all. In total only three students (13%) did not pass after the two stage – adjustment process. On the other side, originally there was only one student who obtained a distinction while five received distinctions in total. In the coping well group, distinctions doubled from four to eight.

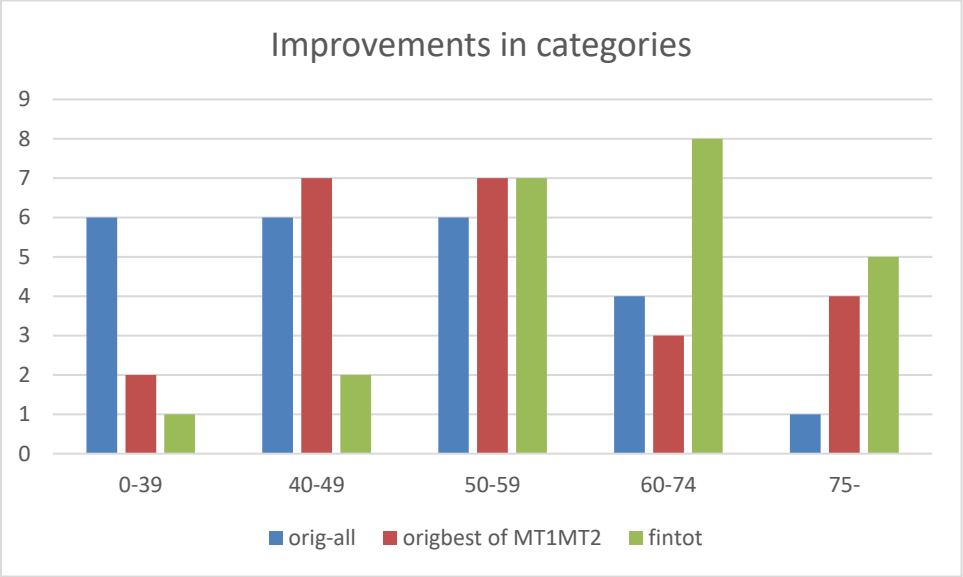

Figure 3: Bar Graph showing differences in marks in original, intermediate and the final scenarios in the geometry module

Statistical tests show that changes in marks at each stage were statistically significant. The paired samples t-test conducted on the student scores after the first stage of adjustments shows that there was a significant increase in the marks from the Original All Total (M= 45.89, SD=17.90) to the Original Re-scored best of Two Tests Total (M= 53.78, SD=18.07), $t\ (22)=5.41$, $p < 0.005$. Furthermore, the paired samples t-test conducted at the second stage shows that there was a significant increase in the marks from the Original Re-scored Best of two tests Total (M= 53.78, SD=18.07) to the New Final Total (M= 59.96, SD=17.14), $t\ (22)=3.49$, $p < 0.005$.

The mean of the Original Total was 45,9, while the mean of the adjusted scores is 60 (New Final), which represents an increase on average of 30%.

The scatter graph below in Figure 4 provides a visual image of the changes for each student at each stage, where the blue dots representing the original total are shown on a line; the orange dots show the changes at the first step; and the green dots are the scores at the second step of the changes.

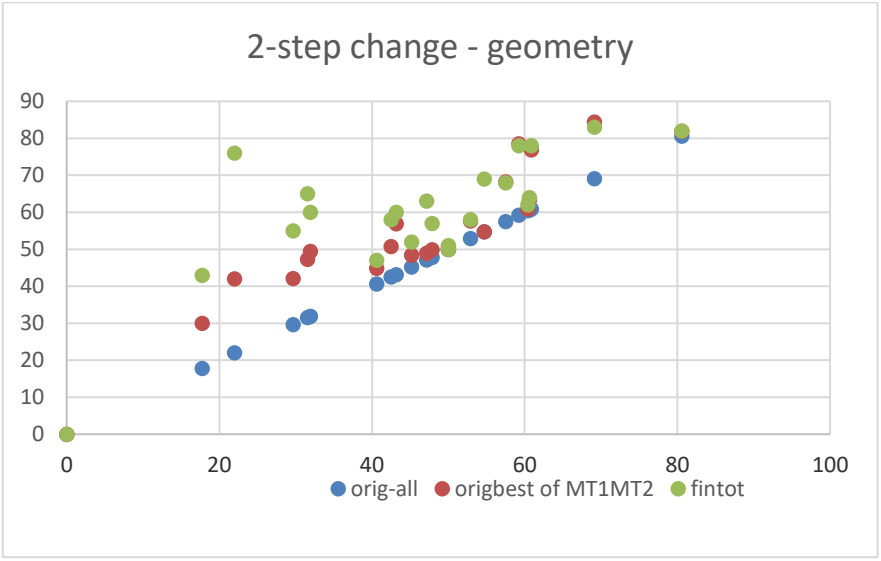

Figure 4: Scatter Graph showing the original versus the two stages of adjustments in the geometry module

Figure 4 presents a visual picture of how each student's scores changed after the second chance. Unlike the algebra method modules where two-thirds of the students had no change, in this geometry method module only two students had no change. Here is the frequency of the difference in the overall scores for the geometry module.

Table 6: Frequency of differences in scores for geometry module

Change in score	Frequency
0	2
1-5	5
6-10	3
11-15	3
16-20	5
21-25	2
26-30	1
>30	2

Table 6 and Figure 4 show that there was a much bigger change in the marks for the Geometry module when compared to the Algebra module. Notably there were two students whose marks increased by over 30 marks.

4.3 Student Perspective: The Case of Mlu

The largest increase across both modules was achieved by student Mlu in the Geometry module, as shown in Figure 5, which indicates that the increase in Mlu's mark was from 22 (original) to 76 (final total).

During the interview Mlu explained that he was funded by the Provincial Government and his payment was delayed because of the many communication problems. He said, '*They do not pay on the exact time, the payments take a delayed time'.* However, when the payment was made, the university systems took very long to reflect the payment and to direct it to the School of Education: '*Then, when they did make the payment, it did not appear on the system'.*

He was quite desperate, but when he was on the verge of giving up, he received a message on 26 May that he was registered, two months after the semester had started.

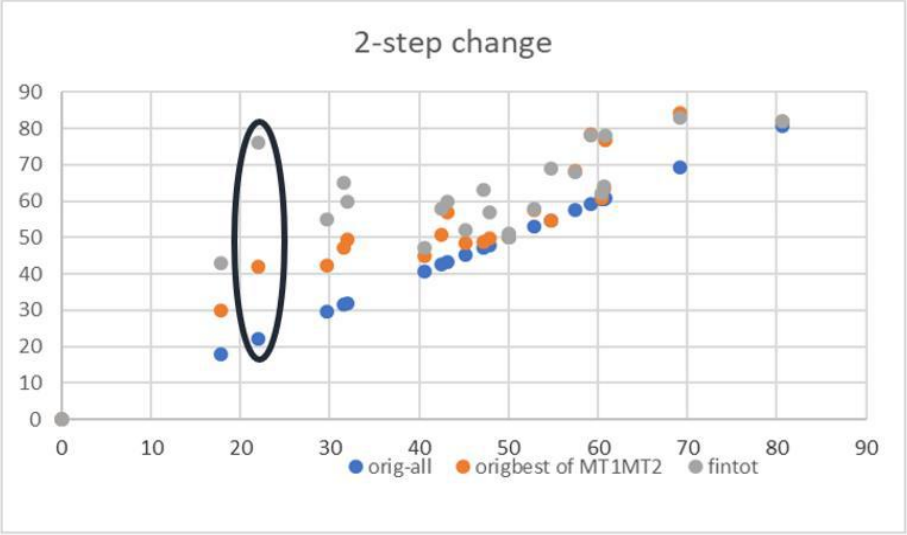

Figure 5: Scatter graph showing change in Mlu's scores

Mlu described the Herculean task that he faced in catching up with the work in the five modules that he was registered for. For the next few weeks, he slept from 6:00 to 8:00 in the mornings and had a nap later in the night. To keep himself from feeling overwhelmed, Mlu reminded himself to '*take everything step by step'*. He tried to be methodical in covering the work across all the modules: '*I would go to one module, first one task, then go to another module, finish one task, and to the next module*'. He then went back to the first module and finished the second task and then rotated them again.

He also tried to vary the tasks that he did according to the time of the day, working out tutorials for Maths and Method in the morning, reading up on Theory for Education Studies in the early hours of the morning. He worked hard in the morning on tutorials: '*From 9:00 until 3:00 I would do all the tutorials for all modules … practicals, tutorials'*. He took advantage of the quiet times in the night, which was when he looked at the notes and theories in the modules. '*I relegated my theory studies to 12:00 to 4:00, when it is quiet- everyone is sleeping – I can concentrate. I would put my music on and just work.*

In the early hours of the morning, he changed his strategy and at 4:00, he focused on checking his own progress to see where he was in the overall picture, which was a key part of this self-regulated learning process: '*After four, I would test myself, check each module … to make sure that I have made progress and not going in circles'*.

These strategies used by Mlu are described by Yorke (2003) as self-regulation (monitoring success of the strategies) and self-feedback (focusing on how well they have done), which are effective ways of improving learning.

He found it very useful that recordings were posted on the learning site, because he was able to watch selected Zoom lectures. He only watched them after reading up on the notes on PowerPoints, and then would decide which ones to watch. Then he would tackle some assessments or tests that were due. He explained reserved the 12:00 to 4:00 slot for learning theory, because it was the quietest time of the day.

He said he felt as if he was in another world and watching himself from out of his body. For the method course, when those second chances were given, for him, most of them it was the first chance. He chose to do them as he mastered the sections. The assessment that he did the worst in was the second major test, although he said he had worked really hard on it. It was focused on phrasing conditional statements and inverses of statements, and the teaching of tangents, ratio and proportion and similar triangles. He passed with 57%, but with the first

test he obtained 80%; thus taking the best of the two marks really helped to boost his final score. Overall, in the end, he passed four out of the five modules.

5 Discussion

The findings of the study show that across both modules the second-chance assessments improved students' marks. By allowing students to re-submit assessments, the success rates were changed substantially. The statistical tests confirm that the marks after the second-chance assessment was statistically significantly higher from their original scores for both modules. For the Geometry module, the number of students who did not pass decreased from 12 to 3; hence the pass rate increased from 48% to 61%, which is a percentage increase of 27%. For the Algebra module, the number who failed decreased from 29 to 8; hence the pass rate increased from 69% to 92%, which is a percentage increase of 33%. These increases suggest that the grade inflation reported for the clusters in the School of Education may be explained to some extent by this second-chance intervention. The second chance made it significantly easier for students to pass and made it easier to do well. It could be inferred that the reliability of the assessments have been affected. Nitko's (2001:63) perspective of reliability is that it refers to the consistency of assessment results and is 'the degree to which student's results are the same … when they complete different but equivalent tasks on the same or different occasions'. This perspective suggests that the second-chance intervention impacted on the reliability of the assessments for the two modules, The second-chance assessments enabled the marks for both the modules to be inflated, which also provides more insight into the grade inflation that was detected for some of the clusters in the School of Education (Bansilal & Rosenberg 2021).

However, it is important to remember that learning, and achievement, is about engagement (Knight 2002). One can argue that offering these second-chance assessments allowed the students further opportunities to engage more deeply. This experience helps us to understand the powerful impact that formative assessments can have on learning by providing self-feedback (Evans 2013) so that when students attempted the tasks again, they improved their marks.

Advancing social justice pedagogies requires of us as educators to recognise contradictions and 'to take actions' against perceived injustice (Freire 1970:35). In the midst of this crisis- prompted online learning (Hodges *et al.*

2020), many students experienced disruptions, and required further opportunities to engage with the materials. Mlu was one such student who, through no fault of his own, was not able to register in time. By granting him those second chances he was able, through his Herculean efforts, to meet the demands of the module. Mlu described his self-regulated learning (Yorke 2003) that allowed him to engage deeply with the content of the modules within the restricted timeframe. The critical reflections central to advancing social justice pedagogies support such actions (Kumashiro 2008). Behind each of those dots in the scatter graph, there is a person who, when granted the second chance, was able to pass. Thus, a social justice perspective (Kumashiro 2008; Frederiksen & Collins 1989) argues that granting the second chance was the appropriate action to reduce the inequities.

We are mindful of the context within which the university's policy decision of the second-chance intervention was made. Within the current culture of performativity permeating higher education institutions (Mcfarlane & Tomlinson 2017), the intervention was more likely to be directed by a fear of a decline in rankings than by a social justice perspective. Universities want to avoid a situation where the pass rates are decreased, which may send a signal to funders and other stakeholders that the performativity of the university was declining. In terms of ensuring that the standards of the university do not decline, it is more important to ensure that our administration systems are working optimally. If Mlu's payments were recognised earlier on, his registration would not have been so delayed and his studies would have been less stressful. Efficient administrative systems will help to enhance the university's reputation.

This study, situated within the context of online learning, cannot ignore the issue of cheating. Some authors have expressed a concern that cheating is becoming increasingly common among students, posing a challenge to the integrity of academic institutions (Goff *et al.* 2020; CHE-UsAF- UFS 2021; Comas-Forgas *et al.* 2021). The report by the CHE (CHE-UsAF UFS 2021:8) that surveyed lecturers from most HEIs in SA noted that one of the most disturbing findings concerned 'the integrity of academic assessments as a result of cheating'. A study in Spain (Comas-Forgas *et al.* 2021) using search engine data analysis showed that there was a significant increase in online searches about how to cheat during the Covid-19 lockdown period. It is therefore likely that part of the grade inflation identified in this study may be due to cheating made easier by the online environment. There is an additional dimension at UKZN; many of our students have returned to their residences and are physically

present on campus. As students meet and work together in the residences or campus, there are many opportunities to collude on their assessments, as witnessed by a colleague at our institution (Bansilal & Rosenberg 2021). In moving forward, we should also be cognisant of the challenges posed by cheating and should endeavour to reduce the opportunities for cheating.

6 Conclusion

This study focused on a policy of the university that was prompted by the objective of not wanting students to be left behind, and requested that students should be offered multiple opportunities for assessment. I argue that this intervention was more likely directed by the objective of avoiding declining rankings than by a social justice perspective. As part of my own critical reflections as a lecturer, I studied the ways in which the intervention led to an increase in marks in two modules, to try to understand whether the second- chance intervention led to grade inflation or whether it rightfully offered disadvantaged students an equitable opportunity to pass. The reflections were prompted in part, by the analysis of the increase in pass rates in our school (Bansilal & Rosenberg 2021), which showed large increases over the years 2019 to 2020.

In this chapter I considered two contrasting perspectives about the inflation in the marks. On the one hand, the assessment validity perspective suggests that the assessment process had been disrupted. The results show that that the marks were significantly increased by this intervention in both modules, showing that there was grade inflation. These results are supported by many studies conducted during the pandemic era which showed increased pass rates in many countries (Gonzalez *et al.* 2020; Karadag 2021; Hale 2021). The consistent increase in pass rates raise concerns about the integrity of the assessments across HEIs, which needs to be urgently investigated.

On the other hand, a social justice perspective requires of educators to move beyond just engaging in critical reflections, but to pursue actions actively to reduce perceived inequities (Kumashiro 2008). Within this perspective, the intervention was necessary for those students who were disadvantaged by the move to online learning. The case of Mlu highlighted how he was disadvantaged by administrative delays and benefited from the second chance intervention.

As academics, we should try to balance these two perspectives in our teaching and assessment by trying to present equitable opportunities to our students whilst taking care that students are learning what they need to.

Academics should ensure that they are constantly engaging with their students so that we identify and reduce inequities experienced by particular students whilst also recognising instances of possible cheating. The university community has to work together and actively tackle the problem of online cheating by considering hybrid assessments, assessments which focus on higher order skills, and other innovative solutions.

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Professor Sarah Bansilal
Department of Mathematics Education
University of KwaZulu-Natal
Durban
Bansilals@ukzn.ac.za

Chapter 6

‘Here be dragons’: A Critical Reflection on the Experience of Using Formative Assessments to Teach Professional Drafting Skills

Dusty-Lee Donnelly
ORCID iD: https://orcid.org/0000-0002-5574-7481

Adrian Hugh Bellengère
ORCID iD: https://orcid.org/0000-0003-1575-7594

Abstract

Formative assessment remains unexplored territory for many academics, and although its importance has long been recognised, its features are not well understood. The rapid transition to flexible continuous assessment in response to the Covid-19 pandemic required that both formative and summative assessments should be used. Formative assessments provide students with opportunities to reflect upon their learning, identify, and close learning gaps. However, there remain challenges, particularly related to the time constraints burdening lecturers of large classes. There are also concerns about the validity of formative assessments. This chapter presents the documented experience of two lecturers and a class of full-time students in the use of formative assessments for three professional drafting assignments in a final-year undergraduate course in law during the second semester of 2020. This chapter describes the formative assessment tasks and the supporting resources and modalities of self-review and lecturer feedback used, prior to the final submission for summative assessment at the end of the semester. The students’ engagement with the formative assessments was tracked by analysis of Moodle course participation statistics. Student reflections in e-mails to the lecturers and course evaluations were analysed to

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provide insights into the students' perceived benefits and difficulties associated with completing the formative assessment tasks. The lecturers' critical reflections on the documented experience are included to highlight challenges and concerns. From the analysis, a framework is proposed for including formative assessments as a tool to scaffold the development of professional writing skills in undergraduate students at higher education institutions.

Keywords: formative assessment, self-assessment, scaffolding, professional legal drafting

1 Introduction

'If it's not in writing it didn't happen' is a phrase used so often by lawyers and in legal circles that it has been absorbed into popular parlance. It finds expression in a number of different circumstances, the most famous of which must be Samuel Goldwyn's statement that 'A verbal contract isn't worth the paper it's written on' (Johnston 1927)[1].

For legal professionals, an essential skill that is ubiquitously referred to as 'drafting' requires the committal to the written word, usually on paper, of a legal memorial of an agreement, a record of a witness statement, or the preparation of pleadings and notices for civil court proceedings. The drafting exercises referred to in this paper fell into the latter category. Competence in these professional drafting tasks is a critical attribute required in aspirant lawyers.

Thus, if the profession places such store on the written word or written representations in various forms, how exactly should one go about teaching this skill? The answer is not straightforward and the process is not easy. However, this should not dissuade us from trying. This chapter describes, analyses and comments on one such attempt that took place in a final-year undergraduate law course at the University of KwaZulu-Natal (UKZN) in 2020.

The background to the chapter is the adoption of continuous assessment as part of the emergency remote teaching plan devised by UKZN and most other institutions of higher learning, in response to the Covid-19 pandemic in 2020. Continuous assessment differs significantly from the traditional end-of-semester examination session in that its purpose is to 'identify potential problems, monitor

[1] Although its origins are disputed, the quip is popularly attributed to movie producer Samuel Goldwyn.

progress and provide feedback' (Songca 2020:5). Continuous assessment should therefore include both formative and summative assessments, and it should be aligned with teaching and learning activities in the course to encourage *active* learning (Songca 2020:5). However, while all academics at institutions of higher learning were familiar with summative assessments, for most formative assessments are *terra incognita*. Like the earliest explorers who marked dragons on the unexplored corners of the map of the world as they knew it, we incorporated four new pedagogies into our course assessment: use of complex, real-world scenarios requiring higher-order thinking than would have been asked in a closed-book test; self-assessment as an essential component of the assessment process; peer collaboration, which in a closed-book environment might have been called 'copying' or 'cheating'; and provision for multiple attempts before marking the final submission. As such, the paper is of wider relevance to any course seeking to introduce these elements as a combination of formative and summative assessment in relation to teaching practical skills.

2 Nature and Importance of Drafting in a Professional Legal Context

Legal writing comprises a range of different applications and legal students are trained in a specific module focused on interpretation of written agreements, judgments, and legislation. Yet at no point in the 100-year history of the Law degree at the UKZN[2] has there been a Legal Document Drafting course. So how has drafting been taught? The starting point has been that drafting is a practical skill and is thus not part of the university curriculum. It has traditionally been left to the profession to teach as part of its in-service training (known as Articles of Clerkship for candidate attorneys, or Pupillage for pupil advocates). This has been done by on-the-job training, and/or in recent years a practical training course run by the Law Society, which is compulsory for all candidate attorneys.

It has, however, become apparent that drafting skills need to be inculcated at a much earlier stage, for a number of reasons. First, it is a developed skill, one which improves with practice and over time; thus, the year, sometimes two, spent doing articles is inadequate to develop the skill optimally. Secondly, with the advent of several alternative entry routes to the profession, not all potential attorneys are subjected to the same opportunities to develop this skill.

[2] Including the period as the University of Natal.

Thirdly, it is unreasonable to expect proficiency in what is essentially a word-smith's skill from English second-language speakers who have not had the advantage of immersion in the foibles of English over a protracted period. Fourthly, when interpreting case law statutes and the many other sources upon which the LLB degree is based, students are able to understand the documents they are reading better if they have some knowledge of the documents they put together. Finally, in the modern age where there is a simple and easy (and completely uncritical) resort to databases of 'made-to-fit' electronic precedents, the emphasis has shifted from creation to collation, and thus critical interpretative skills are becoming more prevalent.

This chapter does not intend to offer a solution across the board with regard to all forms of drafting in all areas of law, but instead focuses on a specific (and vitally important) area: the drafting of legal documents in civil court proceedings. This is a perfect area upon which to focus, as this adjectival area of law is heavily, if not entirely, dependent on drafted documents. Even minor errors can be extremely costly (so the stakes of getting it right are very high), and there are several standard-form documents that require a focused drafting input, not drafting *ab initio*.

3 Formative Assessment

While formative assessment originally focused on the gathering of information to enable curriculum development (Black & Wiliam 2009), it has evolved considerably. Scriven (1967), who coined the term, and Bloom (1967; 1968), believe that assessment is formative if it enables changes in curriculum design. This approach developed over time and Black and Wiliam (2009:9) felt able to redefine formative assessment more broadly, thus:

> Practice in a classroom is formative to the extent that evidence about student achievement is elicited, interpreted, and used by teachers, learners, or their peers, to make decisions about the next steps in instruction that are likely to be better, or better founded, than the decisions they would have taken in the absence of the evidence that was elicited.

Adopting formative assessment techniques thus allows for the achievement of a number of different objectives. As already mentioned, it provides feedback so that teachers can modify and improve their techniques (Huhta 2010);

it enables teachers to identify deficiencies and thus enables them to address them (Huhta 2010); it shifts the focus away from marks and onto the learning process (Shepard 2005a); students gain some insight into how they learn and are thus empowered to improve their learning process (Shepard 2005a; 2005b); and 'frequent, ongoing assessment allows both for fine-tuning of instruction and student focus on progress' (Cauley & McMillan 2010:2). While assessment was traditionally regarded as useful for teachers to gauge their students' attainment of knowledge (Crooks 2001, as cited in Zondi 2015), formative assessment allows for improvements in teaching *and in learning*: 'The goal of formative assessment is to monitor student learning to provide ongoing feedback that can be used by instructors to improve their teaching and by students to improve their learning' (Eberly Centre 2014). While curriculum development is definitely part of our formative assessment, our focus is on enabling student learning.

Self-assessment is a key component of formative assessment (Trumbull & Lash 2013:5):

> In addition to using assessment evidence to plan future instruction, teachers are expected to use it to help students; (1) judge the state of their own knowledge and understanding; (2) identify the demands of a learning task; (3) judge their own work against a standard; (4) grasp and set learning goals; and (5) select and engage in appropriate strategies to keep their learning moving forward.

This means that strengthening students' self-assessment skills is equally important to the provision of teacher feedback in the learning process (Nicol & Macfarlane-Dick 2006:205).

4 Professional Formative Training

The move to learning on an online platform occasioned by the Covid-19 pandemic brought with it several challenges when assessing students' performance, especially with regard to drafting exercises. The assessed drafting component of the course has traditionally taken the form of providing students with a comprehensive set of precedents, a shortlist of potential documents from which an assessment would be drawn, and then setting the student a sit-down, closed-book examination with a life-like set of facts from which they are to extrapolate the nature of the proceedings, the stage which it is at, and thus the document that

is needed. They then need to draft the document. It is then assessed in minute detail and a mark is awarded. The deficiencies are obvious. Only the document chosen is actually tested and students have a limited opportunity to implement any lessons learnt from the exercise.

Continuous assessment presented us with an opportunity to redesign the drafting assessment, particularly because of the online nature of the assessment exercise itself. With a dozen perfect precedents (templates) available at the touch of a button, assessing students on the accuracy of their uploaded answers seemed fruitless. Everyone would get everything correct. We thus accepted an almost 100% accuracy rate on assessments instead of working on the summative aspect – the final mark. We decided to tackle the formative aspect – the learning process that went into the attainment of the final mark, designing a series of exercises that encouraged students to apply their knowledge to the exercises, we provided them comprehensive feedback, and then allowed them to apply the lessons learnt to correct their errors and resubmit a self-drafted but accurate document.

In doing this, we borrowed from standard legal practice – both the vocational training aspect and the stressful world of superior court litigation. With regard to the former, no candidate attorney in training at a legal practice is allowed, by law, to sign any pleadings or other court documents. These have to be signed by an admitted attorney[3]. However, it is the candidate attorneys that are tasked with preparing these documents, sometimes dozens a day, and then with presenting them to the relevant attorney for signature. These documents are thus perused, amended and then returned to the candidate attorneys to be redrafted to incorporate the corrections before their principal (the supervising attorney) is prepared to sign them. While, obviously, an informal and sometimes an extremely 'hit-and-miss' process, the drafting of multiple versions until a perfect final version is achieved is a valuable formative learning process.

With regard to the stressful world of superior court litigation, the legal profession has a built-in formative drafting process. The rules of court require that all superior court pleadings are signed by both an attorney and an advocate.[4] Papers drafted by an attorney (including some that have already been through the attorney/candidate attorney formative process) are sent to an advocate to be 'settled'. This process involves the advocate providing corrective input and returning the papers, duly signed – if he or she is satisfied with them. Seldom,

[3] Rule 18(1) of the Uniform Rules of Court, South Africa.
[4] Rule 18(1) of the Uniform Rules of Court, South Africa.

therefore, are court documents served, filed and presented to court without going through a formative process.

The process in the professional legal sphere is neither organised, comprehensive or designed, nor primarily aimed at teaching and learning – the primary focus is on the production of professionally competent documents and so we were able to not only borrow, but to formalise and improve on this raw formative training.

Adopting this essentially open-book approach to online assessment is one means of ensuring the integrity of assessments without resorting to online proctoring solutions. Open-book assessments are designed on the basis that students will be able to consult their notes, and resources on the internet, textbooks or otherwise (Edwards *et al.* 2020:1). Coupling the assignment with a self-assessment mirrored the real-world experience in which students must become professionals capable of critically evaluating their own performance.

5 Case Study

5.1 Methodology and Description

This paper adopts the methodology of a case study, describing analysis by the lecturers who set three professional drafting assessments in a final-year law module. Student feedback on the exercise has been positive since its introduction, but while student feedback is important, it should not be used as the sole marker for evaluating teaching and assessment practices (Theall & Franklin 2010). This chapter presents an empirical analysis of activity participation, performance and student engagement. The case-study method is classically defined as 'an empirical inquiry that investigates a contemporary phenomenon (the 'case') in depth and within its real-world context' (Yin 2014:16), and is appropriate and useful for analysing experimental introductions of formative assessment practices for teaching law (Merritt *et al.* 2017:387).

The learning outcomes associated with this assessment were for students to develop a practical understanding of the concepts inherent in civil legal practice and the rules of court, and to develop the ability to apply this theoretical knowledge to practical situations as one would do for one's clients in a civil litigation practice. They were presented with three detailed real-world factual problems, and were instructed to decide what litigation step was appropriate and to draft the relevant court document to take that step. The modality used for the assessment was submission of an MS Word document through the 'assignment'

activity on the Moodle learning management system.

5.2 Scaffolding

Careful consideration was given to the timing of the assessment tasks. The assessment questions were made available at the beginning of the semester, but the opening of submissions on Moodle was timetabled to coincide with the week in which students would be covering the relevant substantive content in the module.

In addition, a number of supports were put in place to provide the scaffolding necessary for successful completion of the assessment tasks. The required skills to complete the assessment task successfully were categorised. Students must:

- be able to locate the relevant court rule and understand its content;
- understand the conventions applied to the structure of a court document;
- have the necessary computer skills to correctly format and spell check the document; and
- be able to apply their theoretical knowledge to the facts of the problem question in order to draft the content of the document.

The structured supports provided to address these needs comprised:

- Learning materials in the form of written course notes, short audio notes explaining and unpacking key concepts in the written notes, weekly Zoom consultations, and a prescribed course textbook. The modality for delivery of learning materials was Moodle file uploads, with the use of Moodle's reporting feature made to track student engagement and trace students requiring intervention (e.g. non-participation in course due to lack of access to computing facilities). The use of data-light files meant that students were largely able to engage in the core materials. The textbook was available online through Ebscohost.
- Additional learning support for the assessment task was provided in the form of four video lectures taped at the UTEL studio, in which students were taken through a practical demonstration of how to approach the drafting task. Using PowerPoint, and the pointer and annotation tool, the document's content was explained in a step-by-step fashion. Video lectures

were uploaded as Kaltura resources on Moodle, and made downloadable to ensure students could watch the video again if needed without using additional data. Moodle reports were used to track student engagement.

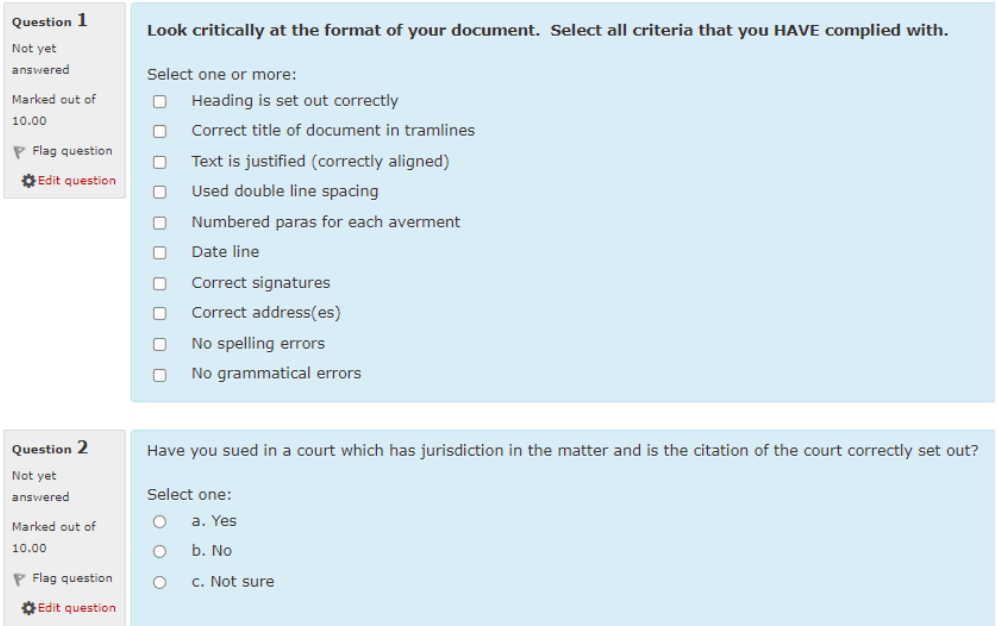
- Students were supplied via Moodle with a file folder upload with 'precedents', which are examples of actual court documents in other matters, and were given access to the court rules in the library's online resources. This provided a sound, real-world context to the exercise by mirroring the process an attorney would follow checking court rules and comparing other examples of similar documents. This process was explained to the students in the video lectures, and they were also warned of the pitfalls associated with using precedents – namely that they might be outdated, wrong or inappropriate. We did not supply students with outdated or incorrect precedents, but we did warn them that we had deliberately included precedents that would be inappropriate in important respects and that this would require the students to make the changes required by the facts of the problem set.
- The third support that students required was motivation. This was identified by the lecturers as a key need under the stressful circumstances that prevailed in the second semester of 2020 with the Covid-19 pandemic and a rapid transition to emergency remote online teaching. It was addressed by regularly downloading Moodle activity reports and sending weekly e-mail messages to students falling behind. A catch-up group was created for students joining late and out of sync with the class to enable them to move sequentially through the material with lecturer guidance. A WhatsApp help number was set up and was used to liaise with students who were unable to regularly check email and Moodle due to connectivity issues.
- The final support provided was mentoring. We took the approach of encouraging class discussion about the drafting assessment. In addition, formal peer mentoring support was in place through support from a dedicated Graduate Teaching Assistant to provide technical support on the blended learning tasks, and Academic Development Officers to provide guidance on academic content and writing skills. Mentoring was facilitated by the lecturers using group consultations in Zoom and individual consultations upon request. This approach was taken as it again mirrors the real world in which lawyers frequently consult a colleague to discuss a difficult problem. We sought to shift the students' mind-set from

cheating and copying to one of engagement with the material and collaboration. Ultimately, the students each had to submit their own draft and would thus take responsibility for decisions about how to respond to the assessment. The self-assessment activity discussed next was central to encouraging this meta-cognitive reflective approach to the task.

5.3 The Self-assessment Activity

A marking rubric was set up for the marking of the assessment. This rubric was used to create a self-assessment that guided students to all key components without providing a model answer. After completing the self-assessment, students were permitted to upload a second attempt of the assessment. The modality for delivering the self-assessment was a short Moodle questionnaire in which the five measures of attainment were scored by the students according to their level of certainty on a simple scale of 1–3. Figure 1 illustrates the first two questions of the questionnaire.

Figure 1: An extract from the self-evaluation questionnaire



Question 1 directed students to the formal requirements for the court document, and the repetition of this question in all three self-assessment questionnaires assisted students to internalise the formal aspects of the document structure.

Question 2 was directed at a key content component, being selection of the correct court having jurisdiction based on the facts of the problem question. Students indicated 'Yes' to indicate that they were certain that they had sued in the correct court, in which case they were scoring themselves 100 per cent. Students indicated 'No' if they realised that they had mistakenly sued in the wrong court. Students who picked 'Not sure' were reminded via a Moodle quiz feedback option of resources available on the topic and the opportunity to consult the lecturer. In the case of 'No' and 'Not sure' students scored 0 per cent.

The questionnaire was therefore not intended to mirror the final marking process, but rather to indicate to the student the number of serious errors requiring correction before final submission, and to allow them to reflect on their own level of confidence and re-evaluation opportunities to seek additional information and support.

5.4 A Second Attempt

Each assessment was set up in Moodle for the manual re-opening of the assessment for a second attempt. Completion of the self-review was necessary to 'unlock' the second attempt, and a decision was made not to automate this function, but to rather require students to send an e-mail to the lecturer explaining what changes they wished to make in their document. This process required students to make decisions based on their self-review and to articulate those reasons.

The first attempt was not marked, but the lecturers used the content of the students' e-mails to assess whether there were any serious misunderstandings that might indicate a need for the students to consult with the lecturers. In these e-mails, students were not given the correct answer, but were guided to ask relevant questions in order to reach a greater level of understanding.

This was time-consuming in a class of over 300 students, and made it difficult to monitor how many students overall submitted a second attempt, as Moodle does not keep a record of earlier submissions. However, using e-mail communication provided an opportunity for rich individual feedback.

6 Parallel Experiments

The Civil Procedure drafting component is no longer the first time that students are expected to engage with the drafting legal documents. The Law of Evidence module which students complete in the academic year immediately prior to the one in which they enrol for Civil Procedure also includes a drafting component. It is structured differently, as a tutorial programme, and it emphasises different aspects of drafting. It assumes no previous drafting knowledge and thus the first exercise (there are four in total) simply requires students to identify relevant material and categorise and compile lists, in preparation for drafting their first legal document, which takes the form of an affidavit. This has been chosen deliberately, as the use of affidavits is widespread in practice and many students are already familiar with an affidavit having either read or deposed to one themselves. It is also a simpler document to draft than the complex legal documents used in Civil Procedure and thus serves as a good introduction. The tutorials comprise four separate but related tasks, which increase in difficulty until they culminate in the drafting of a document commonly used during civil trials, thus providing a direct link to and preparation, for the Civil Procedure module the following year (see further discussion in Swales & Bellengère 2021).

7 Analysis

After completing the course and marking the final assessments, student participation and performance were analysed to gain insights into students' engagement with the activity and its impact upon their performance in the summative assessment.

7.1 Higher Participation Rates

As the practical drafting exercises were introduced into the course in 2016 as part of a blended-learning pilot project funded by a UKZN Teaching and Learning Office grant, comparison with participation rates in the 2016 class was possible. Figure 1 graphically represents a comparison of the participation rates in the three drafting assessments and in the associated self-assessment questionnaires in 2016 and 2021. Each assessment is marked (a) and the associated self-assessment is marked (b).

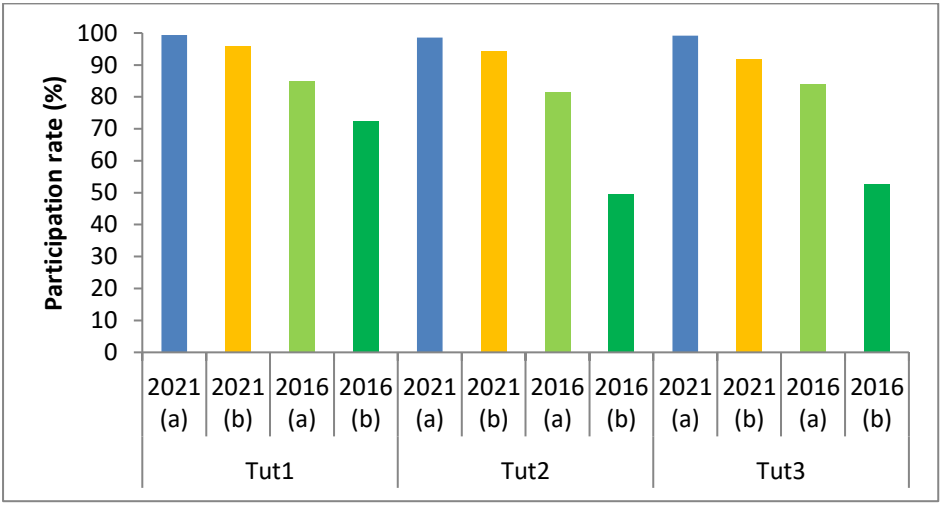


Figure 1: Participation rates of 2021 compared to 2016

Participation in the three assessments in 2021 was uniformly high, ranging between 98.55% and 99.42%. This was higher than in 2016, where the participation ranged from 81.42% to 84.83%. However, participation in the self-assessment was much higher in 2021, ranging from 91.86–95.93%. By comparison, in 2016, participation in the first self-assessment was only 72.45%, and fell dramatically to 49.54% and 52.63% in the second and third self-assessments. Using a one-sample t-test, we conclude that there was a statistically significant increase in participation in all assessments and self-evaluations in 2021, compared to 2016. The results are set out below in Table 1 (participation rates) and Table 2 (t-test results).

Table 1: Participation rates

PARTICIPATION RATES	2016			2020		
Assignment 1	274	323	84.83%	342	344	99.42%
Self-evaluation 1	234	323	72.45%	330	344	95.93%
Tutorial 2	263	323	81.42%	339	344	98.55%
Self-evaluation 2	160	323	49.54%	325	344	94.48%
Tutorial 3	271	323	83.90%	341	344	99.13%
Self-evaluation 3	170	323	52.63%	316	344	91.86%

Table 2: t-test on participation rates

PARTICIPATION RATES	2016	2020	Mean difference	t statistic	df	p-value
Assignment 1	84.83%	99.42%	.146	35.538	343	<.001
Self-evaluation 1	72.45%	95.93%	.235	22.008	343	<.001
Tutorial 2	81.42%	98.55%	.171	26.503	343	<.001
Self-evaluation 2	49.54%	94.48%	.449	36.432	343	<.001
Tutorial 3	83.90%	99.13%	.152	30.332	343	<.001
Self-evaluation 3	52.63%	91.86%	.392	26.571	343	<.001

7.2 Inverse Correlation between Actual Marks and Self-evaluation

Marks for each assessment were averaged across all students who did the assessments and are set out in table 3 below, together with the standard deviation.

Table 3: Average marks across all assessments

	Tut1	Tut2	Tut3	Self-Eval 1	Self-Eval 2	Self-Eval 3
N	342	339	341	330	325	316
Mean	72.77	56.48	39.84	79.15	76.64	87.12
Std. Deviation	13.78285	18.25381	17.81639	19.72402	18.01787	22.02669
Minimum	27.00	.00	.00	9.5	22.00	10
Maximum	99	97	94	100	100	100

Repeated-measure ANOVA was applied to determine if there was a significant difference in average marks across the three assessments. While the maximum mark attained remained high across the three assessments (99%; 97% and 94%, respectively), the average mark decreased significantly from one assessment to the next (72.77%, 56.48% and 39.84%, respectively), $F(2, 676) = 407.594$, $p<.001$. Post-hoc analysis shows that marks dropped significantly from assessment 1 to assessment 2 and again from assessment 2 to assessment 3. An important factor explaining the decline in marks is that the assessments were marked on a progressively stricter basis so that in the final assessment a student who made an error that would be fatal to the success of litigation, such as suing

in the wrong court or in the name of a party without legal standing, could not pass, regardless of whether other elements of the document were correct. Students had an opportunity to adjust to this marking structure, as this was discussed in the Zoom consultations that were held after each submission, where key errors made in a selected sample of first submissions were flagged and discussed by the lecturer. Nevertheless, the marks revealed that the students found the adjustment challenging.

This led to further inquiry into whether self-assessment had proven effective in assisting students to identify the kinds of serious errors that should be corrected in a re-submission. Self-assessment involved the students evaluating whether they had each criterion in the marking grid correct as explained in section 5.3, and assigning themselves an estimated self-assessment score out of 100. The same repeated measures ANOVA was applied to the average marks on the three self-assessments. There is a significant change in self-assessment score across the three assessments, $F(2; 620) = 39.931$, $p<.001$. Post-hoc analysis shows that the self-evaluation score for assessment 3 is significantly higher than for assessments 1 and 2 ($p<.001$, in each case).

Figure 2 illustrates the widening gap between actual marks awarded on the assignment and the student's estimated score on the self-assessment.

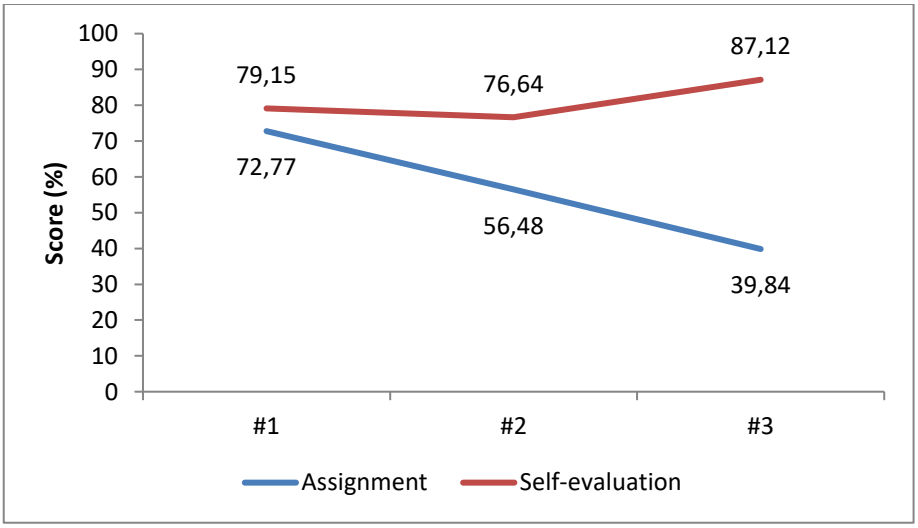


Figure 2: Inverse relationship between actual and estimated scores

Results from a repeated measures ANOVA reveal that there is a significant difference in the gaps between actual and estimated scores across the three assessments, $F(2, 620) = 282.499$, $p<.001$. Post-hoc analysis shows that the gap for assessment 2 is significantly bigger than for assessment 1; and the gap for assessment 3 is significantly larger for assessment 3 than for assessments 1 and 2.

It is possible to conclude from this that there is an inverse relationship between actual and estimated scores as the assessment progressed. As the assessment progressed, the actual mark declined while the average estimated mark increased. There was also a significant increase in the number of students, estimating that they had achieved a score of 100, from 55 students for the first self-assessment (16% of the total sample), to 157 students for the third self-assessment (44.2% of the total sample). Higher estimated scores may be attributable to growing student confidence that they had drafted the document correctly, but may also indicate a lack of engagement with the self-assessment task. The reasons for this widening gap thus required further exploration, as discussed in the next section.

7.3 Time Spent as a Measure of Student Engagement in the Self-assessment Activity

As the results indicated a counter-intuitive relationship between higher estimated scores, suggesting increasing confidence in self-assessment and declining actual performance, the self-assessment questionnaire reports were analysed to determine the average time taken by students on the self-assessment. Any completion times over 75 minutes were excluded as outliers, being most likely because of a failure to close the questionnaire rather than a reflection of actual time spent. These results are illustrated in Table 4 below.

Table 4: Mean self-evaluation time in mm:ss

Self-evaluation time	
Ass1	06:01
Ass2	03:32
Ass3	02:51

Analysis using a repeated measures ANOVA shows that the average time taken to do the evaluation differed across assessments, $F(2, 552) = 21.517$, $p<.001$. In particular, post-hoc analysis shows that the average time taken for the first self-assessment was significantly greater than for the second and third ($p<.001$ in each case). The average time taken for assessment 2 was marginally longer than for assessment 3 ($p=.097$).

Next, the number of students who took less than two minutes to complete the questionnaire was analysed. This revealed a large difference. Only 38 students took less than two minutes to complete the self-assessment for assessment one. This increased to 186 and 226 students in the self-assessments for assessments two and three respectively.

This tends to indicate that over half the class did not engage with the self-assessment activity in the second and third assessments and that the high self-evaluation scores (reflected in Table 3) were not an actual measure of their real levels of confidence. Thus, while participation in the self-assessment activities was uniformly high, meaningful engagement by the students was not high. In fact, quite the reverse. Figure 3 below illustrates the trend revealed in the data that self-evaluation time decreased and the estimated score increased across the three self-assessments. This must be seen against the background of declining actual scores, as discussed above.

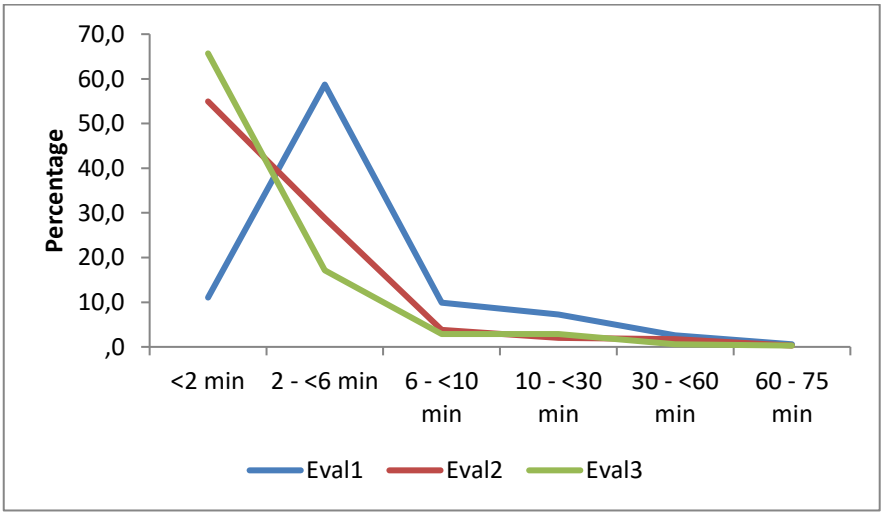


Figure 3: Relationship between evaluation time and evaluation mark

8 Discussion

This study offers insights into the use of formative assessment, including self-evaluation, when teaching legal drafting in large law-school classes. The study did not attempt to measure student engagement in the drafting task itself. Numerous studies have demonstrated that authentic formative assessment activities, which require students to apply theoretical knowledge and skills in a complex real-world context, encourage meaningful engagement and self-reflection (see literature review by Gikandi, Morrow & Davis 2011:2388). This study's focus was on assessing participation, performance and engagement in the related self-assessment tasks. Earlier studies have shown that student engagement in self-assessment predicts better performance and greater accuracy in self-assessment scores (León *et al.* 2021). The findings of this study are consistent, and show that lower engagement led to weaker performance and a wider gap between actual and estimated scores.

However, the finding in our study that self-assessment time and accuracy declined across the three assessments suggests an increasing lack of engagement with the task that merits further exploration. Student engagement has long been recognised as a critical indicator of success in higher education (Strydom, Kuh & Mentz 2010). There is a growing body of literature discussing lack of motivation and student engagement as problems in formative assessments (Baleni 2015), making it important to consider ways of enhancing engagement. These include the delivery of timely feedback (Spector *et al.* 2016), assigning 'low-stakes' grades to the task (Dermo 2011), or introducing 'gamification' through competition and play to enhance student engagement (Adukaite *et al.* 2017; Zainuddin *et al.* 2020). Another aspect requiring further investigation in a future study is whether self-assessment had differing effects on low, medium and above-average performing students, as self-assessment may be less effective for low-performing students (Panadero, Brown & Strijbos 2016).

Extrapolating from our findings in this module, preferably in conjunction with similar studies in other modules, will also enable a discussion on the broader topic of the impact of Covid-19 on learner engagement with formative assessment. Any attempt to draw a direct line between the impact of Covid-19 on formative assessment without situating this within an analysis of the impact of Covid-19 on learning and assessment generally will necessarily provide an incomplete picture. A full discussion of the multivariate issues involved is beyond the scope of this paper.

Our findings do provide insight into a vital component of such a discussion, i.e. learner engagement with the same online formative assessment tasks in a blended learning environment prior to the advent of Covid-19, compared to learner engagement with the same online formative assessment tasks in a fully online emergency remote-teaching environment in 2020. In blended learning there is a combination of online and face-to-face instruction and learning (see Graham 2006). The trend of increased participation in all online assessment tasks in 2020 seems to indicate an increasing familiarity with both formative assessment and with an online mode of formative assessment delivery. Considerably more analysis needs to be done across a wider array of modules, however, before any definitive answers can be isolated. Such studies are important, because much of the research on formative assessment has focused on its effectiveness in a blended learning environment, and further research is required to establish student engagement when formative assessment is used in a fully online environment (Chen & Kexin 2021:51).

9 Recommendations and Conclusion

The introduction of practical drafting assessments based on complex real-world scenarios was more closely aligned to learning outcomes and required more graduate attributes than a closed-book test which had been used previously. The student marks on the assessment in 2021 were better than previous years, even though marking was progressively stricter and by assessment 3 represented a realistic approximation of the real-world consequences attached to the various errors identified.

Participation in self-evaluation was much higher in 2021 than in 2016, but the effectiveness of self-evaluation was less clear. The finding that over half the students failed to engage in the second and third self-assessment exercises could indicate that students did not appreciate the benefit of the self-assessment exercise. It could also indicate that changes to the self-assessment criteria or formative feedback are required to provide students with a clearer picture of the implications of their errors (or possible errors) in respect of their final mark. However, it is difficult to determine an exact cause and effect relationship, as failure to engage in the activities could be explained by other factors, such as mounting time pressure and other assessment deadlines. Ideally, if the semester timetable permitted sufficient time to stagger the assessments, summative feedback on the first assessment would be given before the second assessment

was attempted. As explained in section 5.3 above, detailed formative feedback was provided in consultations and email correspondence with students, but the students did not receive a mark from the lecturer on their first submission. They 'marked' themselves with a self-evaluation score and used this in conjunction with the class feedback sessions (and individual consultations or email exchanges with the lecturer) to determine whether they should re-submit an amended assessment task.

A key intervention that will be introduced in 2022 is the inclusion of a second self-evaluation, in which students reflect on the effectiveness of their self-assessment after receiving their mark and feedback on the final assessment.

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Dusty-Lee Donnelly
Senior Lecturer
Faculty of Law
University of KwaZulu-Natal
Durban
donnellyd@ukzn.ac.za

Adrian Hugh Bellengère
Senior Lecturer
Faculty of Law
University of KwaZulu-Natal
Durban
bellengerea@ukzn.ac.za

Chapter 7

Mobile-based Formative Assessment and Feedback in Medical Education – Work in Progress

Veena S. Singaram
ORCID iD: https://orcid.org/0000-0002-6974-7423

Abstract

In medical education, assessment and feedback are critical elements for effective clinical learning and training. However, feedback and formative assessments are often neglected in resource-constrained environments due to a lack of quick, accessible, easy-to-use digital tools. The disruptions of the Covid-19 crisis have also underlined the need for more digital tools to support educational continuity and assessment in clinical training environments. Mobile-based technology was adopted for this research project to develop a generic formative-assessment, mobile-based application that is accessible, quick and easy to use. This chapter reports on the preliminary development and design of this mobile-based feedback application prototype to facilitate and create opportunities to prompt self-assessment and constructive formative feedback conversations between trainers, trainees, and peers in the clinical training environment at the University of KwaZulu-Natal. This project adopted participatory action research and Agile methodology for software development. Convenience sampling was used for the pilot test of the prototype. Six clinical teachers and five students from the School of Clinical Medicine, University of KwaZulu-Natal (UKZN) consented to participate. The prototype of the app was commended by all participants who reported that it was simple and easy. The menu items finalised for the proposed app aim to facilitate self-assessment, bi-directional feedback, reflection, feedback-seeking behaviour, and feedback utility to enhance graduate competencies and clinical performance in medical education. Future work will report on the subsequent iterations, development,

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and implementation of the mobile-based formative assessment feedback application.

Keywords: mobile-based assessment, formative assessment, feedback, self-assessment, self-regulated learning

Introduction

The disruptions of the Covid-19 pandemic were initially anticipated to be temporary. However, there is a mounting belief that medical education might change more permanently (Ten Cate *et al.* 2021). The global adaptations, evolvement of web-based technology and increased acceptance of distance learning have nurtured extensive support for online teaching and learning paradigms (Chen *et al.* 2021). Hence, Covid-19 has ushered in a new era of online learning resources and electronic tools to facilitate teaching, learning, and assessments. In addition, studies on the impact of technology in education highlight the need for educators to embrace and design technological innovations to facilitate student learning in the 21st century (Mackay 2017).

One such innovation is the use of mobile technology. Smartphones perform many of the functions of a computer. In addition to a standard touch-screen interface and internet access, smartphones have an operating system capable of running downloaded apps. Further, mobile devices and applications have many customizable features. These features can be tailored to the learners' needs to improve and facilitate learning in informal and diverse learning contexts beyond the traditional learning environments (Ramos, Conde-González & Garcia-Peñalvo 2015). Smartphones are frequently used across the different levels of healthcare staff to improve clinical communications in specialist training (Martines *et al.* 2017). Hence mobile technology contributes to the flexibility of education due to its 'mobility, access, immediacy, situativity, ubiquity, convenience and contextuality' (Naylor & Gibbes 2018:63).

Smartphone apps have also been reported to influence how formative assessment feedback is collected and analysed positively in clinical training (Gray *et al.* 2016). However, formative assessment and feedback are paper-based on the resource-constrained South African medical training platforms, as there is a lack of digital tools for formative assessment feedback (Naicker, Govender & Singaram 2021). Further, medical training environments are

largely summative in resource-constrained training environments. Hence, formative assessment and feedback are often neglected due to time constraints, the extra resources needed to implement continuous formative assessment, and the discomfort created by giving negative feedback in clinical work and training environments (Bagwandeen & Singaram 2016a). These challenges were further exacerbated during the constraints of the pandemic (Singaram, Naidoo & Ramrathan 2021), highlighting the need for effective digital tools for educational continuity.

Since the ownership of digital devices such as smartphones and tablets and the use of handheld computing devices have been increasing in the clinical settings, mobile technology was adopted in this research project to develop a generic mobile-based formative assessment application that is accessible, quick and easy to use. Mobile devices provide an opportunity for medical students and faculty to access apps quickly and complete assessments in real-time or between clinical tasks. Unlike computer systems which can be time-consuming, mobile-based applications do not require lengthy login processes.

This chapter focuses on the development of a prototype or minimum viable product of the mobile-based formative assessment feedback application that could be used by both the clinical trainees and trainers at the School of Clinical Medicine, University of KwaZulu-Natal to provide formative assessment and feedback on trainees' performance and competence.

Background and Literature Review

Formative assessment is an essential aspect in developing a professional's lifelong learning and reflection skills. Even though the importance of reflection for the professional development of physicians is well established, it does not happen 'intuitively or spontaneously' (Könings, Van Berlo & Koopmans 2016:365). It needs to be prompted proactively and more needs to be done to improve the frequency of self-assessment and feedback amongst medical students and junior doctors (Hawkins *et al.* 2012). Könings *et al.* (2016) explored using a smartphone app to promote medial registrars' reflection in the workplace and found that trainees using the app captured more learning moments on their reflection forms than non-app users. They found that the app allowed users to capture their reflections in various ways, using voice notes, text notes, pictures, or video recordings. Automated formative assessment feedback created in virtual environments has also facilitated frequent, timely

access for reflection and self-assessment (Pishchukhina & Allen 2021). These findings highlight the importance of mobile-based application features and other Artificial Intelligence (AI) functions to stimulate formative assessment as well as feedback quality and efficiency.

Several studies have reported the positive benefits of mobile technology in undergraduate, postgraduate, and workplace-based assessments in healthcare professional training. Mobile-based assessments were found to be feasible and acceptable (Torre *et al.* 2007; Duggan *et al.* 2020) and encourage more feedback, which leads to improvement of clinical skills (Coulby *et al.* 2011), and creates more flexible modes for assessments (Ferenchick *et al.* 2013). Nikou and Economides (2018), in their review of mobile-based assessments, also found that mobile-based, formative assessments have a significant impact on student learning performance, motivation, and attitudes. They also highlight the need for more studies on mobile-based assessments to explore the use of mobile-based assessments and the relationship between student motivation and different mobile-based assessment practices.

The factors influencing behavioural intention to use and accept mobile-based assessments were explored using the Technology Acceptance Model (TAM) and the Mobile-Based Assessment Acceptance Model (MBAAM) (Nikou & Economides 2017a). TAM includes the constructs of perceived usefulness, perceived ease of use, and attitude towards usage. MBAAM consists of the constructs related to facilitating conditions, social influence, mobile device anxiety, self-efficacy, and others. Nikou and Economides (2017a) found that the construct of perceived usefulness had the highest mean value, followed by social influence. This means that students perceive mobile-based assessment as a valuable educational activity, especially when their teachers and peers use it as well. Nikou and Economides (2017a) also highlight that when the appropriate technical and administrative infrastructure for the use of mobiles in assessments exists, students perceive the procedure as accessible and acceptable for use. However, Bacca-Acosta and Avila-Garzo (2020) found that students' acceptance of mobile-based assessment influences their engagement, even though the user interface and feedback have no impact on students' engagement. Further investigation is needed to research mechanisms for automatic engagement detection effort and regulation strategies to enhance engagement with mobile-based assessments, as shorter time-frames for engagement are recommended.

On the other hand, George, Bohnen and Goreback (2020) found that

using smartphones as the assessment instrument for medical trainee performance in the workplace is convenient, easily accessible, faster, and less cumbersome than starting up and logging into computers in the hospital. Nonetheless, in their description of their smartphone-based work assessment app called the System for Improving and Measuring Procedural Learning (SIMPL), they highlight important considerations for successful app development and implementation. These include being aware of the financial, operational, and ethical issues, which could become a hindrance, particularly in under-resourced settings. However, Khan and Malik (2021), who investigated the use of smartphones amongst medical students in a developing country context, found that, despite some constraints, the use of smartphones continues to increase, illustrating the need for more novel developments of medical apps and educational resources to enhance the training of medical students.

Several studies in South Africa have explored the frequency and quality of formative assessment feedback practices in medical education settings. Bagwandeen and Singaram (2018) found that the diverse multilingual South African training environment could create tensions that hinder verbal, face-to-face feedback. A study exploring the trainers' perceptions of the quality of feedback given to registrars found that formative assessment feedback is very poor and rarely done (Bagwandeen & Singaram 2016a). The medical and surgical trainers in that study provided feedback in less than half of the learning encounters. Bagwandeen and Singaram (2016b) also examined the trainees' perceptions. They found that although trainers claimed to have provided feedback, trainees disagreed and reported overall dissatisfaction with the quality of the feedback process. Another study also noted some concerns regarding the lack of standardised and structured assessment criteria and variation in feedback (Abraham & Singaram 2016). However, trainers and trainees agreed on the need and importance of formative assessment feedback to enhance clinical competence. These findings highlight the need for standardised formalised formative tools to improve the frequency and quality of feedback, as feedback is critical in clinical training.

Feedback creates opportunities for students to 'self-direct their learning in response to an assessment of their performance that fosters lifelong learning, promotes good ethical practice, and improves patient outcomes' (Naicker *et al. 2021*:180). Students value feedback comments that are supportive and encouraging and ask questions that enhance personal or professional reflection. (Bowen, Marshall & Murdoch-Eaton 2017). The most

dominant form of feedback is unidirectional and is initiated by the trainer rather than the trainees. These forms of feedback hinder the students' competency in enabling feedback discussions and providing feedback across power differentials (Myers & Chou 2016). In contrast to unidirectional feedback, bi-directional feedback can increase the likelihood of improving future performance and strengthening the feedback interactions (Holmboe *et al.* 2004). Hence there is a need to explore the use of mobile applications to prompt trainees to initiate bidirectional feedback.

Since medical training adopts the apprenticeship model, the most convenient way to carry out regular performance assessments is by the clinical supervisors who work with the trainees. However, although effective feedback is critical for developing competent graduates and professionals, it is often neglected or absent as it disrupts the routine clinical workflow (Naicker, Govender & Singaram 2021). Therefore, the formative feedback process may pose several limitations, especially in resource-constrained public healthcare clinical settings such as South Africa. A recent study with South African Anaesthetics trainers found that most trainers raised concerns about the infrequent use of current paper-based formative assessments and reported a preference for digital tools to provide formative assessment feedback (Naicker, Govender & Singaram 2021). These clinical trainers were also willing to use an app on their own mobile devices to provide feedback more frequently and timeously. Trainers also indicated that they would like to receive feedback about the feedback they gave. Providing trainers with feedback about their feedback could improve the quality and impact of their formative assessment feedback.

This research project aims to design and develop a mobile application to enable bi-directional, specific, non-judgemental feedback to improve self-regulated learning and enhance clinical competence in daily educational learning encounters in the clinical training environment at the University of KwaZulu-Natal. The mobile-based formative feedback application will also facilitate and create opportunities to prompt self-assessment and constructive formative assessment conversations between trainers, trainees, and peers.

Theoretical Framework

The SDL theoretical framework of Knowles (1975) and the conceptual framework for effective feedback processes by Hattie and Timperley (2007) underpin the development of the menu items of the mobile-based formative

assessment feedback application in this study.

As defined by Knowles, self-directed learning (SDL) theory involves a process in which students take the initiative, diagnose their own learning needs, create goals, implement suitable learning strategies, and evaluate their learning outcomes (Knowles 1975). Students become self-regulated learners by becoming agents of formative assessment practices through peer assessment and self-assessment as they diagnose and address their own learning needs (Granberg, Palm & Palmberg 2021). Self-assessment is a fundamental skill that empowers professionals to appraise the value of their clinical performance critically and improve through self-directed learning (Kornmehl, Patel & Agrawal 2021). Studies have also shown how self-assessment facilitates the development of critical skills and increases medical students' interest and motivation level, leading to enhanced learning and significantly higher academic performance (Rajeev *et al.* 2016). SDL has also gained greater relevance in the new Covid-19 normal, with remote learning implemented in higher education sectors and the rapid expansion of digital learning platforms (Mahlaba 2020).

Hattie and Timperley (2007:86), in their conceptual framework for feedback, emphasise that effective feedback processes are based on evaluating performance using three key questions by either a teacher, peer or self: 'Where am I going? (i.e. what are the learning goals?); How am I going? (i.e. to achieve this goal what progress is been made?), and Where to next? (i.e. to make better progress what activities need to be undertaken?)'.

Methodology and Development of the Prototype

A participatory action methodology (Turnbull, Friesen & Ramirez 1998) was adopted for this project to create collaboration, participation, and interactions between the researcher and the stakeholders in the different phases of the research project. These collaborations between the researcher and various stakeholders include the external software development team, the clinical trainers, trainees and the institution. This chapter reports on the preliminary development and design of the prototype of the mobile-based feedback application.

Prototype

The software development process of the prototype is based on the Agile methodology (Ribeiro & Domingues 2018).

The Agile methodology is a project management methodology purposely adopted for the development of software. Agile incorporates a collaborative approach that allows for iterations or development cycles (Martines *et al.* 2017). These approaches aim to minimise errors and are flexible enough to accommodate changes throughout a mobile app development lifecycle. Hence, the Agile methodology was adopted for this research project as the focus is on collaborative planning and goal formulation to develop the mobile app with continuous user feedback regarding the app's features. This approach facilitates a system of constant improvements. Hence, the mobile app development is organised into sprints discussed weekly between the author (VSS) and the design team.

Beta Testing, Implementation, Evaluation

After the piloting the prototype, the mobile-based feedback application will be developed into a fully functional app. Thereafter, it will be distributed to 50–100 users to test the app for bugs. After fixing any identified bugs, the app will become available to all users across the clinical and medical training environments in the academic hospitals in KZN. Training sessions will also be held regarding the rationale for formative assessment and how to use the app to facilitate frequent constructive feedback to enhance clinical training and development of our students into competent, self-directed lifelong learners.

The mobile-based feedback application is currently being engineered for use on both Apple iOS and Google Android, the two most popular operating platforms for smartphones. The medical trainees and trainers will be able to download and use the feedback application on their mobile devices for ease of access to encourage frequent use.

This project was approved by the Human and Social Sciences Research Ethics Committee at UKZN (HSSREC/00003007/2021).

Preliminary Results

Mobile-based Feedback Application Prototype Development and Pilot

A convenience sample of six clinical teachers and five postgraduate clinical trainees from the School of Clinical Medicine, University of KwaZulu-Natal (UKZN) consented to participate in the pilot. These 11 participants, who are

potential users of the app, were recruited from four specialties (Orthopaedics, Anaesthetics, Psychiatry and Internal Medicine) to participate in the prototype's development phase. This test sample consisted of seven males and four females.

Two rounds of online Zoom interviews or telephonic consultations were held with each of the volunteers individually. In round one, the design of the mobile-based feedback application was presented and discussed. In round two, the prototype of the app was emailed before the individual discussions.

The majority of the feedback received were commendations. The clinical trainees and trainers found the app *'simple', 'quick and easy to use'*. Both the trainers and trainees reported that the design of the proposed app *'looks good'* and the design favoured, *'I like the 3 step 3 tab design'*. Overall the prototype was well received as participants felt that app *'will enhance clinical training and hence improve patient care'*.

Minor suggestions and recommendations were made to refine the content and layout of the prototype.

Mobile-Based Feedback Application – Menu

Based on the literature, theoretical framework, and suggestions from the pilot, the proposed mobile-based feedback application will be available in two versions, one for trainers and the other for trainees. The trainees will have access to three menu items: *learning encounter, self-assessment,* and *feedback reflection*. Trainers can view all menu items but only need to provide formative assessment feedback on *performance and competence.* The trainees can also seek peer feedback from one another. All the menu items have open-ended questions for narrative feedback comments.

The mobile-based feedback application developed will consist of the menu items as outlined below.

Learning Encounter

This section of the app is designed to encourage the trainees to initiate feedback on any of their learning encounters, e.g. case, procedure, skill, etc. In addition to describing the learning encounter, trainees can also upload one to four related pictures or images.

Self-assessment

In this section of the app, trainees need to complete a self-assessment of the learning encounter before requesting formative assessment feedback from the trainer.

Formative Assessment Feedback

The trainer receives the description of the learning encounter and self-assessment conducted by the trainee. The trainer will then receive a prompt to evaluate and provide formative assessment feedback on the same learning encounter.

Feedback Reflection

This section on the app encourages bi-directional feedback as the trainee gives feedback on the feedback received to the trainer. The trainee also reflects on the impact of the feedback to create improvement goals for future performance. The reflection is then sent to the trainer. If further clarity is needed, the trainer and trainee can set up an appointment to further discuss the formative assessment feedback of this learning encounter, or the feedback cycle can be restarted.

Archive

An archive or information repository will also be created and linked to the smartphone app. This section will keep a log of the data that can be used to map student progress and competency development. This data will also be used to inform faculty development programmes. All data will only be accessible to secure registered users.

Conclusion

It is essential to explore the use of mobile apps that encourage and enable timely and frequent formative feedback in resource-constrained clinical training environments, particularly under pandemic constraints. We also need to investigate how technology could enhance the ability of clinical trainees to

track the evolution of their learning through effective and neutral formative assessments that enhance the acceptance and adoption of feedback to feed-forward action plans that strengthen competence and, ultimately, patient care.

In this chapter, the mobile-based formative assessment prototype that was piloted was well received. All the clinical trainers and trainees reported that the mobile app prototype was easy to use with a simple design to facilitate feedback and formative assessment timeously and frequently. Both clinical trainers and trainees will be able to use the app. Trainees will use the app to initiate feedback on their learning encounters, based on a three-step approach with open-ended questions for narrative feedback comments. The first step involves a self-assessment conducted by the trainee before they seek formative assessment feedback from the trainer. After the trainer has assessed and provided feedback to the trainee in the second step, the third step creates an opportunity for the trainee to provide feedback regarding the formative feedback received from the trainer. Closing the feedback loop promotes a culture of life-long, self-regulated learning that fosters a growth mindset in medical trainees. Hence the formative mobile app is based on assessment for learning and not of learning. Further development and implementation of the app described in this chapter will be reported in future publications.

Mobile devices and mobile applications in healthcare and medical education will continue to gain momentum as handheld devices become increasingly accessible in clinical settings. Although research on mobile-based assessments is still an emerging topic, several advantages regarding mobile-based assessment systems have been reported. These relate to ease of access, convenience, usefulness, independence, personalisation, and the positive impact of mobile technology on learning outcomes and motivation. The ubiquitous use of mobile technology in learning environments and clinical platforms also creates unique opportunities 'to assess performance and competence at the highest levels of Miller's Pyramid, thereby reflecting real-world practice' (Lumsden *et al.* 2015:244).

The dynamic influence of technology to improve the training of medical professionals will continue to flourish as the ultimate goal is to improve patient healthcare (Masters *et al.* 2016). Hence, developing mobile-based assessment tools is vital to prepare and train future generations of frontline healthcare workers.

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Veena S. Singaram
Senior Lecturer
Clinical and Professional Practice
University of Kwa-Zulu Natal
Durban
singaram@ukzn.ac.za

Chapter 8

Assessments during the COVID-19 Pandemic: The Experiences of Students in Higher Education Institutions within the South African Context

Frank Joseph Mensah
ORCID iD: https://orcid.org/0000-0002-4966-0638

Sakyiwaa Boateng
ORCID iD: https://orcid.org/0000-0002-1604-5487

Alex Boateng
ORCID iD: https://orcid.org/0000-0003-1995-1431

Abstract

Assessments provide the means by which students' learning is measured, and feedback is given. Anecdotal evidence suggests that, during the Covid-19 pandemic, there was an urgency for a shift to emergency remote teaching and learning in higher education and that resulted in a change of students' assessment criteria. The purpose of this study was to determine students' assessment experiences during the pandemic. The study utilised a mixed-methods approach using a concurrent data collection strategy to conveniently sample 108 undergraduate students from a higher education institution in the Eastern Cape Province of South Africa. Data analysed from quantitative and qualitative sections of the questionnaire were triangulated. Mixed results were recorded, indicating that students were optimistic and motivated by their assessment experiences during the Covid-19 pandemic. On the other hand, other assessment-related challenges, such as technical and connectivity issues, stressors and late feedback were noted. The chapter suggests that student-related factors, institu-

tional factors, and governmental factors related to the harmonisation of the online learning space must be revisited to produce more credible and purposeful student assessment experiences that can withstand risks to the higher education system. The study therefore recommends that lecturers and online assessment designers should be mindful and adopt a holistic approach to fit the purpose in which the assessment is designed, integrated, and implemented.

Keywords: Assessments, Covid-19, higher education, learning management systems, online learning, student experiences

Introduction

Assessment is a critical part of the teaching and learning process at all levels of education. Through assessment, lecturers can classify and grade their students, give feedback, and structure their teaching accordingly (Tosuncuoglu 2018). Concerning the importance of assessment in the academic life of students, Boud (1995:35), states that "students can with difficulty escape the effects of poor teaching, they cannot (by definition, if they want to graduate) escape the effects of poor assessments". This quote reflects the current state of affairs concerning assessments in higher education institutions.

The Covid-19 pandemic prompted an abrupt shift from face-to-face to remote instruction in higher educational institutions. This upended normal assessments in almost all higher education institutions around the world, because the lockdowns or social distancing measures were still continuing (Guangul, Suhail & Khalit 2020; Hew, Jia & Gonda 2020; Sharadgah & Sa'di 2020). Before the pandemic, most of the modalities for teaching, learning and assessment were strongly dependent on contact or face to face mode of teaching and learning (Schindler, Burkholder & Morad 2017). However, due to increased risks of infections, higher education institutions were forced to consider remote learning and assessment as an alternative for delivering academic objectives (Mncube, Mutongoza & Olawale 2021).

Thus, it is commonly accepted in the contemporary context that online assessment is no longer a choice, but a necessity for measuring knowledge and ensuring that learning outcomes are reached. As Vonderwell, Liang and Alderman (2007) note, assessment in online learning contexts is distinct from assessment in face-to-face situations, owing in part to the asynchronous nature

of online participant interaction. As a result, lecturers' online pedagogy must be rethought to develop successful evaluation methodologies that enable meaningful (higher-order or deep) learning and its assessment.

A review of the pertinent literature demonstrates that online assessments are a significant technical innovation that should be incorporated into the educational system to supplement the current evaluation method (Alruwais, Wills & Wald 2018). These assessments reflect the nature of online learning and empower students to take greater ownership of their education (Liang & Creasy 2004). Online assessment enables learners to demonstrate their critical thinking and problem-solving ability, which are two of the primary benefits of transitioning from traditional teaching to online learning, in which the teacher serves primarily as a facilitator (Reimers *et al.* 2020).

Despite the numerous benefits of online evaluation, various issues and constraints prevent widespread adoption (Mahyoob 2020). One of the primary problems that surfaced was some students' lack of confidence in assessment as a valid and secure technique of evaluating their competencies (Whitelock & Brasher 2006).

At remote universities that primarily serve rural populations, lecturers had little time to examine online assessment solutions because of theCovid-19 stringency (Adedoyin & Soykan 2020). This was because such lecturers had rarely taught remotely in the past, making both online instruction and assessment experimental (Zalat, Hamed & Bolbol 2021). Additionally, the majority of rural students are unfamiliar with online learning and evaluation as Suryaman *et al.* (2020) remark, the Covid-19 pandemic has therefore exposed shortcomings in remote learning and assessment, particularly in the developing world, where students reside in rural areas without access to basic educational amenities. The current crisis has indeed highlighted historical, geographical, and economic inequities that many students confront, such as access to electricity and broadband internet, as well as the expansion of learning management systems beyond the boundaries of higher education institutions.

Although some urban institutions used technology prior to the Covid-19 outbreak, the majority of rural institutions are now required to adopt technology in order to continue teaching, learning and assessment, resulting in a substantial growth in online teaching and learning (Mishra, Gupta & Shree 2020). As a result, lecturers and students are required to increase their knowledge and proficiency in the use of online resources. However, because students are required to demonstrate their gain from online teaching by pro-

gressing to the next level, it was deemed necessary to gather their perspectives on this rapid transition from face-to-face to online learning and assessment.

However, prior research has raised concerns about the quality of instruction in online courses (Ives 2021), as well as issues of equality and accessibility for online teaching and learning and online assessment. At the same time, relevant research on student experiences with online assessments is scarce and frequently omits data on student experiences with online assessments during the Covid-19 epidemic, including how assessment processes influenced students' experiences in online learning throughout the pandemic. Additionally, there is a dearth of research on how technology support services affect students' assessments during a pandemic. Moreover, as the total usage of online education continues to grow, maybe aided by experiences with the Covid-19 epidemic, the consequences for research on these topics are broad and long-term by nature.

This chapter therefore fills gaps in the research by examining student assessment experiences, assessment procedures, and technology that facilitates online learning in higher education within the context of a rural institution. As Ojo and Lorenzini (2021) assert, such awareness enables global higher education to adapt and develop in an unpredictable future.

The chapter aims to address the gap in this empirical study by considering the following research questions:

- What are students' experiences with online assessment during the Covid-19 pandemic?
- How have assessment procedures shaped students' experiences in online learning during the pandemic?
- How did technological support services influence student assessments during the pandemic?

Theoretical Framework

Students' motivation to learn, confidence and self-esteem, questioning abilities and self-directed learning are all improved by using digital tools. According to Nykvist and Mukherje (2016), students' presentation skills as well as their problem solving and communication abilities are also improved. Effective online learning, however, requires strategic leadership, pedagogical expertise, and technological experience, as well as assistance with the new tasks of both

the lecturer and the student, according to King and Boyatt (2014). As a result, we based this study on the "model of acceptance and usage of e-assessment" (MAUE) as our theoretical lenses to explore students' experiences with online assessment. MAUE is a concept developed by Sadaf, Newby and Ertmer (2012) based on technological acceptability (TAM) and the use of e-assessment (UE). The TAM component of the MAUE was developed by Davis (1985) for assessing the use and acceptability of e-assessment by academics (both lecturers and students). The TAM reflects how users feel about and desire to utilize digital tools. Users' intent to utilize technology are predicted to be influenced by factors such as perceived usefulness and perceived ease of use.

> If a person believes that utilizing a certain system would improve his or her job performance, they have high perceived usefulness, and if they believe that using a particular system will be easy, they have high perceived ease of use (Davis 1989:320).

According to the MAUE, there are three broad determinants of use and desire to use the digital tool. These determinants are attitude, subjective norm and perceived behavioural control. Attitude is further classified into three components: perceived utility, perceived simplicity of use and perceived utility, as well as compatibility. Subjective norms consider the role of social factors such as peer pressure, persuasion and supervisory influence. This theoretical framework is relevant for this study to understand whether students have adopted online assessment procedures and perceived ease of use of online platforms as forced upon them by Covid-19.

University Students' Experiences of Online Assessment in South Africa

The empirical study took place at a rural university in the Eastern Cape Province, where students were taught via online learning platforms following the implementation of the Covid-19 lockdowns on 26 March 2020. Only a handful of South African universities were able to implement what is now known as emergency remote teaching and learning and assessment as an adaptable technique during the 2020 pandemic. Nonetheless, little is known about these students' experiences for a continuous time of online learning and assessment. This is the subject of the current study.

Experiments with Student Assessment

Student assessment experiences can broadly be explained as the time students spend on formative and summative activities towards cognitive investment, active participation, emotional engagement, and ultimately feedback (Andrade 2019; DeLuca *et al.* 2018). Student assessment experiences offer an opportunity for faculties to assess and analyse course content and provide the care and support needed by students to succeed in their academic work (Double, McGrane & Hopfenbeck, 2020). In the past, students used assessment data to improve their well-being (Wong 2015), but in an increasingly competitive enrolment landscape exacerbated by the Covid-19 pandemic, an impactful student assessment experience has become more critical than ever.

Students' experiences, perceptions and happiness with online assessment are associated with a variety of aspects that contribute to student achievement, including self-regulation, time management, self-evaluation, and prompt feedback on performance (Kauffman 2015). Evidence of different student assessment experiences indicates that it may support or diminish their motivation and performance, depending on the way it is designed, implemented and used (Pötschulat, Moran & Jones 2021). Assessments that are not well designed and implemented may contribute to alienating students (and lecturers) and exacerbating inequality in education. On the other hand, carefully planned assessment interventions that are well aligned with learning goals and place students at the centre of the teaching and learning process have the potential to raise achievement and reduce disparities.

Empirical research on the impact of education policies and practices on student assessment experiences is conceptually and methodologically challenging (Mpungose 2020). Some of these experiences are shaped by a range of extra- and inter-institutional factors, including family background, abilities and attitudes, organisation and delivery of teaching, school practices, and the characteristics of the different assessment practices in higher education institutions (OECD 2013). Studies measuring the impact of different assessment policies on student achievement tend to use data sets and methodologies that provide limited measures of learning and partial indicators of the range of important factors (OECD 2013). The outcomes and policy recommendations of such research are sometimes contested, especially when they generalise results across different contexts. Bearing these limitations in mind, a range of policy-relevant conclusions can nonetheless be drawn from the numerous studies exploring the

link between student assessment experiences and learning out-comes.

In the current context, relaxed and flexible assessment criteria will facilitate the transition to online learning now and in the foreseeable future. According to Veletsianos and Houlden (2020), by incorporating radical flexibility in student assessment, higher education institutions can support more equitable, just, accessible, empowering and imaginative educational futures. Researchers such as Mahlangu (2018) and Saykili (2018), on the other hand, espouse the general concern on the drawbacks of the current system concerning accessibility, equality and security. This is because systems that do not take into account the exigencies of the current circumstances to make accommodations towards flexible student assessments may become antithetical to the goals of education and the ideals of a just and equitable society.

Assessment Procedures

Assessment procedures describe the approach used for student assessment within different education systems (Asamoah 2019). This pertains to the scope of assessment, content coverage and important related features that must be observed. Features may take the form of an assessment instrument (i.e. oral, written, observation, projects, case studies, portfolios), or assessment formats such as multiple-choice questions, short answers, essay questions and numerical problems (Asamoah 2019; Tosuncuoglu 2018).

Some higher education institutions in South Africa had challenging assessment experiences during the peak of the pandemic. This was because there were no clear policies and guidelines regarding online learning and assessments. For example, several questions that focus on what to teach, how to teach it, what should be assessed, the duties of the lecturers and students, the teaching environment, and implications for social justice became central talking points (Mncube *et al.* 2021; Mpungose 2020). Before the pandemic, assessment procedures served evaluative and feedback purposes and ensured validity, reliability and fairness (Huber & Helm 2020). Presently, online teaching challenges in the face of non-existent policies, guiding principles and procedures for many institutions have made the task of assessment more difficult. Mncube *et al.* (2021) believe that a possible solution is for online learning to be structured with appropriate pedagogical principles, while taking into account the different assessment options, to improve the quality of online assessments.

Some institutions, though, are not wholly supportive of online learning, even in the present circumstances. For example, Almeida and Monteiro (2021) explain that, to increase the motivation levels of online assessments, traditional and online assessment practices need to be reconciled to serve teaching for the future. This is because a post-pandemic assessment must be seen as a form of diagnosis rather than classification. The need, therefore, arises for student-centred approaches, such as problem-based learning, self-learning, simulation activities and self-assessments, to accommodate students in the current unstable teaching and learning environment.

Technology that Facilitates Online Learning at Higher Education Institutions

Technology has changed the face of education delivery worldwide. This change has seen a shift to open-source, online-based learning platforms (Deliwe 2020; Turnbull, Chugh & Luck 2021). The impracticability of in-person education during the Covid-19 pandemic and the slow pace of education by mail have prompted most higher education institutions to favour software that makes it possible to mediate teaching and learning in real-time, conveniently, and efficiently.

Learning Management Systems (LMS), also known as Content Management Systems (CMSs), are software applications that allow lecturers to post and update course materials and interact with students (Alokluk 2018; Turnbull *et al.* 2021). LMS further promotes collaboration between students and lecturers and enables feedback to improve the performance of students.

LMSs were a common feature in developed countries before the pandemic (Deliwe 2020). Turnbull *et al.* (2021) argue that the most widely used LMS at most higher education institutions around the world is the Modular Object-Oriented Dynamic Learning Environment (MOODLE). Besides MOODLE, there are other LMSs such as Google classroom, AWS Educate and Blackboard (Turnbull *et al.* 2021).

In South Africa, a full integration onto LMS may lead to a loss of personal contact that in-person education accords (Mlotshwa, Tunjera & Chigona 2020). In addition, not all students have access to internet connectivity; therefore, a post-pandemic, hybrid approach based on students' contextual situations should be used so that assessment concerns can be properly addressed.

Methodology

This study employed a pragmatist paradigm underpinned by the mixed-methods technique to examine the online assessment experience of rural university students during the Covid-19 outbreak. We conducted a cross-sectional survey of students enrolled in the division of Natural Sciences Education, Faculty of Education at this university in the Eastern Cape Province.

An online questionnaire was used to collect quantitative data (through closed-ended items) and qualitative data (open-ended items). This data collection format facilitated the use of a fully mixed. concurrent, equal-status design (Leech & Onwuegbuzie 2009), which incorporates qualitative and quantitative research elements within or across the following four components: research objective, data and operations type, type of analysis and type of inference (Onwuegbuzie & Ojo 2021:3). The quantitative and qualitative phases of this investigation were combined concurrently across all of these components, with approximately equal weighting given to the quantitative and qualitative components. Prior to triangulating the results, a concurrent mixed-method data gathering strategy was used to validate the various study approaches (quantitative and qualitative). Additionally, the ongoing data gathering technique aided in enhancing and explaining complex or contradicting survey results (Wium & Louw 2018).

The current study examined third-year students enrolled at a rural South African university pursuing a Bachelor of Education (Natural Sciences) degree in the Eastern Cape Province. The university is located in a historically and socially disadvantaged neighbourhood as a result of the apartheid government's practices prior to 1994. Due to their remote location, this university found it particularly challenging to make the abrupt change from face-to-face to online teaching and learning (Mbodila, Bassey & Kikunga Masehele 2016). The participants were chosen using a convenience sampling technique. Convenience sampling was deemed appropriate due to the researchers' proximity to the individuals (Kumar 2011). A total of 108 students were chosen. Nearly two-thirds of sample members (n=63, 58%) were female, whereas approximately one-third (n=45, 42%) were male. In terms of age, the largest group was those between the ages of 18 and 24 (n=48, 44%). The 25–34 age group (n=18, 17%) was followed by the 35–44 age group (n=18, 17%), and the 44-plus age group (n=10, 9%). The majority of students (n=96, 89%) were local students, while the remaining students (n=12, 11%) were

international students. In terms of race, the majority of students (n=76, 72%) were Africans, while 19 (18%) were Coloured and 10 (13%) were Indian. Each participant was a third-year student who has enrolled in full-time study and is majoring in Physical Sciences and Mathematics Education. The majority of participants reside in rural villages and in informal settlements where network connectivity is difficult to create and maintain. South Africa is well-known for its high levels of inequality (Parker, Morris & Hofmeyr 2020), and stark inequities exist in rural parts of provinces such as the Eastern Cape, where the bulk of the population is dependent on monthly government grants.

Concurrent Design with Identical Samples was employed as the mixed-methods sampling strategy (Collins, Onwuegbuzie & Jiao 2007). This design was chosen because all 108 individuals participated in both the quantitative and qualitative phases of this research project. In addition, all qualitative and quantitative data were collected concurrently. According to Collins *et al.* (2007), this approach of mixed sampling is utilized in 14% of mixed-methods research investigations.

The primary data-collection instrument was a three-part, online questionnaire (both open-ended and closed-ended). The first section discussed students' demographic features. Gender, age, race, student status (international or local), level of economic status, type of learning platform used and digital gadgets available at their institutions were all considered.

Sections B to D comprised a 5-point Likert scale questions (ranging from 'strongly disagree' to 'strongly agree'). The dimensions considered under the Likert scale questions were the following: students' assessment experiences, assessment procedures within the period, and technological services support.

Section E, the third section, elicited open-ended responses. The questions specifically asked students to recount the following briefly:

a) their personal assessment experiences during the Covid-19 pandemic;
b) the techno-logical support services and study materials received during the pandemic; and
c) whether they received prompt feedback on assessment submitted.

To collect data from our respondents, we designed an online questionnaire. The online questionnaires were administered to students in June 2021, after the university's research committee had granted ethics clearance.

Students were informed about the objectives of the study through the faculty Facebook page and their respective learning management systems. Since one of the authors was lecturing these students, access to students' e-mail addresses was not a problem. Hence, the questionnaire, together with consent forms were then sent to the students via their approved student e-mail addresses.

The completed questionnaires and signed consent forms were returned. Participants were assured of confidentiality and anonymity of their participation.

Data Analysis

In accordance with the concurrent study design, quantitative data were analysed first, followed by the qualitative data. Data collected from the questionnaires were cleaned and exported to SPSS (version 23) for analysis. Missing quantitative data were excluded. Analysed quantitative data are presented in Table 1 and Table 2 using descriptive statistics, reported as frequencies, percentages, mean and standard deviations.

Responses to open-ended questions were analysed qualitatively using a thematic framework to generate themes. We captured the responses on an Excel spreadsheet. After engaging with the text, an inductive thematic analysis was performed for the identification of preliminary codes (Braun & Clarke 2019). The preliminary codes indicated the context of the research and gave a sense of how students appreciated assessments concerning the context under study. Next, we conducted an interpretive analysis of the codes generated to organise and separate codes based on similarities and differences. This produced subthemes and themes towards an end goal.

Finally, we conducted a deeper review of the themes identified from the codes generated. Synonymous codes were refined and merged to have clear and identifiable distinctions between themes. The semantic differentiation of themes was also ensured by focusing on the descriptive expression of respondents while latent discourse to a detailed interpretive and explanatory analysis was reserved for the discussion stage of the study. The next section therefore triangulates results from the closed-ended questions as well as the open-ended responses.

To determine the instrument's quality, the Cronbach's Alpha test was used to determine internal consistency. This test determines the degree to which all of the questionnaire's items measure the same idea (Taber 2018).

Values greater than 0.7 are regarded as satisfactory. Each questionnaire falls within the permissible range of values, ranging between 0.702 and 0.845. Additionally, the Average Variance Extracted (AVE) and Composite Reliability (CR) were calculated to assess the measurement quality. The AVE function should return values greater than 0.5 (Fornell & Larcker 1981, Hair *et al*. 2014). The surveys' calculations yielded values between 0.5 and 0.7. With relation to CR, it describes a variable's reliability level, and values should be more than 0.7 (Fornell & Larcker 1981, Hair *et al*. 2014). The values for the questionnaire varied between 0.7 and 0.8 in this situation.

Results

Demographic Data

Table 1: Demographic characteristics of participants by domain

Item	Category	Frequency	%
Gender	Male	45	42
	Female	63	58
Age	18–24 years	48	44
	25–34years	32	30
	35–44 years	18	17
	45 and older	10	9
Racial grouping	African	76	72
	Coloured	19	18
	Indian	13	10
Student status	South African	96	89
	International	12	11
Level of economic activity	Employed	17	16
	Unemployed	91	84
Institutions' online learning environment	Google Blackboard (BB)	66	63
	Moodle	31	29
	Other	10	8
Technology provided by	Computer	44	40
	Internet	32	30

institutions to meet students' needs	None of the above	32	30

Overall, 58% of respondents were female and 42% were male. Of this number, the age range was as follows, 18–24 years (44%), 25–34 years (30%), 35–44 years (17%), and 45 years and older (9%). Africans were the dominant race, comprising 72%, followed by Coloureds at 19% and Indians at 13%. The status of students showed that the majority (89%) were South Africans, with 11% being international students. The level of economic activity indicated that 84% of students were unemployed while 16% were in employment.

Table 2: Mean and Standard Deviation for the students' online assessment experiences, assessment procedures and the technological support services influence on online learning

	Domain	**Mean**	***SD***	**Kurtosis**	**Skewness**	**Total reliability for all dimensions**
1	Students' online assessment experiences during the Covid-19 pandemic	3.0007	1.3515	-0.6062	0.2566	0.8124
2	Assessment procedures during the pandemic	2.73688	1.14443	-0.39066	-0.09675	
3	Technological support services' influence on online learning	2.59392	1.18771	0.1416	0.3675	

The descriptive statistics provided in Table 2 reflect the results and observations of the three domains on the Likert scale as computed. These domains are student assessment experiences during the Covid-19 pandemic; assessment procedures; and the influence of technological support services on online learning. Table 2 shows the mean score of students' assessment experiences during the pandemic to be 3.0007, with a standard deviation of 1.3515. The mean score indicates a positive student assessment experience during the Covid-19 pandemic. The standard deviation is approximated based on the coefficient of variation (CV=standard deviation/mean). Therefore, when the CV>1, it is an indication of a relatively high variation, while a CV<1 is considered a low variation (Pélabon *et al*. 2020).

Since the standard deviation for student assessment experiences is 1.3515, it presupposes that there is a degree of acceptable variance of data about the mean. The second domain, which comprises assessment procedures, had a mean score of 2.73588 and a standard deviation of 1.14443. The mean score purports to show that assessment procedures within the period of the pandemic were adequate. The standard deviation, as calculated, points to the fact that data are evenly spread out, although much clustered about the mean, compared to student assessment experiences at the height of the pandemic.

On how technological support influenced the students' online assessment, there was a mean score of 2.59392, with a standard deviation of 1.18771. Even though the mean score obtained is positive, it is the lowest in comparison to the overall student experiences and assessment procedures within the same period. The corresponding standard deviation informs that this is a comparatively evenly shared view among students surveyed. Again, the level of technological support may explain a low student assessment experience.

Students' Assessment Experiences

As already described, the open-ended responses were analysed qualitatively to give a sense of how students appreciated assessments concerning the context under study. In effect, we sought to refine the codes to generate the themes.

Self-motivation

This theme entails three sub-themes: a) self-directed learning; b) greater convenience in place of study; and c) student centred constructivism.

Self-directed Learning

Findings revealed that the sudden switch from face-to-face teaching and learning evoked a sense of responsibility in students as they set their own learning goals, monitored them and evaluated what they were able to learn within specific time frames. Also, since the sudden switch to online learning was new to both faculty and students, students had the advantage of self-assessment prior to writing the actual assessment. Although students did indicate an increase in formative assessment, which they initially thought to be an inconvenience prior to the writing of summative assessment, it ultimately led to an increase in their grade point average. One of the students commented:

> *I felt in charge and more empowered as I worked my way through my assessments with little support from my lecturers. I never thought I could do this on my own. Although I miss my friends but I am happy of the opportunity to help myself throughout this period.*

Greater Convenience in Place of Study

Students recounted their experiences of the convenience of studying from home in the midst of restrictive lockdown measures. They were able to set their own schedules and take breaks when needed in the comfort of their respective locations. Compared to normal schooldays, when they had to wake up early to prepare and take transport to overcrowded lecture halls, the switch to online learning was much more convenient. Many of the young students were able to consult with their family members to guide them through assessment-related tasks.

Comments from students who alternated between work and school prior to the pandemic showed two opposite effects. The first was a feeling of detachment from friends that impacted their social lives, while the second was a sense of security as they feared crowded, potentially super-spreader situations in the lecture halls. This fear was more prominent amongst adult and mature learners who felt they could catch the virus from their younger colleagues. An adult learner recounted her observation as follows:

> *Online classes were the best option I could ever have under the current circumstances. Being an older adult, juggling between work and my studies, as I did before, took a toll on me to the point that I*

> *considered quitting my studies. Currently, online classes fit my daily schedule perfectly and I enjoy the self-paced environment. This is really a life saver indeed.*

Student-centred Constructivism

Students felt that their new normal provided them with an opportunity to construct their own learning as they read through their tutorial letters and study guides online. Also, lecturers, who were themselves battling to communicate effective teaching methods online, relied on students to be able to understand what was sent to them online. Students were free to discuss issues from different perspectives and achieve greater levels of personal reflection. The blog sessions that were introduced by some lecturers proved useful. In these sessions, there was no right or wrong answer to topics under discussion; rather, the fact that these discussions served as building blocks to the main or final answer was very encouraging for some students. Below is an observation of a student:

> *My colleagues made me a team leader in one of the groups for the blog sessions and, for the first time in my academic life, I had to moderate the views and discussions of my group. It was not easy at first but I did my homework by researching on the topic we had to discuss and I made a good impression. I really gained confidence with this.*

Students' Contextual Challenges

This theme entails the following sub-themes: a) technical and connectivity challenges; and b) stressors.

Technical and Connectivity Challenges

The assumption was that all students would be able to navigate their online spaces and work from their respective locations but students recounted issues about their varying levels of technology access and proficiency. Some of the LMSs were not user friendly and there were days that prompts in the LMSs did not respond as expected. Other students maintained that they were unable to

log onto their LMSs although the institution had provided them with usernames and passwords, and students who lived in areas where network connectivity was poor were forced to find better network reception areas.

Several students concisely, but clearly detailed the challenges they had encountered due to insufficient network access, including the following sentiment shared by a student:

> *My residence has almost no network coverage; I have to travel to the other village to receive coverage. Because of poor network, I failed a test because I was frantically searching for a network connection while writing the test. Hence, I could not submit my work on time.*

There was also the challenge of hardware and software compatibility. Some students had the impression that either their institution or the Department of Higher Education would provide them with laptops as announced by the Minister of Higher Education. As this did not materialise, students themselves had to buy smartphones with bigger memory and storage space to be able to download study materials and related assessment tasks. A remark from one of the students who shared concerns on technical and connectivity issues is below:

> *My phone does not have a big memory and storage space to download all the stuff and there was no money to get a new one quickly so I was hoping that the university or government would provide us with something. Online studies are nice, but it is difficult if you are poor and don't have everything that makes it work like me.*

Stressors

At the beginning of the pandemic, some students enjoyed learning from home but, as reality set in, their motivation levels decreased. They reported that the social and political environment around them increased their stress levels, particularly those whose relatives were either infected or affected during the peak of the pandemic. Both parents and siblings demanded attention and interfered with students' planned schedules as they had to respond to the needs and dictates of the home. These distractions affected the end of cycle assessments. The following are some of the accounts of students:

> *It is stressful now compared to when I used to attend lectures daily. Back then, I used to escape these household chores using my schoolwork as an excuse, but now it's not easy. So, I have to push my studies to midnight and sometimes I am not able to participate in the blog discussions due to tiredness.*
>
> *Being home means that you cannot ignore household chores. My children needed time at this moment, and it was not easy giving them study time as their school did not assist them with any study materials, so I was their teacher in addition to teaching myself plus parental duties. As a single mother, it was unbearable. Am not sure my marks for my assessment will be good this year. Besides my lecturer is too strict and does not want to even understand what I am going through when I tried to explain my reason for late submissions.*

Feedback

This theme had one sub-theme, namely slow response time.

Slow Response Time

Students were concerned about the response time after they had submitted their assessments, because some of the lecturers were directly or indirectly affected by the pandemic, which led to staff shortages.

In addition, the institutions' LMSs had their own challenges as they were still in the trial stages and were suddenly overloaded, particularly at peak times, when students submitted completed assessments. When this happened, some of the lecturers made alternative arrangements for submission, which proved cumbersome. The following are observed students' responses:

> *Unfortunately, two of my lecturers had Covid-19, so we were told a new lecturer will be assigned to the programme but we were kept waiting. But I continued to submit the rest even when no one responded.*
>
> *We had to wait because my lecturer was doing graduations for Masters and Doctoral students so attention was not there. Besides, we could not even get them at this time of the year. This semester has not been good at all.*

> *We were told to just upload our completed assignments, but the system will just not accept it and I know it's not only me. The university software keeps crashing all the time. I think it's better to post or something, because it is like we have not done the work and we are lazy if we send late. Some of the lecturers do not understand when you explain.*

Discussions

Pötschulat *et al.* (2021) explain that assessments that are not well designed have the potential to alienate students and exacerbate inequality, but the triangulated results show that students had a positive assessment experience during the period of the pandemic. Some of the students acknowledged that they were able to take responsibility for their studies through self-directed learning. Similarly, there was an increase in student-centred constructivism as lecturers allowed students to share and exchange views, and believe in their capacity to lead and be autonomous (Double, McGrane & Hopfenbeck 2020). Students used the blog discussions as an opportunity to control their own learning as Mahlangu (2018), in support of self-directed learning, explains that allowing students the flexibility to learn from themselves enabled them to play a central role in the learning process.

Students' experiences in the assessment procedures during the period of the pandemic were generally positive, but the quantitative analysis showed that this was not true for all students surveyed. The responses given under the subtheme for self-directed learning revealed that there was an increase in formative assessments when online assessments began. It is therefore assumed that some lecturers encouraged and promoted formative assessments, especially peer and self-assessments, as a means of offering students the opportunity to reflect on past work and demonstrate growth (Broadbent, Panadero & Boud 2018). Huber and Helm (2020) believe that assessment procedures will continue to serve an evaluative purpose after the pandemic and beyond until policies and guiding principles are developed. In the absence of these policies and guiding principles, it is assumed that lecturers will continue to increase formative tasks to ensure that students understand the concepts before initiating summative assessments.

Technological support received mixed responses and scored low according to both quantitative and qualitative outcomes. The abrupt shift to

online learning as a result of the lockdown did not consider whether devices were available to students to mediate their teaching and learning, whether hardware and software were compatible between the institution and the students' devices or whether students had internet access. Students had problems downloading study guides and tutorial letters, and uploading completed assessments and, by extension, feedback was also affected. Mixed responses from policy makers also impacted students' attitudes towards their institutions' assessment schedules negatively.

Limitations

This study involved a higher education institution from a province in South Africa and a sample of 108 students drawn from a department within the Faculty of Education. Generalisations must therefore be made advisedly. As the study's main theme was students' assessment experiences during the Covid-19 pandemic, related topics that may be explored in future could be academic integrity, the effectiveness of interactive online tools, and the impact of the Covid-19 pandemic on the mental health of lecturers.

Conclusion and Recommendations

The coronavirus pandemic has changed how millions of people around the world learn, are assessed and receive feedback. With student assessment experiences being the central theme of this study, the results indicate that, to navigate through such shocks in the future, requires students, higher education institutions, as well as governmental departments to be fully prepared.

Some student-level factors, such as motivation, became catalysts to self-directed learning and student-centred constructivism. This showed that student-content interaction improves and shapes their learning experiences. This, in turn, increases students' online assessment experiences which leads to an increase in the assessment success rate.

On the contrary, the potential for learning gaps to widen is far greater in online settings than in traditional learning spaces. Therefore, lecturers using LMS must first examine how their use of this medium to communicate assessment content will enhance pedagogy.

The Covid-19 pandemic has become a catalyst for innovation in higher education institutions within a short space of time. The findings of this study

show that a positivist approach that objectified learning from the past is now making way for a constructivist approach that includes students' views and inputs in the teaching and learning process. Therefore, assessments must be included in students' personal reflections, portfolios and projects, instead of tests and quizzes. Lecturers' use of online tools must therefore maximise student engagement in knowledge creation and liberate them from time, distance and assessment constraints.

On the issues of access, equity and equality, the government is expected to create an enabling environment for both students and higher education institutions. This view was reiterated by students who said that they waited for the Department of Higher Education to honour a pledge of free laptops for all. Government must therefore assist higher education institutions with guiding principles and procedures regarding access to online learning for the poor and marginalised through process, course design, development, delivery, support and assessment.

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Frank Joseph Mensah
High School Principal
DEd
University of Zululand
Kwadlangezwa
South Africa
joemenscrow2@gmail.com

Sakyiwaa Boateng
Lecturer
Science Education
Walter Sisulu University
Umtata
South Africa
sboateng@wsu.ac.za

Alex Boateng
PhD Student
Department of Industrial and Organisational Psychology
University of South Africa
Pretoria
South Africa

Chapter 9

The Digital Shift in Higher Education and the Aftermath of COVID-19: A Wellness Perspective Case in an ODeL Institution

Meahabo Dinah Magano
ORCID iD: https://orcid.org/0000-0001-7562-0333

Abstract

The Coronavirus disease (Covid-19) pandemic became a game changer in higher education and dictated how the pedagogy and the Scholarship of Teaching and Learning (SoTL) will be like. The chapter focuses on the shift in higher education during the pandemic and its aftermath from a wellness dimensions perspective. Furthermore, the exploration was done in the College of Education in a comprehensive open distance and e-learning (ODeL) institution. The research question that guided the study was: ***What was the digital shift in higher education during the pandemic and the aftermath of Covid-19 in an open distance and e-learning institution from a wellness perspective?*** The lenses followed were the transactional distance theory of Moore (1997), which bridges the distance between student and the lecturer, and the wellness theory of Hettler (1980), which outlines six dimensions of wellness such as academic, emotional, social, career, physical and career wellness. The third theory, African philosophies (*botho:* humaneness) (Tutu 1999) elucidates on using humaneness, which is an African value of valuing other people and that a person cannot thrive well in isolation and without support from other people. The study was embedded in an interpretivist paradigm and followed a qualitative research approach. In addition, the research design was phenomenological, since experiences were the focus of the study. Purposive sampling was used to select the participants, which

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comprised ten academics, four student support staff members and e-mails from students who had complaints. Interviews and document analysis were used. The findings revealed that the ICT challenges experienced during the uploading of assignments and examination papers on the side of students posed challenges, since online examinations were conducted for the first time and this affected the academic wellness of students. The shift to online examinations brought doubts and concerns on authenticity of qualifications for students. Academics' career wellness was suddenly transformed since they had more administrative work to do. Academics showed resilience and were able to show support to students and humaneness (*botho/ ubuntu*). There was a sudden shift in higher education; the '*e*' in ODeL was maximised and the aftermath of Covid-19 was virtual platforms were the new normal.

Keywords: Pandemic, Academic wellness, shift in pedagogy, career wellness, online exams, ICT challenges

Introduction

Higher education experienced a shift in pedagogy due to the Covid-19 pandemic. The mode of delivery where blended approach was used suddenly changed to virtual mode. Concomitantly, also the assessment mode was affected and as such institutions had to adapt and follow new ways of assessing. At institutions that use open distance and e-learning (ODeL) such as the University of South Africa (Unisa), a blended approach was followed, but in 2020, a fully online mode of assessment was followed owing to the threat that Covid-19 posed. In the past, Unisa had formative assessment in which a hybrid system was used, where students would either upload assignments online or post hardcopies. Both modalities were permissible, and students would receive feedback through post and online modality. For summative assessment, Unisa had examination centres globally and there were invigilators who were hired to invigilate all examinations, since a face-to-face mode was used. The blended approach that was used for years at an institution which claimed to be an ODeL had to realise that there is an '*e*' in the ODeL. The pandemic caused a drastic shift and brought to the surface the '*e*', which became an enabler to save the academic year. The development of distance education is very interesting and the way the context plays a role needs a closer look. Let me try to extrapolate the way open distance learning (ODL) evolved over time in the subsequent paragraph.

What Characterises an ODL Context?

According to Moore and Kearsley (1996:6), ODL is defined as a way the study material is disseminated to students in a situation where students and lecturers are not in a face-to-face contact and space and time separates them. The second one, ODL is defined as a mode of distance learning delivery, which involves an appropriate institutional framework (Mukama 2018). The third is taken from the mega-university – the University of South Africa (Unisa) (2008:2), which defines ODL as follows:

> ODL is a multi-dimensional concept aimed at bridging the time, geographical, economic, social, educational and communication distance between student and institution, student and academics, student and courseware and student and peers. ODL focuses on removing barriers to access learning, flexibility of learning provision, student-centeredness, supporting students and constructing learning programmes with the expectation that students can succeed.

Tait (2014) outlines how teaching and learning evolved from print, correspondence and postal system in Boston, Massachusetts in 1728; the telephone with synchronous conversation in teaching, radio, television, and currently the use of the internet in an asynchronous dimension which we are now accustomed to. Technological development influenced the space of teaching and learning, and the summary above can be alluded to man devising means of teaching and reaching the greater communities especially those who have other reasons not to attend a contact university, hence ODL and currently ODeL. Globally, in developed and developing countries, ODL/ODeL is used as a mode of accessing higher education. Since 1968, the Open University of the United Kingdom (OU UK) has created a multi-media teaching and learning system, which impacted on the cognitive and affective being of students (Tait 2014:8). It clearly shows that OU UK in a developed country was able to establish an online mechanism within distance education to cater for student support much earlier. In developing countries in Africa, there are a number of universities that have adopted the ODL system in higher education in an attempt to address the UN 2030 Agenda of achieving the Sustainable Development Goals (SDG) goal number 4 of quality education. It is clear, that shift has been there in higher education, and this continues to occur owing to the dynamic space in which education occurs.

ODL Challenges in Third-World Countries

Looking closely at Kenya, which has approximately 12 universities offering ODL programmes, one can argue that this is in response to the rapid expansion of higher education and the demand from communities, in particular the poor and marginalised. A study was commissioned by Commonwealth of Learning conducted by Nyerere (2016) at universities offering ODL programmes in Kenya, including universities such as Nairobi, Maseno University, Kenyatta University, among others. Very interesting findings revealed what developing countries experience in higher education regarding student support. Though there was a high demand of university education in ODL institutions, the enrolment remained low, owing to numerous challenges. Programmes suffered credibility and recognition crises (Nyerere 2016). Open Educational Resources (OERs) were cost effective, and some universities adopted them. Sadly, the use was very low owing to infrastructure and capacity challenges. Furthermore, other findings from Nyerere's (2016) study revealed that staff capacity in module development was inadequate and insufficient funding which affected ICT and e-learning.

In a study conducted at the National Open University of Nigeria (NOUN), an ODL institution, Ojo and Olakulehin (2006) found that students had a positive attitude to ODL, compared to face-to-face institution. In another study by Okopi (2011) on dropout rates of students at NOUN, findings revealed that there was no timely feedback of examinations and assignments, and no prompt responses to students' enquiries, which led to students dropping out, though there was a remedy to be proactive in bringing counselling early in the lives of students before they were frustrated.

Online participation depends on factors such as income, class and access (Theurmer 2019). Inequality in sub-Saharan countries is still prevalent, owing to a number of socio-economic factors. Again, participating in online learning depends on access to tools and to data. In rural communities, there is still a challenge of access to electricity, while in urban or suburban areas, most African countries experience power outages. Students who live in such areas are often cut off from online participation about their studies. In supporting the students from low socio-economic backgrounds, those students who are on financial aid do receive data bundles so that they are able to study using online platforms. Hence the digital divide is not so evident. Furthermore, laptops were also availed to enable students in an ODeL context to access study material and upload assignments easily. Higher education views digital platforms as the digital eco-

system (Tiwana 2013; Schreieck 2016) that must be ethical. For the digital platform to be ethical in higher education, it must be seen as a supportive tool towards student success, rather than causing a divide. Hence, the service providers such as MTN, Vodacom and others who came on board to provide data to students are part of the ecosystem that enables online learning, student engagement and student support.

People in both the global north and global south embrace ODeL and has gained mainstream acceptance (Qayyum & Zawacki-Richter 2019). Adult students preferred learning through ODL, although currently, even younger students as old as 19 years old are found at ODL institutions. Student support in ODL/ODeL plays an important role so that student retention and student success are maintained in a positive way. A study conducted by Qayyum and Zawacki-Richter (2019) revealed that in India, distance education lacks quality programmes for both online and correspondence education. In contrast, in Turkey, it was found that there is a balance between residential programmes and open distance education. Lessons need to be learnt on how the developed countries managed to maintain quality ODL programmes. In developing countries, there are challenges of electricity and internet, which may be a hindrance to the success of ODL/ODeL, since students need to be connected to post assignments, to be on discussion forums, and engage with peers, tutors and lecturers. South Africa, Zimbabwe and Nigeria experience a challenge of frequent electricity cuts and this causes a disruption for students who study using internet connectivity most of the time. Owing to poverty and unemployment in South Africa, funding is extended to students to be able to get books, food and other amenities necessary for their education. The fund called the National Student Financial Aid Scheme (NSFAS) is the government student bursary scheme, which supports students financially to alleviate poverty. The students who receive NSFAS funding also receive laptops and data that will enable them to write and send assignments (e-News Unisa 2019). Another challenge may be the data and access to laptops or computers and free Wi-Fi hotspots for students who do not have a bursary or financial aid. This poses a dilemma if students are employed, but they do not qualify for a bursary. This is where additional support should be availed by the counselling unit of an ODeL institution. Therefore, it is important that universities should know how to communicate effectively with students and use the cheapest way of communicating, for instance, the use of a short message service (SMS) and WhatsApp. The ICT, library services, counselling units, tutor services, and first-year experience unit are capacitated to

deal with large number of students and to have efficient communication methods. The lecturers should also ensure that their way of teaching online is relevant and fulfils the students' needs, since most young students are digital natives. In supporting students effectively, timeous and detailed feedback will motivate the students not to drop out of programmes. An early identification of students at risk enables the university personnel to intervene timeously in supporting the students. The students at risk may be those who do not send assignments on time, or those experiencing challenges in academic writing. Intervention, which is timeous, may be of help so that students are able to continue smoothly with their studies though an ODL/ODeL.

The staff that are recruited at ODeL institutions are expected to have knowledge and skills of teaching and assessing using either blended or online modalities. The young cohort of academics are expected to be competent and innovative in using online platforms and to use teaching applications on learning management systems (Jäger-Biela, Kasper & König 2020). In higher education, academics must prepare the students for the global context and equip them with the use of digital tools so that they are competent upon completion of their qualifications. Not only pedagogic content knowledge is important, but also technological pedagogic knowledge (TPK) (Mishra & Koehler 2006:1025).

Owing to the Covid-19 pandemic, there was a sudden shift in teaching and learning and assessment and a rapid swift to fully online and e-assessment was introduced to students who were taken by surprise. Although at ODeL institutions digital pedagogy was used even though not fully applied, Covid-19 hastened the application in assessment and teaching, which might have caused some discomfort. From the study conducted by Dhawan (2020), there are lessons learnt that during the Covid-19 pandemic, certain skills are necessary in conducting assessment such as problem solving, critical thinking and adaptability to survive in a crisis moment. Sean Michael Morris of Colorado Denver School of Education states,'Digital pedagogy as an emerging field may always need to be and not something hastily discovered in the aftermath of a crisis. The work of digital pedagogy was never to be a quick solution for every teacher in every situation' (Lederman 2020). Hence, in this chapter, the aim is to explore,

> ***the digital shift in higher education during the Covid-19 pandemic and its aftermath in an ODeL institution from a wellness perspective.***

Theoretical Framework

The lenses followed were the transactional distance theory of Moore (2005), the wellness theory of Hettler (1980), and African Philosophies (botho) humaneness (Tutu 1999). The transactional distance theory helped the researcher to understand the distance between the lecturers and the students, how teaching and learning were mitigated during the pandemic and how dialogue was enabled. In using the wellness theory, the researcher understood the situation that arose during the pandemic affecting the physical, emotional, social, career, spiritual and academic wellness of both students and academic lecturers. Furthermore, the African philosophy of *botho* (humaneness) as a lens helped the researcher to realise the caring attitude that was displayed by academics in an attempt to save the academic year. *Ubuntu* as an African philosophy, which is also used as a theoretical framework and is core to teaching and learning and student support. *Ubuntu* (humaneness) is explained as follows by Archbishop Desmond Tutu (1999:34–35), 'a person is a person through other people … the concept shows interconnectedness of human society'. Within an ODeL context, the interaction between students and stakeholders that render services must show an *Ubuntu* ethos. This philosophy of *Ubuntu* was key when a shift in pedagogy occurred, since there was no face-to-face interaction, but an online teaching was the sole modality.

Methodology

The study was embedded in an interpretivist paradigm, which is defined by Wagner, Kawulich and Garner (2012) as a paradigm that addresses understanding the world as others experience it. Furthermore, Creswell (2012) defines interpretivism as a worldview wherein individuals seek an understanding of the world in which they live and work. The choice of an interpretivist paradigm was influenced by the nature of the study, which is more on the exploratory side and fed more on experiences and narratives from academics, students and support staff in higher education. The ontological nature of higher education gave an impetus to the study and how a shift in pedagogy occurred. Furthermore, the qualitative method provided an in-depth grounding to the study within a naturalistic environment (Henning, Van Rensburg & Smit 2009) in which data collection occurred, even though it was mostly through online platforms. The design was phenomenological (Creswell 2012), owing to the descriptive nature of experiences sought from both academics, students and support staff. Sampling

was purposive by nature as described by Wagner *et al.* (2012), and only those with experience in a module for at least five years were selected to participate in the study. I sampled ten lecturers who taught modules which had more than 5 000 students. Big modules would give a clear picture on what students' experiences were after Covid-19, how the shift was in pedagogy managing teaching learning and assessment, and the wellness of both academics and the students. Four student support staff members were also purposively sampled to be part of the study. From the students' side, only e-mails with complaints from ten lecturers with more than 5 000 students were sampled.

The instruments used for data collection were an interview guide for ten lecturers and four student support staff members, and document analysis from e-mails sent by students who had challenges, as well as responses from lecturers and student support staff. The interviews asked questions that sought clarity on how assessment was switched from venue-based examination centres to online platforms and the preparation that went into the process. Furthermore, clarity was sought on the actual exam management, which was online and the exam integrity. In addition, academics were asked to give an account of how students reacted to the change to online platforms and the success and challenges thereof. The support staff were asked questions on how they participated in the online examination process and how they supported the students. E-mails that were sent pertaining to assignments and examinations were analysed on the type of query and the challenges that were experienced by students. Moreover, data were analysed manually following Henning et al.'s (2009) colour coding, forming categories and collapsing them into themes. The themes that emerged were as follows:

- *Online assessment and ICT challenges;*
- *Doubts on authenticity of online assessments;*
- *Academics Career Wellness transformed;*
- *Maximising the e in ODeL – The Aftermath of Covid-19; and*
- *Physical, Emotional, Social, Spiritual Wellness challenges.*

Discussion of Findings

Theme 1: Online Assessment and ICT Challenges

There were successes in the shift regarding moving from hardcopy posting of assignments and courier systems to moving swiftly to submissions via online platforms. The successes were marked by agility on the side of academics to

adapt and inform students to use the LMS-sakai platform to submit their assignment and abandon the hardcopy posting system. Another success was marked by academics who shifted from the traditional way of setting question papers and learnt a new skill of setting question papers using SAMIGO randomised multiple-choice questions. To some academics, this was a new thing and a skill in itself to create a pool of questions to set a question paper. In addition, the academics had a shift in acquiring skills of using Microsoft Forms as an alternate platform to allow students to submit the scripts, should they fail to submit using the LMS-sakai platform. The links were attached as an autoreply on e-mails from academics and also put on the module site as an announcement to enable all students to succeed in submitting their answer scripts. This is how the announcement looked like to enable a shift from venue-based exams to online exams:

> *NB. Kindly put this auto reply on your email*
> *If you are unable to upload your answer sheet on the relevant platform myExam or myAdmin kindly use the link as the last resort*
> *CEDU: https://tinyurl.com/CEDUOCT/NOV20 contingency link*

The ICT challenges may be summarised as follows:

- Challenges experienced during the uploading of assignments and examination papers posed a threat on the side of students.
- Students further experienced challenges in downloading question papers that caused a delay in commencement of examination.
- In addition, the problem of uploading of exam scripts was experienced by some students.
- Students from informal settlements, townships, deep rural areas experienced a challenge with connectivity.
- The diverse contexts also have different challenges regarding electricity, connectivity to internet and other societal factors which may either affect the examinations run online compared to when students were writing the venue-based examinations.
- The challenges during exams led to the writing of aegrotat exams or a deferment in the exam in June 2020, writing again in October 2020.
- Other students experienced loadshedding in their areas, as this is common in South Africa.

- Other international students missed the time zone and could not upload the scripts within the given time frames.
- Another challenge was the handwritten scripts, which were blurred and students got a deferment to have a second opportunity.
- Owing to large cohort of students submitting papers simultaneously, the LMS could not manage the stress level but crashed.
- Sadly, some students were supposed to complete their qualifications and owing to challenges in low bandwidth in their respective locations, the scripts could not go through and students had to write aegrotat exams in the subsequent exam session.

These are some of the emails with queries that were received by lecturers or student support staff:

Student 1 on e-mail:

Dear Dr xxxx
I was unable to use the internet at that time to upload my exam on the suggested site and on this link which was mentioned on the unisa website. I had an internet connection problem because my VPN was not working. So, I could not connect to the internet. Even though I tried using my phone to upload, it did not work because the internet on my phone works with a VPN as well.

Student 2 issue on corrupt script on e-mail:

Dear Mr yyyy
How many times have I sent emails with my student number yet you don't see it. Like I said you and your markers handle students' matters trivially; your office is not in order, you know you did not mark my script and I will not be disorganised by your carelessness, From December onwards the dates that I will prioritize are of my hospital appointments. I have been saying there is nothing wrong with my script this proofs [proves] it.

These are some of the evidence from students who were disadvantaged by technology, either owing to connectivity challenge or failure to convert the script to a PDF document. As academics had to adapt quickly and equip themselves with ICT knowledge, students were also able to move from the

comfort zone of using hardcopies and move to online platforms for formative assessments in sending assignments and summative assessments for the examination purposes. This shift caused by Covid-19, where Unisa moved from a blended mode to fully online, also challenged the teacher training programmes to put emphasis on the digital competence in all modules. This is in line with Jäger-Biela *et al.*'s (2020) advice that early-career teachers should have digital competency during their training.

Theme 2: Doubts on Authenticity of Online Assessments

The shift to online examinations brought doubts and concerns pertaining to the authenticity of qualifications for students. From the interviews with academics, the findings revealed that all ten academics preferred the past practice of venue-based examinations, where invigilators would oversee the examination for the entire duration and students were not allowed to have notes or any writing on their arms or palms. They still believed that close monitoring ensured credibility and authenticity of all exam papers. The academics also upheld the disciplinary processes that were carried out during venue-based summative assessment periods. They also expressed whether professional bodies will not query the qualifications completed during Covid-19 and the use of online examinations.

Academic 1 said: *I wonder if the teachers who are graduating through online examinations will really be having the pedagogic content knowledge of their subject.*

Academic 2 said: *Maybe the online assessment opened our eyes on how we question so that we minimize copying and students should express their insight on the subject matter.*

Academic 7 said: *With 4IR technology maybe it is the right time to explore other avenues of testing knowledge and move away from traditional practices.*

From the deliberations of academics during interviews, it was clear that they were not convinced that online assessment was reliable during summative assessment periods. Furthermore, some consoled themselves that an invigilation application was used only on exit-level modules, which allowed the use of a mobile phone to accommodate students from low socio-economic backgrounds.

Academic 4 said: *When the university brought in an Invigilator App, I was relieved that my module will be invigilated and students will not copy. Since they were taking selfie photos at least twice or thrice I was assured that they will behave.*

The findings of the study also revealed that some academics used multiple-choice questions in June 2020. For the October-November examinations, they changed the ordinary multiple-choice questions to randomised multiple-choice questions. In the June assessment period, they realised that students used an app called Telegram to share answers. Fortunately, there were honest students who reported their friends in the Telegram group that they were sharing answers and they saw this as an act which compromised the examination process. Two academics who experienced this reported the students to the university disciplinary committee and they got zero for their examination. Agility was noticed in how academics switched from one mode to a randomised one.

For the postgraduate papers, Turnitin was used to detect plagiarised work, even though this had its own challenges where handwritten exam scripts could not be read by the Turnitin mechanism. The handwritten scripts would have a report of a 0% or a 100% similarity index. Academics felt that this was not a genuine reading from the Turnitin report. They resorted to a stringent marking process and comparing the answers to identify and discrepancies. Indeed, there were culprits who were caught even at postgraduate or honours level.

The case study findings clearly reveal that students cheat, whether writing venue-based or non-venue-based exams. Previous studies also support these findings. For example, Kaczmarczyk (2001) highlights that there is some anecdotal evidence which suggests students today cheat less in distance learning than with traditional instruction. However, Rowe (2004) points to the identification of students in online exams that there is no assurance, even when one uses Invigilator Apps and takes selfie photos. The problem is confirmation that in online assessment one cannot really confirm that student are in fact who they say they are. These are some of the doubts that characterise online examinations. The shift in higher education is riddled with changes and agility that academics are confronted with.

As a college, we normally conduct exam analysis to assess if a module performance is declining or increasing in pass rates. From module analysis we do a generic analysis to see the overall college performance. The table below outlines the pass rate for the college.

Table 1: Generic Pass Rate Pre-Covid and During Covid

PRE-Covid			**DURING Covid**
	May/June 2018	May/June 2019	May/June 2020
Admitted	274 482	189 232	115 562
Wrote	264 828	184 797	111 451
Passed	221 263	155 822	105 013
Failed	23 631	16 527	1 700
Normal Pass rate	83,5%	84,3%	94,2%

Table 2: Generic Pass rate during Covid-19

Nov 2020	**DURING Covid-19**
Wrote	406510
Passed	353 655
Pass Rate	87%

Table 1 above depicts an increase of only 0,8% in the pass rate from 2018 to 2019 and between 2019 and 2020, there was a leap in pass rate of 9,9% during Covid-19 when students were engaged in online assessments during May/June. In November 2020, there was a drop in the pass rate from 94,3% to 87%. The drop in the pass rate may be the manner in which the academics responded after realising how students cheated during the May/June examinations. Ordinary multiple-type questions were changed to randomised multiple choice questions. Exit-level modules were proctored through an invigilator application to curb cheating. Owing to warning letters that were received by those who cheated during the May/June examinations, this might have acted as a deterrent.

Theme 3: Academics Career Wellness Transformed

The study revealed a shift in the career wellness of academics in a number of areas. The technological skill of quite a number of academics was heightened since they were expected to upload question papers after setting them. Many complained that they were now turned into administrative staff members.

Participant 5 said: *I am no longer sure whether I am an academic or an administrative staff member. I find myself formatting question papers and uploading*

them whereas during venue-based exam these duties were performed by the Directorate of Assessment and Administration. I now know how to use other functions on the Learning Management System such as MyExams. I wonder what is the role of administrative staff?

Participant 6 said: *I found myself seated in front of my computer for four hours when my students were writing my paper. I was responding to calls guiding them on how to download the question paper. Some were crying saying their computers are spooling and can't get access to a question paper. I was turned into a counsellor and had to calm them down when they were crying. During the upload time of answer sheets, it would be the same some due to low connectivity they could not upload their papers.*

The utterances of Participants 5 and 6 clearly show that there was an increase in workload and a shift in the academic role to that of being and administrator. Owing to the shift to online examinations, there were many workshops to update academics on how to go about online examinations. The hours of working online also shifted from normal office hours of 8:00 to 16:00, to 8:00 to 18:00, 19:00 or 20:00. Some exam sessions ended at 20:00 in the evening and that would cause the lecturer to be online to assist and also be ready to respond to phone calls when students called. Academics showed resilience and were able to support the students. This resulted into a shift in career wellness and blurred roles. Some were stressed, because they were not used to working for long hours and doing duties that were new to them. Unfortunately, some already had a difficulty of balancing the key performance areas of teaching, research and engaged scholarship. These findings are similar to a study conducted by Houston, Meyer and Paewai (2006) and Veletsianot and Houlden (2020), who report that some staff members cannot balance teaching, research and service obligations.

Theme 4: Maximising the e in ODeL – The Aftermath of Covid-19

It was clear from all responses by interviewees that the move to online assessment of formative and summative assessments needed some support regarding digital pedagogy. Some advanced skills were needed in administering teaching and offering support to students in an online environment. Owing to a shift from a blended approach to fully online, the discomfort of student sending assignments via the LMS was a challenge for those who were used to courier

systems of hardcopy assignments. For summative assessments, venues were used and that was the norm for Unisa students. A sudden move to online assessment came with a number of challenges for both students and academics. The shift to online assessment came both benefits and challenges experienced by students and academics. For assignments sent via the LMS, immediate feedback was received after marking, instead of waiting for courier delivery, which took weeks to deliver the marked assignment. This is supported by the view by Singh and Thurman (2019), who assert that online learning has some flexibility. The shift to fully online platforms began when the lockdown period was announced and there was a crisis of getting formative assessments submitted via couriers. Academics requested students to submit their assignments via the LMS and there was unhappiness amongst those who were used to submitting hardcopies. Some insisted on submitting assignments via e-mails, claiming that they could not use the LMS and it created more work for assessment division to capture all marks manually.

Upon this experience, the University Management prepared videos for students to view and learn how to submit question papers using the LMS from an ordinary phone. Lecturers also prepared video lessons with the view of preparing students for online examinations and learning online. There was also a move to prepare more webinars on how to convert and scan the exam script into a portable document file (PDF) and to submit it using a phone. Covid-19 forced all institutions to adopt online pedagogy and to move at a rapid speed. Even though Unisa was known as an ODeL environment, the '*e'* was not fully implemented. The '*e'* was seemingly rapidly brought to the surface by the pandemic and a rapid shift was realised by both ICT, academics, support staff and students. The use of proctoring tools was also explored during this online assessment period to curb plagiarism and to maintain the academic integrity of qualifications. Academics learnt how to use an Invigilator App and study the report thereof. This shift to online assessment was beneficial for 4IR and maximising the '*e*' within the ODeL context. On the other hand, it excluded students who struggled with connectivity and with a poor bandwidth, with the result that they had to write supplementary examinations in October and November 2020.

Other challenges associated with online assessment and the rapid shift to fully online platforms were load shedding, which is a systematic challenge, and it disadvantaged some students. To mitigate these challenges, the university was flexible in its rules, since all students were given permission to have a second

assessment opportunity if evidence could be provided of a loadshedding period in an area. In the aftermath of Covid-19, there will be no more turning back to hardcopy assignment and venue-based summative assessment. The utilisation of online examinations has been embraced. Even in 2021, Unisa had the June/July fully online assessment and September to December examinations will be conducted on online platforms. To ensure that the online assessment at Unisa has been fully embraced, furniture was sold in all examination centres that were used as venues for face-to-face assessment centres so that data could be purchased for all students. Students from 2020 were provided with 10 Gb of data during the day and 20 Gb during the night. The lessons learnt by staff members of Unisa is that we are all lifelong learners; new digital pedagogy was introduced and caused a paradigm shift for all in higher education. These findings reveal that academics and support staff in higher education should be prepared for any disaster. As Dhawan (2020) asserts, that there will always be unexpected situations that push us out of our comfort zones and the norm in our teaching space. Furthermore, the findings at Unisa clearly indicates that our ICT systems must be ready and adopt a high innovative ICT systems (Tull, Dabner & Ayebi-Arthur 2017). The digital shift experienced at Unisa harnessed the digital skills and improved the e-learning and the online teaching. Furthermore, the online assessment is acceptable for the majority of students and proctoring tools, though some are unhappy about the online platforms.

Theme 5: Physical, Emotional, Social, Spiritual Wellness Challenges

Findings further revealed that there was uncertainty and panic pertaining to physical well-being on the part of the academics owing to the loss of family members as a result of the pandemic. Academics felt isolated and understood what students were going through and tried to show kindness (*botho*) in responding to students' queries. Both academics and students were traumatised by the pandemic and were uncertain whether the academic year would be a success. Student support staff received many e-mails pertaining to teaching practice, and fear and frustration were expressed by students. From the interviews, it was clear that pain and loss characterised all ten interviewees as they juggled between the shift in the work environment of assessment and personal lives. Loss of family members caused depression in some and they were forced to consult psychologists. The difficulty was isolation from other colleagues and

that brought too much strain on individuals to cope. One academic expressed that he was afraid of taking leave and overburdening other colleagues with his work. He forced himself to finish the marking of examination scripts.

The emotional trauma was also seen in e-mails from students who lost parents or loved ones because of a missed examination opportunity. The student support office received many e-mails from students, seeking advice on how to get a second opportunity to write the online examinations. Most were requested to apply for an aegrotat examination. Some e-mails from students threatened staff members, because students got only 1%, which indicated a corrupt file, causing unhappiness amongst students. A student would resend the exam script and claim that from his/her side the script was fine. Some used even unpalatable language to academics. What is sad is that students were oblivious that their lecturers were also stressed and did not know what to do to save corrupt scripts from students.

Furthermore, there were no policy guidelines on online examinations. The shift to online examinations caused a disruption on assessment practices in higher education. An increase in workload on staff members owing to the death of colleagues within the university brought trauma to the leadership of departments, staff members and students who wrote e-mails that were not answered. Concomitant to all these burdens, frustrations, loss of loved ones, colleagues affected the wellbeing of academics, student support team and students. All these heartaches that came in 2020 and 2021 owing to the pandemic Covid-19 caused a shift in higher education. Martin (2020) asserts that relationships, motivation and mental health, amongst others, should be taken into consideration when online education is carried out.

Ubuntu/botho humaneness kicked in at the university and it started to organise mental health workshops and coping strategies. There were workshops for emotional intelligence on how to respond to angry students to student support staff members. In addition, a new culture developed of starting meetings with a moment of silence or prayer so that we could encourage one another. The truth is that we needed one another as a community of academics, administrative staff and students. As Tutu (1999) asserts, the philosophy of *Ubuntu/botho* with a notion of no man is an island, the I am because you are should map the way forward, even when we have moved to online pedagogy. Some departments started to have a debriefing meeting once a month that was held via Microsoft Teams simply to support one another and to show *Ubuntu/botho* humaneness. These seminars held online were an attempt to bridge the gap and to improve the social, emotional and spiritual wellness. Some interviewees expressed that prayer

was a haven for them and it helped them to cope with their work. The following excerpts are examples from participants of the study:

Student support member: *To be honest, I found my mailbox flooded with emails of frustrated and angry students who were not happy with the results. Some whose scripts were corrupt threatened suing the lecturer. I found myself praying first before I responded to emails in trying to calm them down.*

Academic participant: *I was also experiencing my own crises from my family and had to do my work with the new normal which brought me to tears. Before I responded to an email, I would calm down first because a retaliation would cost me my job.*

An e-mail from an angry student: *This university is useless I submitted my exam script which was fine even now it is fine from my side I am now told that it is corrupt, and I must rewrite in October November another exam. No, I can't do that I am paying a lot of money.*

Covid-19 indeed caused a digital shift in higher education and the assessment practices that were online saved the academic year even though the wellbeing of many were compromised. Change normally brings shock and support must be maximised in higher education. As Dhawan (2020) states, these sudden changes owing to Covid-19 demand humanity and unity. The support staff in ICT extended support to academics during the digital shift when most staff members work remotely. The humanity extended was commendable. Furthermore, the digital literacy was even extended to students who were not willing to abandon the practice of writing on paper and submit assignments. Currently, all assignments are submitted via online modalities, which is a positive gain in digital shift.

Trustworthiness of the Study and the Use of Lenses

In ensuring that the findings of the study are trustworthy, the transcribed interviews were verified with participants to ensure credibility. The researcher, since she is an insider, had to bracket to avoid bias in interpreting the data. Furthermore, for dependability, a critical reader had to go through the findings to audit trial data. In addition, the current study findings may not be generalised,

but I provide thick, rich descriptions of findings from interviews and documents such as real e-mails from students.

The theoretical lenses used in the study such as wellness theory, transactional distance theory and the African philosophy of *Ubuntu/botho* humaneness helped the researcher to understand what participants experienced during the pandemic in an ODeL institution. The three theories also helped to interpret data from a wellness and *Ubuntu/botho* humaneness perspective and what the transactional distance theory dictates. It was easy to understand the frustration of participants and how they showed resilience.

Limitations of the Study

The study was conducted on a small scale with ten academics and four student support staff members in one college. Future similar studies may be conducted on a larger scale using mixed methods to get more reliable data that may be generalised.

Recommendations

The following recommendations are made for the study:

- Online teaching, learning and assessment are no longer an option, but a necessity for Unisa and will continue even for future years.
- Academic integrity needs to be worked on and improvements are needed.
- More guidance to students should be provided on videos for online exams.
- Use of social media to communicate with students.
- Radical paradigm shift and transformation in assessment types that are innovative are urgently needed for online platforms.

Conclusion

The agility seen in saving the academic year is highly commendable, including how the students agreed to move to online assessments, even though this was a sudden move. The findings also revealed that though there were challenges with

ICT, connectivity and load shedding, many students were able to write and managed to submit assessments successfully. Furthermore, resilience was shown by all stakeholders – academics, students and support staff. Despite their own wellbeing challenges, all managed to sail through the year and it was completed successfully. The benefits seen in using online assessments is the flexibility thereof, which minimized transport challenges and work-related matters. This saved money for the students to move from their homes to the exam venue, compared to the past. Since data were provided by the university, that was also a bonus for the students who come from a low socio-economic group. However, the issue of tools remains a challenge, since many do not have laptops and computers, but write on paper, take a photo of a script and then submit it. These online platforms revealed that Unisa has a student population that is diverse. There is a digital divide among the student population; some are excluded when we move to fully online platforms. It was evident that the ICT infrastructure needs to be upgraded, owing to the challenges experienced of systems that crash when there are uploads of many students in modules with more than 30 000 students. Going forward, this will need immediate attention from the university. What needs more attention is the use of proctoring systems and verification of students' identity throughout the assessment duration. This will assist in ensuring the credibility and validity of the online assessments and that the qualifications accreditation is not compromised. The human element of academics, support staff and students are central to the shift that was experienced in the institution. Furthermore, the wellness of individuals matters the most, even when we move to fully online platforms.

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Meahabo Dinah Magano
Manager Teaching and Learning
Department of Psychology of Education
University of South Africa
Pretoria
maganmd@unisa.ac.za

Chapter 10

Rethinking Formative Assessment in Times of COVID-19: A Critical Analysis of University Assessment in Eswatini

Karen Ferreira-Meyers
ORCID iD: https://orcid.org/0000-0002-4418-269X

Mandana Arfa-Kaboodvand
ORCID iD: https://orcid.org/0000-0002-0617-2060

Abstract

This chapter deals with broad issues of assessment and education. It highlights the importance of linking assessment with individual and societal outcomes. Examples from assessment as it was undertaken during the Covid-19 pandemic at the University of Eswatini (Department of Academic Communication Skills; Institute of Distance Education; Faculty of Education: BEd Primary and BEd Secondary – French major) are used to make a case for shifting the focus from summative assessment to formative assessment and the logic behind the shift and its significance. A major discussion point is that of the disruptive nature of the pandemic in education, which has brought about an unforeseen and more rapid move towards blended and online teaching, learning and assessment. The argument put forth concerns the compatibility of online learning and assessment with independent, self-directed and autonomous learning, and whether students can benefit from the sudden change in content delivery (from face-to-face to virtual) and learning facilitation mode. The chapter makes the point that in order to benefit from the given circumstances and use assessment for learning, rapid and fundamental changes in the delivery and practice of teaching are also essential. It concludes with some suggestions regarding the use of the advantageous aspects of e-learning and assessment.

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1 Introduction

The role of higher education is still a philosophical debate; however, it seems safe to assume that it can help students create knowledge that can lead to development in general and socio-economic development in particular (Chankseliani, Qoraboyev & Gimranova 2021; Gül *et al.* 2010). Education should engage with and respond to the requests of society and the diversifying needs of different social contexts (Fitzgerald *et al.* 2012; McCowan 2016). To reach this understanding and address the needs of the individuals and the society, the development of the cognitive capacity and critical thinking ability of the university students is essential (Indrašienė *et al.* 2021; Rogaten *et al.* 2019). It is only then that they can produce knowledge that applies to today's issues and prepares for the future. Since December 2019, Covid-19 has brought about unprecedented challenges to almost all aspects of individual and social life. Since the beginning of the pandemic, educational institutions, too, have been affected. To begin with, institutions have required of stakeholders to shift from face-to-face classes to virtual classrooms and digital learning (Marinoni, Land & Jensen 2020; Mseleku 2020; Muftahu 2020). This transition had to happen rapidly so that the curriculum could be delivered without much delay. Many higher education institutions around the world have tried their best to address the immediate challenges to keep the ball rolling. This immediate action was necessary and as Neuwirth, Jovic and Mukherji (2020:4) put it,

> Providing a quality education during a crisis such as this pandemic can be seen as a tool for building resilience by providing a sense of normalcy and purpose to both students and faculty in sensitive and meaningful ways.

More than a year has passed since all of these changes occurred and now is the time to enhance the quality of education in the new circumstances. It seems that after the Covid-19 pandemic, there is no return to our previous 'normal' (Ewing 2021). Educational institutions need to think beyond the classroom and consider the needs of society as well. At this stage, more than ever, education needs to rethink and re-imagine curricular design and delivery as well as

assessment mode and content. This new design is supposed to prepare the students to thrive in a future about which we know very little. Will we have a new appreciation for face-to-face classes, will we opt for digitalised and remote learning, or will we find a middle ground? Who will make these choices? Will it matter at all which mode of delivery we choose? Will it impact our students' employability? Will the job market demand new competencies? Will the world have a more global perspective on some key issues? Will there be a wider gap between the rich and the poor? And how can educational institutions address the challenges, if at all?

The University of Eswatini, too, experienced these phases of rapid change and adapting to the new situations in both teaching and assessing. In this paper, after reviewing some concepts relevant to our discussion, we present our experiences and observations on assessment at the University of Eswatini. We will also share the challenges that we have faced and our proposed solutions to them, with the hope that the insights we have collected during this time will direct us for future actions.

2 Assessment and Education

When discussing education, assessment of student learning deserves special attention. Assessment is not a standalone subject. It is not only a part of instructtion, but also a part of learning (Baleni 2015; Podung 2021). Assessment methods are linked to the whole educational system, particularly the way we teach and what we need to promote. Assessment is a medium for both making decisions and supporting learning and, therefore, we cannot change assessment without modifying our pedagogical approaches. At the same time exams have washback effects. The washback effect of assessment, also known as 'the hidden curriculum', highlights the importance of exams in education, as it determines how students infer what is important in a course (Kearns 2012:198). This point – being examination-oriented and not quality-oriented – shows the importance of summative assessment in the eyes of the learners and even teachers. Knowing what is expected from them in the exams will help learners to pass successfully, and in many cases the more successful the learners are, the more effective the teacher will be considered to be (Goe, Bell & Little 2008).

Assessment for learning (formative assessment) and continuous assessment are the buzzwords of modern assessment. With the emergence of

Covid-19 and the shift towards online assessment, new and diverse techniques for assessing learning are also on the rise. More than ever, many of these focus on formative assessment. Formative assessment can promote effective learning (Jennifer 2013), and through it, teaching can be modified. This type of assessment is built on some strategies that all put the learner in the centre (Black & William 2009). For the assessment to serve its purpose, which is helping students to learn and become independent learners (Chahine & Belkasim 2021), the criteria for success have to be clarified. Educators are required to assist students to understand the criteria and help them find ways to reach their goals (Black & William 2009). Teachers are supposed to modify their teaching and the curriculum based on the findings emerging from the tests (formative assessments). Besides helping students to stay on the right track in their learning, formative assessment can enhance self-directed learning (Leenknecht *et al.* 2021; Lubbe & Mentz 2021), which implies that the learners are responsible for deciding on their learning objectives and planning the learning strategies to achieve these (Serdyukova & Serdyukov 2013). Eventually this strategy paves the way for learner autonomy. To assist the students to reach this stage, formative assessment can provide continuous feedback on the assignments and tests that the students take during the term or school year (Hattie & Timperley 2007). Feedback, which is timely and clear to the students while also in line with the learning goals, assists the learners (Gedye 2010; Baleni 2015). It can be given by teachers, computers and peers. When learning goals are clear, students are trained, and rubrics are provided, students themselves can also actively take part in diagnosing the areas they need to improve. This delegation can lead to trust and constructive dialogues between teachers and students to assist the latter in determining what and how to learn. Formative assessment can continuously illustrate how close the learners are to the outcomes and what steps they need to take to achieve them fully. Therefore, implementing strategies and reaching established goals require the shared involvement of educators and students (Stull *et al.* 2011).

It should be noted that formative and summative assessments are not at the opposite ends of a spectrum. Despite summative assessment being used mainly for 'certification and evaluation of student achievement' (Rawlusyk 2018:2), the two types of assessments can overlap. Summative assessment is usually administered at the end of the term, and for the same reason, may not necessarily be used to take learning forward the way formative assessment does. However, if the students can still receive feedback on their performance

in the coursework or final exam, both assessments for and of learning have been fulfilled (Carless, Joughin & Liu 2006). The same applies to formative assessment. Even though formative assessment is usually continuous and students have opportunities to learn and improve their work, being rewarded for their efforts can also be an additional incentive. In formative assessment, self- and peer assessments are helpful, and feedback provided by the teacher or peers can play a vital role, as it may lead to self-directed learning. At the same time, the end-of-term or end-of-year exam can keep the students engaged.

3 Formative Assessment and Quizzes

In formative assessment, as Townsend and Mulvey (2016) suggest, the focus is on learning rather than on studying for a test. For that to happen, students should be able to track their progress and learn from their mistakes. They need to receive feedback that is timely and clear, and to have opportunities to engage with the feedback (Chahine & Belkasim 2021; Lubbe & Mentz 2021). Quizzes can facilitate this process. They are quick to design and mark and, therefore, give students multiple opportunities to improve and reflect on their learning more frequently. Students can have more interactions with their educators to improve before having a summative assessment that might decide their future. Simultaneously, educators can use formative assessments in the form of quizzes to reflect on their teaching and revise their plans. Since quizzes can be taken more frequently, teachers can identify the topics that require more attention and build on the areas on which the majority of the students need more support and practice.

As will be discussed in the next section, with the help of technology, designing and administering quizzes becomes more feasible, and providing timely feedback is also achievable. Built-in feedback strategies such as those offered by Moodle and computer-adaptive testing can make preparing online quizzes for formative assessment more accessible and more valuable for both teachers and learners.

4 Assessment and Covid-19

Covid-19 has drastically changed the practice of teaching, learning and assessment (Mahaye 2020). Teachers and more than 1.2 billion students (Jena 2020) around the globe had to prepare for transformation in a very short time and had

to discover how to teach, learn and behave within virtual contexts. This was the emergency response (Williamson, Eynon & Potter 2020) to a situation that required the changes to be implemented rapidly and be acceptable and available to stakeholders. Both students and teachers needed to be helped to feel safe in the online learning environments and had to have access to the required resources (Khan *et al.* 2021). To begin with, it has been moving education towards online classes and digital learning. Even the hesitant or technologically challenged stakeholders have had no other option than to go online. Before the pandemic, in many contexts, traditional exams were favoured over more modern trends in testing (Baird *et al.* 2017; Brown 2019; Deneen *et al.* 2019). During the pandemic, however, most institutions were left with no choice but to move towards non-traditional views and practices of assessment.

Technology is now an inseparable part of education and assessment (Deeley 2018; Elmahdi, Al-Hattami & Fawzi 2018). Khan *et al.* (2021:35) believe that 'the success of online teaching is dependent on the teacher's willingness plus the ability to integrate technology into their teaching and assessment, and feedback practices'. Therefore, the first step had to be to support teachers and help them to use technology better in preparing for and teaching in their classes. At the same time, students also needed assistance in preparing for this new model of learning and assessment (Muftahu 2020). For the online learning environments to be successful, some principles had to be identified. Some of these key principles, according to Korkmaz and Torman (2020), are connectivity, student-centredness, sharing knowledge, exploration, authenticity, using digital platforms and forming online communities. If teaching is in line with these principles, then the assessment should also consider them. These principles illustrate the need to assist students, so they learn to take responsibility for their learning. Formative assessment can help. Online environments can facilitate formative assessment, as they can lead to authentic, engaging, collaborative, meaningful, reflective and motivating experiences (Baleni 2015; Gikandi, Morrow & Davis 2011). Also, online quizzes can be taken more frequently, marked more quickly and help with providing feedback. Formative assessment is one of the ways that can allow students to identify their weaknesses and reflect on those areas in which they need to improve, without necessarily having to rely on others for encouragement and motivation.

Anderson's study (2009) on online quizzes for finance students in New Zealand is an example of their success as a tool for formative assessment and provides many possibilities. The author concludes that, by using quizzes,

'[s]tudents gain significant learning benefits, and teachers and education providers gain benefits in terms of time and financial resources' (Anderson 2009:36). Ogange *et al.* (2018) also support using quizzes and have another perspective. They studied a group of undergraduate students' perceptions of online formative assessment. Their study suggests that this type of assessment lessens the anxiety of the students while helping them prepare for their summative assessment and enhances the students' confidence. Townsend and Mulvey's (2016) study also confirms that using online quizzes designed on Moodle had a positive impact on the learning of Japanese nursing students and the feedback that the students provided at the end of the term about the use of online quizzes was positive.

Although multiple-choice questions have some shortcomings, they still remain one of the most popular types of questions in quizzes. They are easy to mark, 'cover a wide range of topics and students can receive feedback in a shorter period' (Rawlusyk 2018:11). If designed appropriately, they can encourage some level of higher-order thinking. Combined with other types of questions and tasks, they can function as effective testing tools that can promote learning.

However, despite the many advantages that online assessment offers, the lack of direct supervision is considered the downside by many educators. The concern is that students' opportunities for academic dishonesty and cheating increase (Mahabeer & Pirtheepa 2019). This is a fair argument; however, by modifying the education system, it may be overcome. Moving towards learner autonomy and making students responsible for their learning (Deneen *et al.* 2019) may be the solution, which again suggests that modifying assessment without modifying the whole education system is next to impossible.

During the past years, some short-term and hands-on solutions have been offered and shared by different practitioners and theorists to help to deal better with these issues. To minimise the chances of, or the desire for cheating, some suggestions are:

- Creating authentic assignments (Gikandi *et al.* 2011).
- Designing relevant policies
- Having dialogues with the students about the value of education
- Using software such as Turnitin
- Making sure that teachers are also respectful of academic integrity and acknowledge the sources that they use.

Another concern raised by practitioners regarding online assessment relates to decision-making, which is not necessarily visible or relevant during formative assessment (Cizek, Andrade & Bennett 2019), The main role of summative assessment is making decisions about the students, while informal formative assessment is not supposed to do that. Nevertheless, the solution might be to take advantage of both formal and informal formative assessments and rate of the students' progress. For formative assessment to be used as a decision-making tool, new policies are needed. In addition, assuming that testing is moving towards authenticity and will have real implications for the individual or the society can contribute to using formative assessment for making decisions about the students (Yorke 2003).

Finally, despite the advantages of using technology and online assessment, many educators around the world have their concerns and reservations. Lack of facilities and infrastructure, lack of knowledge and skills on how to hold assessment online, fear of the unknown, and lack of efficient policies to support the less conventional models of testing and assessment are among the issues raised (Seifert 2020). These are important issues which should be considered (early) so as not to increase inequality (Sosibo 2020) and blur the value of high-quality education.

5 Examples from the University of Eswatini (UNESWA)

According to the website of the University of Eswatini (www.uneswa.sz, accessed in August 2021), 7 645 students are enrolled at the university and studying across 48 undergraduate and 25 postgraduate programmes. Online learning and teaching platforms have been encouraged for a long time, and Moodle is the learning management system of choice. Some lecturers and departments, such as the Institute of Distance Education (IDE), have a long history of using the platform. Since March 2020, like most higher education institutions around the world, blended and online learning have been seen as the only available option for the University of Eswatini. However, despite the move to online, a final face-to-face exam (summative) was administered at the end of the previous university term as part of the students' overall assessment. Below we briefly look at the practices in the Department of Academic Communication Skills, in the Institute of Distance Education and in the Faculty of Education (Teacher Training – French major).

5.1 Academic Communication Skills

The Academic Communication Skills (ACS) module is offered to all first-year students, regardless of their chosen field of education. The objective is to enhance the students' academic English language proficiency and communication skills. Academic writing, including essay and summary writing, and practising reading comprehension are among the topics covered during this year-long module.

In March 2020, management obliged lecturers to move to online teaching. Lecturers had to act fast and move the materials to the online platform (Moodle) and prepare themselves to begin online teaching. Many students were hesitant to attend online classes, and some lacked the resources to join them. To accommodate all the students, it was decided that activities, exercises and materials would be put on Moodle and, throughout the term, students would have to take six online quizzes. This was to be done as part of formative assessment to ensure that the students were following the lessons. The quizzes had both open- and closed-ended questions, with some requiring of the students to write a summary or a paragraph. The closed-ended questions were automatically marked by Moodle, but the responses to the open-ended questions and the essays had to be marked by hand and by the lecturers. Since the aim was to assist students in their learning, giving constructive and timely feedback was essential. The students received marks for their quizzes, and later it was decided that these marks would be part of the final assessment.

5.2 Challenges and Solutions

The ACS students were in their first year of university, and they had had almost no opportunity to experience university life before the pandemic hit Eswatini. Many were far from being autonomous learners, as their previous experiences mostly did not move them in that direction. Also, their experience at the university was so limited and so different, and the changes in and out of the university were so sudden that even getting through the term was seen as a challenge. Like many other universities, the priority was trying to help students prepare for online learning and teaching, and eventually assessment (Ewing 2021; Muftahu 2020). At the same time, without helping them to take control of their learning and moving towards some independence, passing the course seemed impossible. This independence meant that the students had to be helped to be motivated to take responsibility for their own learning; however, the

learning environment was structured by the teacher (Holmes 2018:26.). In this case, motivation to self-regulate was imposed by the circumstances; therefore, even if some students were not motivated enough, they had no other option. As Serdeyukova and Serdyukov (2013:230) also state, the nature of online learning 'promotes self-directed learning'. Uneswa students, too, were held accountable for their learning by the circumstances. In the ACS module, quizzes were supposed to help keep students motivated. To support their learning, the lecturers needed to give feedback on the quizzes; nevertheless, the number of students each lecturer had and thus the amount of feedback that had to be provided in a limited time posed a major problem. To solve the problem, using the capacities offered by Moodle was the first option to some general instant feedback.

Then we studied the tests of the students carefully and noted the most common mistakes. Next, a series of very short videos (<5 minutes) – to ensure that all students could view them – addressing the problems and possible solutions were made. In one of the videos, students were introduced to the concept of reflection and self-assessment. They received the link to a checklist that they could fill in in their own time to make sure they had learned the concepts within their lessons. If they had any concerns, they could get in touch with the educators and seek additional help. In the final video they were invited to fill in a survey and a self-assessment quiz (on Quizziz) was given. The survey allowed the students to reflect upon what they had learned and what they thought they still needed to learn and the educator also had access to it. The reason for choosing a platform outside Moodle for the additional quiz was to assure the students that the quiz was only for self-assessment. Also, Quizziz offered music and avatars, and made the test less formal. After that another problem emerged. Many students did not even open the videos to watch them. To solve the problem, and also to prepare the students for their final exam, we had one face-face session. In this class, we briefed the students about the videos and the reason behind making them, and encouraged the students to watch them.

Another challenge, like at most other institutions, was the students copying one another's work and, to put it bluntly, their cheating. We had no other way but to trust and hope that through their cheating they would also learn. The result of the final face-to-face exam was also promising. Of the 535 students of the Faculty of Agriculture who sat the final ACS exam, only 13 did not receive the pass mark.

5.3 Institute of Distance Education (IDE)

In the Institute of Distance Education, assessment is done in a similar way in all study programmes and all course modules, except those dealing with field attachment. All IDE students complete at least two assignments and one test (preferably in a face-to-face setting) per course per semester. The marks for these formative assessments constitute the students' continuous assessment (CA) marks, which count for 40, 50 or 60 percent (depending on the course) of their final mark. The examination mark (exams are organised at the end of each semester) counts for the remainder (total = 100%). Lecturers are free to give additional tests and assignments if they deem this necessary.

Leeway is allowed to the lecturers when it comes to designing assignments and tests (less freedom is allowed when it comes to examination papers; these still follow a quite rigid structure). For example, reflections or reflective practices, multiple-source formative assessments, portfolios, digital or micro-badges, short learner reports in the form of short essays or short answers to specific questions, study cases and groupwork, including literature reviews and specifically defined problem-based questions, among others were used.

5.4 Faculty of Education: Specifics for the BEd Primary and BEd Secondary French Classes

In the Faculty of Education, assessment is also a combination of continuous assessment (formative by nature) and an end-of-semester examination (summative assessment). French is usually taught face-to-face, but the onset of the pandemic made that impossible. So, in the 2019–2020 academic year, we went from face-to-face to blended and then to fully online teaching, learning and assessing. In 2020–2021, we started fully online and then moved to blended learning. The academic year is still ongoing; thus, we do not know how this situation will evolve.

Assessment practices also underwent some changes: in previous years, the oral component of the tests, assignments and exams were more important. During the design phase, that component was integrated, but practical challenges (access to the internet, data costs, etc.) soon showed that keeping it in the implementation phase might not be feasible. For the immediate future, the use of social media platforms such as WhatsApp might be encouraged, as the data costs associated with these are less costly than those linked to video-conferencing tools such as Zoom (proprietary) or BigBlueButton (open source).

5.5 Challenges to Online Assessment as Experienced by Educational Stakeholders at the Institute of Distance Education and the Faculty of Education (BEd Primary and BEd Secondary – French major)

Plagiarism and cheating are definitely problematic areas when it comes to online assessment (Mahabeer & Pirtheepal 2019); focusing on independent, autonomous and self-directed learning (SDL) could possibly help alleviate the consequences of these 'social' ills. In line with Peytcheva-Forsyth (2018), we notice that new technology is constantly emerging and has the capacity to facilitate academic dishonesty and to assist students to (e-)cheat during formative and summative assessment.

At a practical level too, both lecturers and students noted various challenges. These were highlighted during executive and board meetings, but also in notes sent to deans and directors. The challenges ranged from access to the online assessments (technical challenges such as power or internet outages and lack of continuous technical support, but also technological ones such as the incorrect use of parameters within Moodle by the lecturers, such that the online test could not be written at the time it was scheduled) to lack of devices or adequate devices (not all students have a mobile phone or a laptop, and some of those who own such devices might not have the latest smartphone versions). Feedback was also noted as an important challenge, even before the onset of the pandemic: lecturers complain that they are overworked, students complain that they seldom get timely feedback on their formative assessment activities. As noted above, e-marking can be easier in some cases (short-answer or multiple-choice quizzes, for example) but remains more difficult in others (e.g. essay writing). One of the benefits of e-assessment is, according to Howe (2020) for example, the ability for feedback to be delivered promptly to the student. Howe (*idem*), citing Gilbert, Whitelock and Gale (2011), further links e-assessment's immediate and direct feedback to enhanced measurement and achievement of learner outcomes. In our case, for some types of assignments, we need to learn of ways to speed up the process of feedback giving.

6 Suggestions for Improved Assessment Practices at Institutions of Higher Learning

Based on our review of existing literature as well as our experience and obser-

vations, we suggest the following. Our recommendations take into account practical and theoretical, but also ideological aspects of assessment. Using the capacities offered by modern technology can facilitate formative and continuous assessment and are particularly valuable in classes with larger numbers of students.

In education, the need to update pedagogy constantly to match new circumstances cannot be downplayed. The Covid-19 pandemic has had overwhelming consequences, which brought about drastic changes in the way content had to be delivered (emergency remote teaching, blended and online teaching). Assessment too had to follow suit. In order to consider and evaluate the pandemic years, both academic performance expectations and the psychological effects of the pandemic have to be considered. Neuwrith *et al.* (2020: 13) propose the following expression, 'balancing rigour and passion' as the way in which educational stakeholders should tackle today's assessment issues.

Perhaps the time (and opportunity) have come to give more credit to formative assessment that can be done online using software and platforms such as Quizziz, Kahoot, Socrative, Padlet, Google Classroom, Zoom, Moodle and Edmodo, to name but a few. In line with the often-cited 21st-century skills, including independence and autonomy, firstly there has to be meaningful interaction with the students regarding their learning, but secondly also regarding the assessment of their learning. These stakeholder interactions can only be productive and fruitful if and when teachers, students and policymakers are aware of assessment for learning and are trained to implement such online. The implementation phase can only be attained if teachers, examiners and assessors are comfortable with using technology in their teaching and assessing. E-assessment will be beneficial to students if they are aware of online teaching and assessments techniques, methods and etiquette (Neuwrith *et al.* 2020), if they have the appropriate devices and are able to access the e-resources adequately.

We have discussed different challenges above, mainly related to technology and delivery, but further research should be undertaken in the field of the design of assessment 'content'. This last point probably deserves more attention and credit. Worthy test and assignment content are motivating, engaging and beneficial to society. It can be hoped that if the content of an assignment or test is creatively planned, is meaningful, and the students find it useful and unique, then they will be willing to engage. It may also pave the way for autonomy, or at the very least lead to independent learning. Through

using technology incorporating voice, pictures, music, games, interactions in the tests are possible. Sharing knowledge, student-centredness and authenticity are some of the main principles of online learning and they should all be considered when designing assignments and tests. Effective e-assessment needs to take them all into consideration.

All in all, using the capacities offered by modern technology can facilitate formative and continuous assessment and are particularly valuable in classes with larger numbers of students. Taking the measures mentioned into account may help make taking a test a memorable and positive experience.

7 Conclusion

After reviewing some key concepts regarding assessment in higher education institutions with a particular focus on formative assessment, this paper reported some of the experiences and challenges that students and lecturers at the University of Eswatini had during the Covid-19 pandemic. The Academic Communication Skills Module accommodated first-year students. To prepare students and keep them motivated, formative e-assessment was favoured. In the BEd Primary and BEd Secondary French courses, the focus was also on formative e-assessment, including assignments and tests. However, end-of-semester or end-of-year examinations are still compulsory, and they had to be postponed several times because of the sanitary measures which prohibited face-to-face encounters for many months in 2020 and again in 2021.

Education is supposed to prepare students to help create a better world, and to assist students in preparing for this future, good assessment can be valuable. As Gikandi *et al.* (2011:2334) put it, 'Assessment is the heart of formal higher education'. For good assessment, the learning objectives should be clearly defined and in line with the individual and societal demands and needs. The challenges of the future are unknown, and the circumstances imposed by Covid-19 have proven to be more thought-provoking than ever anticipated. Accordingly, the key message is to help prepare the students to cope with the challenges and design activities and tests that would contribute to their engagement, cognitive development and eventually lead to their autonomy. As educators we need to look after our students and ourselves physically and mentally and we need to learn to be a part of an educational culture that promotes life-long learning and critical thinking for our students and ourselves. To be able to do all of this, sharing experiences and acting fast

may be our only options.

One particular issue that the COVID 19 pandemic has shown is the need for increased international and global perspectives to analyse the various impacts of COVID 19 in the short, medium and long term. (Marinoni *et al.* 2020:6)

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Karen Ferreira-Meyers
Associate Professor and Coordinator Linguistics and Modern Languages
Institute of Distance Education
University of Eswatini
kmeyers@uniswa.sz

Mandana Arfa-Kaboodvand
Department of Academic Communication Skills
University of Eswatini
m_arfa@yahoo.com

Chapter 11

Reflecting on Digital Summative Assessments during COVID-19 Lockdown at a South African University: The Accounts of Social Work Academics

Bongane Mzinyane
ORCID iD: https://orcid.org/0000-0003-0684-0644

Siphiwe Motloung
ORCID iD: https://orcid.org/0000-0002-8921-0367

Abstract

In South Africa and around the world, the advent of the Covid-19 pandemic resulted in a series of lockdowns. This necessitated sudden shifts in teaching, learning and assessment, from the traditional classroom environment towards digital platforms. Academics, including social work academics, were caught off-guard and the shift had numerous implications for the processes of curriculum planning and implementation. The people-centred nature of social work presented unique challenges for the summative assessment process. As a result, the digital shift required of social work academics to reflect and rethink summative assessments. These reflective accounts called attention to the multiple contextual challenges that affect social work academics and undergraduate students when administering digital summative assessments. This chapter adds to the body of knowledge on effective teaching, learning and assessment in higher education in the dual era of digitization and lockdown.

Keywords: Digital summative assessments, Covid-19, lockdown, social work

1 Introduction and Background

It is clear that the Covid-19 pandemic is not solely a public health issue, but a challenge that is affecting all spheres of life, including the higher education sector (Shahzad *et al.* 2020; UNESCO 2020). Similar to other parts of the world, education institutions in South Africa were forced into a lockdown. which affected significant operations of teaching and learning (Mncube, Mutongoza & Olawale 2021). In South Africa, the catastrophe of the Covid-19 pandemic became a reality in March 2020 when the President of the country declared a National State of Disaster in terms of the *Disaster Management Act 57 of 2002* (RSA 2002; Landa, Zhou & Marongwe 2021; Mncube *et al.* 2021; Staunton, Swanepoel & Labuschaigne 2020). The South African government had to strike a balance between the aspirations of saving the 2020 academic year versus reducing the spread of the virus. Swift measures such as the total migration to online platforms of teaching, learning and assessment had to be taken in order to save the academic year while observing public health precautions. Social work education was no exception.

The social work profession has always been regarded as a people-centred profession, which is important when considering teaching, learning and assessment (Safodien 2021). Training of social work students also requires professional socialisation, within a classroom environment, which is rooted in a specific ideological base that deeply values interaction during teaching, learning and assessment (Simpson 2015). According to Makhanya and Zibane (2020:8), 'a university lecture hall is one of the university spaces that is assumed to promote critical engagements and to nurture the growth and development of social work students'. However, Simpson (2015) argues that large classes pose a threat to the professional socialisation and reciprocal interaction of social work students during teaching, learning and assessments. Due to the Covid-19 pandemic, the traditional pedagogy of this specific profession had to shift towards the digitisation of teaching, learning and assessment. The digitisation of summative assessments came with distinct dynamics that are fuelled by South Africa's contextual challenges, including inequality and massification in higher education.

The chapter therefore highlights the reflective experiences of the authors, who are social work academics, regarding the practical implications of digital summative assessments in a South African university. These reflections have been done in relation to first-, second-, third- and fourth-year students from the Bachelor of Social Work (BSW) programme.

In order of sequence, this chapter firstly presents the context of teaching,

learning and assessment in social work education. Then, an overview of challenges in higher education locally and globally is provided. Thirdly, the actual reflections about digital summative assessments in the era of Covid-19 lockdowns are presented. Lastly, strategies for addressing the challenges are proposed.

2 Teaching, Learning and Assessments in Social Work

At global and national levels, considerable progress has been made in terms of developing social work education and the profession (Simpson 2015). The International Federation of Social Work (IFSW 2014:1) argues that

> social work is a practice-based profession and an academic discipline that recognizes that interconnected historical, socio-economic, cultural, spatial, political and personal factors serve as opportunities and/or barriers to human wellbeing and development.

These factors are crucial and worth considering in this chapter, as it focuses on the administration of digital summative assessment processes of social work as a practice-based academic discipline.

The Bachelor of Social Work (BSW) programme is a four-year, undergraduate programme that is registered with the National Qualifications Framework. Social work education in South Africa is underpinned by a policy document of the Council for Higher Education [CHE] (2015), namely the *Qualification Standards for Bachelor of Social Work*. This policy frames teaching, learning and assessments at all South African higher education institutions that offers social work. The BSW programme has theoretical and practical modules as per the prescripts of this policy. Each module aims to achieve at least one or a combination of the BSW standards that are contained in this policy. Similar to the Bloom's Taxonomy of Assessment, this policy also holds the premise that each level of social work education has distinct learning outcomes that are specific for each level of study. For example, first-year students are mostly expected to cover the principles, values and foundations of the profession, and from the four social work modules done in first year, two modules are practical. At the second-year level, social work application of the knowledge, skills and values of social work practice is covered. Once again, from the four modules done at this level, two are practical. At the third and fourth-year-levels of study, theory modules and in-service learning that requires of students to go out to

specific institutions then happens. Simpson (2015:565) argues that,

> The purpose of teaching in professional disciplines differs from pedagogies in other academic disciplines. Not only must the student learn the knowledge required for the profession, but they must also learn what it means to be a professional.

Given this argument, one of the BSW standards in terms of the above policy, expects students to demonstrate knowledge, practical skills and theories. Accordingly, the social work assessments are therefore crafted in a manner that accommodates the practical and theoretical requirements of social work education. However, digitisation and Covid-19 disordered the pedagogy of these processes; hence the need to rethink, reflect and re-strategize for the era that Safodien (2021) refers to as 'Social Work 4.0' or the 'e-social work' era. An overview of the challenges in social work education, exacerbated by digitisation, therefore needs scrutiny.

3 Challenges of Digitisation in South African Higher Education: A Focus on Social Work

3.1 Inequality

South Africa as a whole, including higher education, is characterised by deep inequality (Staunton *et al.* 2020). Makhanya (2020) supports this by revealing that the hidden norms of racial division, class division and inequality continue to exclude poor and disadvantaged social work students. Furthermore, existing inequality in South Africa's higher education system was compounded by the sudden digitisation of teaching and learning. The higher education leadership therefore had the challenge of dealing with inequality and fast-tracking digitisation in preparation for assessments, within the context of the new requirement to work from home. The UNESCO (2020) report on Covid-19 captures this predicament succinctly when it states that,

> authorities must on the one hand prioritise efforts aimed at maintaining contact and educational continuity for those populations that have greater difficulty connecting and live in social and economic conditions that are least conducive to supporting education processes at home, and,

> on the other hand, design protocols for resuming and continuing education … which take into account the differences and inequalities ….

Within the South African context, the advent of Covid-19 meant that the President had to declare a National State of Disaster, which introduced a series of lockdowns in order to curb the spread of the virus (Mncube *et al.* 2021). This meant academics and students would work from home.

When working from home, inequality in terms of the urban-rural divide is particularly challenging because of limited educational resources in rural, as opposed to urban South Africa. Social work academics such as Kajiita, Nomngcoyiya and Kang'ethe (2020:25) point out in their paper that 'resources such as internet connectivity, availability of electricity, and devices were lacking among rural based students'. This is specifically the case where online resources and connectivity are concerned, with many in rural areas struggling with a lack of resources and connectivity, which would invariably affect online teaching, learning and assessments. Mncube *et al.* (2021:392) affirm this when they point out that the pandemic exposed 'many inadequacies and inequities in the education systems that ranges from access to the broadband and computers needed for online education and the supportive environments needed to focus on learning'.

In their study, 'Complexities in Student Placements under Covid-19 Moral and Practical Considerations', Sarbu and Unwin (2021:1) in the United Kingdom revealed that social work 'students responded and reported that the moral and practical consequences of a sudden forced move to the "new normal" of online working and assessment raised serious issues about the boundary between home and work life'. This signifies that the digitisation that is related to Covid-19 affected social work education even in European countries. However, within the South African context, inequality was one of the key factors that exacerbated the challenges of teaching, learning and assessment. This is supported by Safodien (2021:259), who asserts that 'the issues of inequality and personal identity are challenges that fall directly within the scope of practice of the social work profession'. According to IFSW (2014), the broad principles of social work, namely social justice, doing no harm, respect for human rights, diversity and the inherent worth and dignity of all human beings, underpin the importance of scrutinising these issues within social work education (IFSW 2014). The consequences of inequality and social injustices that affect students in higher education requires critical examination.

3.2 Massification, Assessments and Social Work

Scott (1995, cited in Adetiba 2019:6) describes 'massification as the rapid increase in student enrolment in higher education'. The end of apartheid meant there was a move towards making higher education accessible to the masses and not just the elite. This process was referred to as massification of higher education, which meant the increased and rapid acceptance of more non-white and poor students into higher education institutions. With the move to massification, the Department of Higher Education and Training (DHET) wanted to improve the economy and the social status of the majority of South Africans as well as provide vital skills to the economy (DHET 2014). Within the context of massification, social work student numbers have also increased (Simpson 2015). Massification in social work teaching, learning and assessment was particularly detrimental, because the increasing student numbers were not matched with increasing staff numbers, which affected the quality of social work student practice (ibid). The supplementary challenge of Covid-19 and digitisation made these issues even worse because of the 'digital poverty' of students, where they could not afford the necessary information technology hardware for them to study effectively from home (Sarbu & Unwin 2021). Moreover, social work students need to be socialised professionally to exit higher learning in order to be ready to work with people face to face outside the context of digitisation. In addition, Simpson (2015) argues that the nature of the social work profession requires the 'professional socialization of students', where there could be opportunities for incidental and practical learning. Similarly, Sarbu and Unwin (2021:1) state that 'opportunities for incidental and tacit forms of learning were lacking in online working environments'.

Nukunah, Bezuidenhout and Furtak (2019) express that massification has led to the need for educational resources that governments cannot provide. In turn, this has affected the quality of teaching, learning and assessments overall, including social work education. Yet another concern is that, despite the improved access, there is a lack of academic success and throughput rates of students (Manik 2015). The emergence of Covid-19 with its numerous resource challenges simply exacerbated existing teaching, learning and assessment challenges in social work which were largely a by-product of inequality and massification in the higher education sector. Other challenges that are associated with large classes include compromise integrity, validity and reliability of assessments (Atkin, Black & Coffey, 2001; Secolsky & Denison 2012).

The next section presents the reflections of authors within the context of all these challenges that affect the administration of summative assessments.

4 Reflections: Digital Summative Assessments during the Covid-19 Lockdown

4.1 Institutional Challenges and the Administration of Digital Summative Assessments: The Transition Struggle

When the Covid-19 pandemic began, various communications, both nationally by our South African president and from the university, conveyed the message that teaching and learning in higher education would continue online and that no student should be left behind (DHET 2020). Training subsequently began online on how to navigate online platforms for teaching and learning. However, under immeasurable pressure to make things work in these novel circumstances there were unsurprisingly no specifics on how to tailor assessments to suit these online platforms and for best practice. Commenting on this pressure, Mpungose (2020:2) states that lecturers were 'forced to adapt their teaching approaches without a clear roadmap'. There was clarity on our part as academics; our role was to assist students to learn for the administration of continuous assessments at a formative and a summative level.

As social work academics, we were ambivalent about the use of digital assessments, because we lacked knowledge on how to prevent unethical behaviour of students when participating in digital summative assessments, especially in our profession that has a clear code of ethics that promotes morality. It was impossible to ensure that students would do their digital summative assessments with integrity. Previous studies have revealed that digital teaching and blended learning approaches have always been accepted reluctantly by academics in the South African higher education system, prior to the transition that was brought about by Covid-19 lockdowns (Davis 1993; Tshabalala, Ndeya-Ndereya & Van der Merwe 2014). Over the years, academics' perception of online learning has been a barrier to the transition to digitisation, although higher education institutions in South Africa have slowly been introducing digital learning over the years (Tshabalala *et al.* 2014). Warburton (2008) also reveals some of the factors that hinder the acceptance of innovation and electronic

assessment by academics. These factors include fear of failure in academics, difficulty in using electronic systems, and lack of digital resources (ibid). Another study by McCann (2010) indicates that some academic staff were reluctant to conduct e-assessments because they were already doing excellent work administering assessments traditionally.

A study by Bagarukayo and Kalema (2015) evaluating e-learning usage at South African higher education institutions before Covid-19, correctly argues that challenges of adopting e-learning were more complex and structural. These authors indicate that the structural challenges that impede the transition include lack of infra-structure challenges, shortage of skilled staff, large classes, multi-lingualism, unequal access, inadequate technical support, poor user support, lack of university policy, technological challenges and lack of pedological strategies (ibid). The study seemed to pre-empt the difficulties that would come as Covid-19 forced all higher education institutions in South Africa to migrate to online. Complications for social work academics and students as a result of Covid-19 were further exacerbated by the lack of preparedness of the university structures to deal with the demands of the transition to digitisation. It took some time for the university to provide all staff and students with electronic devices and data to ensure that working from home was viable. The institutional support showed disorganisation, mixed messages and contradictions, which created further panic and a sense of insecurity to an already tenuous situation. For example, university sessional dates were adjusted several times during the 2020 academic year. Despite all these challenges, the prevalent message that was communicated by the government was to 'save the 2020 academic year' (DHET 2020). This message added pressure to an already shaky academic year. The non-existence of updated internal assessment policies for the transition posed a challenge for us in administering summative assessments.

As a result, the route that we also followed was to set summative assessments in a similar way as we had done during face-to-face teaching and to simply transfer our previous way of assessing to the online platforms. Knight (2002:276) cites Entwistle (1996:11-112), who states:

> The single strongest influence on learning is surely the assessment procedures … even the form of an examination question or essay topics set can affect how students' study … it is also important to remember that entrenched attitudes which support traditional methods of teaching and assessments are hard to change.

In other words, our inclination to simply continue traditional ways of assessing online was inevitable, especially with no concrete guidance on how to do it differently. This undoubtedly posed challenges to the administration of digital summative assessments for us as well as the students.

4.2 The Overemphasis of Summative Assessments

Summative assessments have been the subject of academic debates due to the evolving context of teaching and learning across the globe. A number of authors have argued that assessment, in general, is the heart of students' learning (Spiller 2012; Glazer 2014; Timmis, Sutherland & Oldfield 2016). In the University of KwaZulu-Natal's Assessment Policy (2012), summative assessment is defined as a type of assessment process that enables a total evaluation of the extent of the progress of students, at the end of a learning program or a finite part of the program. Nonetheless, Knight (2002) criticises the timing of summative assessments and their implications on teaching and learning. He argues that it provides 'performance feed-out' instead of useful feedback for further learning. He further states that feed-out in a summative assessment has a 'certifying' function instead of providing feedback for further learning (*ibid*). In support, Ahmed, Ali and Shah (2019:111) assert that 'it is important to notice that summative assessment focuses on past performance but does not offer possible direction to improve learners' performance in the future'. As social work academics, we also did not get the opportunity during lockdowns to provide feedback on digital summative assessments because of condensed semesters, constantly changing sessional dates, and limited time for marking restricted our ability to mentor students. Msiza, Raseroka and Ndhlovu (2020) argue that it is difficult to ensure proper feedback and student mentorship due to large classes in South African higher education. Glazer (2014) criticises the inclusion of both formative and summative assessments as unnecessary in higher education. She argues that 'formative plus summative assessments' are problematic because they increase the workload of both the students and academics. This is supported by Landa *et al.* (2021), who indicate that during the Covid-19 lockdowns, academics would find it difficult to administer summative assessments due to the overwhelming administrative demands of digital teaching and learning. The key message from the government and our institution was to save the academic year.

Another challenges, within our context, was the fact that summative assessments were given more weighting in terms of importance because they

were awarded marks, whilst continuous and formative assessments were acceptable, but were not to be awarded marks. This had implications for social work, in that many of our continuous assessments were crucial to student learning; however, since they were not awarded marks, students did not take them seriously. This was evidenced by poor attendance during these assessments. Based on our experience, marks were a commodity for our social work students and served as motivation for them to participate in assessments. This was particularly problematic for us because of the biased mandate towards summative assessments we received from our university. Given all these challenges, Timmis *et al.* (2020) then advocate the need to rethink assessments more especially in the era of Covid-19 and digitization.

4.3 The Home as an Office and/ or Study Space

The mandate to work from home, as a result of Covid-19 and the subsequent lockdowns, caught us, including other academics, unprepared. One of the main challenges was to balance home-life and work demands. The whole of South Africa was under lockdown, and as a result, university students and staff were sent home while the movement would be highly restricted. As colleagues with children, with one of us also having elderly parents to consider, we both had to make important decisions under pressure. We decided to move to our respective rural homes to safeguard ourselves and our families. Home as an office and or study space was not conducive for us, as well as for many social work students and colleagues. This is supported by Sarbu and Unwin (2021) how social work students at the University of Worcester felt about the sudden shift to working online. These researchers indicate that social work students raised serious issues about the boundary between home and work life, and the relationship-based nature of social work, which was compromised by online education (ibid). Consequently, our teaching was compromised because of lacking tacit and incidental forms of learning during remote teaching, whilst they are integral to social work learning. Summative assessments in the South African social work higher education learning context invariably lacked the tacit and incidental component as well, given their digital nature during Covid-19 lockdown.

Other issues that exacerbated the challenges were the fact that students and colleagues, as well as us also experienced the illness and/or death of loved ones from Covid-19. The events described also affected our mental health and students' mental health alike. All the concerns outlined were genuine for many

social work students and colleagues. However, these concerns would compromise the integrity of the summative assessments set, because it was impossible to prove whether the challenges communicated were genuine or not, especially when students would not attempt assessments.

In addition, a common problem that we also observed amongst our students was unstable and unpredictable electricity and network coverage. Kakepoto *et al.* (2021) reveal that slow internet speed, expensive internet packages, poor computer literacy and loadshedding of electricity were some of the key factors that affected both academics and students during digital teaching and learning in the lockdown era.

Msiza *et al.* (2020) argue that some students from economically disadvantaged backgrounds would normally use a computer in higher education for the first time. Computer illiteracy also limited the fair participation of our students in digital summative assessments, but this was worse for first-year social work students. Mthethwa (2018, cited in Makhanya 2020:109), states that 'poor [social work] students coming from rural areas remain unprepared for such technological pressures'. A factor that exacerbated the challenges of computer illiterate students was the requirement for students to seek help through digital means.

Our social work students also reported competing socio-educational demands, where assessments were competing with challenges such as being required to do chores or being abused physically or mentally. Students would therefore request more time to do digital summative assessments. There were students that described living in conditions that were overcrowded, and this was observed when some students would switch on their cameras during virtual class sessions.

The research findings of Dube (2020:136) reveals that,

> while the South African government is promoting online learning as the only alternative in the context of Covid-19, this mode excludes many rural learners from teaching and learning, due to a lack of resources to connect to the internet, the learning management system and low-tech software.

This then indicates that the challenges of digital summative assessments were also exacerbated by the socio-economic dynamics of rural and disadvantaged South Africa. Consequently, students from disadvantaged backgrounds, especially those from rural areas, were inevitably excluded by the shift to digital platforms.

4.4 Massification and Summative Assessments in Social Work Practice Modules

Large classes are the norm in South African higher education. Simpson (2015: 564) argues that the 'improved access to higher education and the increase in student numbers without a simultaneous increase in resources has given rise to numerous challenges'. The Social Work department is an example of an increase in student numbers, which did not include an increase in resources. In 2020, a limited number of 11 academics had to work with a minimum of 160 students in each undergraduate module. These few academics also had to render post-graduate supervision, community engagement and other administrative duties. While dealing with these large student numbers, the Covid-19 lockdown necessitated that we also had to design, implement and moderate digital assessments. The choice of some of our assessments was influenced by large numbers. In all our modules from the first, second, third and fourth year we implemented eMCQs that were quicker to administer and mark. However, the nature of the Social Work curriculum requires critical engagement and more practical and professional socialization of students (Sewpaul 2010; Simpson 2015).

For example, in a practice module at an exit level (fourth year), students had to submit a physical portfolio of evidence for their field practice, prior to the Covid-19 lockdowns. However, due to the swift digitization that was associated with Covid-19 lockdowns we had to adopt a convenient method of allowing students to submit an e-portfolio. The e-portfolio allowed students a chance to submit unlimited pages for marking. As a result, finalizing the marking and providing intensive feedback to students was a struggle due to the compression of the 2020 semesters and the large number of students. Having to mark an average of 160 assessments and sending them to students via e-mail were a reality that we were faced with. Working non-stop and long hours were the order of the day. We were obliged to meet the deadlines of assessments and also ensure 'catch-up' assessments continuously for those students who did not attempt to participate in summative assessments. This further highlights the need to rethink more efficient ways to administer digital summative assessments.

4.5 Cheating, Plagiarism and eMCQs: Challenges of Integrity on Digital Summative Assessments

During Covid-19 lockdowns, large student numbers and time limitations were some of the factors that gave impetus for the social work discipline to adopt

electronic multiple-choice questions (eMCQ) as one of the main strategies for summative assessment. The eMCQs were administered from the Moodle platform. Singh and De Villiers (2017) appraise the use of eMCQ assessments. They argue that the advantages of this assessment strategy included 'rapid automated marking; it is more convenient in large classes; it has replaced the burden of labour-intensive traditional marking; the marking is objective and unbiased; exams have specified durations or open-ended periods; and there is a possibility of covering of broad ranges of topics' (*ibid*:165). On the other hand, Hedding *et al.* (2020:) argue that 'academic staff at contact universities typically have little, if any, experience or training in the pedagogy or delivery of online learning'. Due to lack of training, we also experienced numerous challenges regarding digital summative assessments. One of the challenges in the administration of eMCQs as summative assessments was technical inadequacies in administering eMCQs on Moodle. The use of Moodle as a mode of implementing digital summative assessments brought a number of challenges for us, which included non-proctored cheating, plagiarism and sharing of answers amongst students. Likewise, Mpungose (2019a:5033) also criticises the use of Moodle as a learning environment by asserting that 'Moodle was officially introduced without clear exposition of the underpinning theory, training, and implementation framework for its adoption'. Additionally, Pinar (2004, cited in Msiza *et al.* 2020:48), criticizes the use of eMCQs, in that this approach is 'an anti-intellectual project that reduces academics to mere technicians'. We also felt the unsolicited obligation of using a digital platform for summative assessments. Due to lack of training and experience, in our initial attempts to use eMCQs we struggled to use technical features that are available on Moodle, such as reshuffling of questions and deferred feedback on correct answers, amongst others. These Moodle features were later discovered through experiential learning, and thereafter they served minimally to control the degree of cheating by some social work students.

Despite having Moodle features such the reshuffling option and the option of deferring correct answers, cheating and unethical sharing of answers through social media were other challenges we experienced. At a loss, we questioned the integrity of the assessments, which we felt were somewhat compromised. Msiza *et al.* (2020) argue that cyber cheating is amongst the key challenges that academics are facing in the era of massification and digitalization in higher education. During the Covid-19 lockdowns, we came across numerous cases of cheating. It was quite worrying to encounter flagrant cheating during

eMCQ summative assessments, evidenced by some students' reporting sharing of answers through WhatsApp groups and other social media platforms. In addition, Mpungose (2019b) and Manca (2020) reveal that WhatsApp and other social media are amongst the most-used platforms for digital learning, but the use of social media is a vehicle for cheating.

Prior to Covid-19 lockdowns, summative assessments were implemented face-to-face and in an invigilated environment in order to prevent cheating. Gamage, De Silva and Gunawardhana (2020) support this assertion when they argue that invigilated assessments are often considered as more secure, but they are not an option with online learning. Furthermore, detecting any cheating would be significantly challenging (ibid). We also struggled to detect cheating due to the unavailability of digital proctoring tools, as described by Brouwer, Heck and Smit (2017). Brouwer *et al.* (2017) evaluate a digital software tool called ProctorExam Pro, which they use in their study to prove its effectiveness in preventing cheating on digital assessments. In our case, we did not have such resources; moreover, virtual invigilation is highly expensive (Gamage *et al.* 2020).

Other social work assessments included essays that were marked online. Ndebele (2020:39) points out that 'plagiarism has become a recurrent challenge in higher education institutions, threatening the integrity of universities and their academic standards'. As social work academics we have co-existed with the challenges of cheating and plagiarism prior to the catastrophe of Covid-19 lockdowns and it is indeed a threat to the integrity of assessments in higher education. The recent shift to digital teaching and learning worsened the manifestation of this challenge. Anney and Mosha (2015, cited in Ndebele 2020: 42), argue that the growth and improved access to the internet is a basic factor that has made student plagiarism more sophisticated and more tempting, and this was our experience with some of the social work students.

Ndebele (2020:39) further asserts that,

> many universities have thus instituted reactive measures that focus on detecting and policing plagiarism with little consideration of proactive and educational measures that can address the primary reasons for plagiarism and foster a community of academic integrity on their campuses.

This assertion by Ndebele (2020) indicates that universities need to

interrogate the causes of plagiarism thoroughly, rather than being reactive in dealing with plagiarism.

During the era of Covid-19 lockdowns, cheating and plagiarism within our context were also compounded by large class numbers, time limitations, an unstable infrastructure for online learning, socio-economic dynamics of students and lack of experience of using online platforms by ourselves as academics. As a result, rethinking the process of assessments is crucial.

5 Recommendations: Rethinking Digital Summative Assessments

In line with the above challenges, as social work academics we have learnt that there is a need to rethink carefully what the ideal digital platform in our context is when administering summative assessments. The knowledge that one size does not fit all needs practical application. With this consideration in mind, the following are some of the areas that need rethinking where digital summative assessments in social work are concerned.

5.1 Online Digital Literacy and Integrity Module

Given the challenges of digital illiteracy amongst social work students, considering having an online digital literacy module would be a viable solution to assist students who start to use a computer for the first time when entering higher education. This would also assist social work undergraduate students who had limited skills, as well as assist students to become comfortable with the learning platforms in university. To deal with issues of plagiarism and cheating, which affect the reliability and validity of summative assessments, the digital literary module would also include a section on integrity, where professional ethics would be taught and discussed, as well as step-by-step teaching on writing without plagiarizing.

5.2 Thinking Contextually about Digital Summative Assessments

It is imperative to reiterate the importance of the fact that at the core of teaching, learning and assessments is the student. The dynamics of students must be

considered, because they either enable or disable the process of digital summative assessments and the digital pedagogy as a whole. The iteration by the Department of Higher Education that no student should be left behind was on the basis of understanding how valuable each individual student is. As emphasized previously, the students that we teach in the era of massification come from varied backgrounds. Many of the students in social work in particular emerge from disadvantaged backgrounds and environments that do not support the digitisation of summative assessments. It is therefore necessary to rethink some of the types of summative assessments students are given. The option of co-creating assessment with students is worth exploring.

Another alternative is creating a reflective journal for both staff and students that would capture the lived experiences of staff and students, providing important opportunities to develop and advance knowledge for staff and students reciprocally. Added to this would be reflective teaching by staff as well as concerted staff accountability programmes.

5.3 Policy Reform and the Pedagogy of Digital Assessments

Training of staff on the pedagogy of digital assessments and the execution of appropriate and contextual online learning is a gap in the current era. As previously stated, there was a definite lack of planning for transitional assessment strategies because of the accelerated move to digitization. To improve teaching, learning and assessments, and specifically digital summative assessments, clear guidelines, standardization of transitional policy and legislation are needed to safeguard academics and students, as well as the integrity of summative assessments overall. Added to this, the provision of more resources and staff to manage large student numbers is imperative.

6 Conclusion

The Covid-19 lockdown and digitization of teaching and learning processes caught all academics including social work academics off-guard. The implycations of the Covid-19 pandemic were unprecedented in our time. Higher education and all other sectors in our society were plunged into a survival mode that prevented adequate reflection on an appropriate and contextual way forward. This chapter was an attempt to reflect and contextualise specific experiences of two academics in social work when administering digital summative assess-

ments. Areas of scrutiny in the administration of summative assessments included the rapid transition to digitisation, inequality, massification and contextualisation. The aim of the academic reflections was to highlight inadequacies in policies and practices in this new era with the aim of paving an improved way forward for students and social work students in particular. This was done through by reflecting on our experiences with the ultimate aim of reapplying the lessons learnt from the process.

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Bongane Mzinyane
Lecturer
Social Work
University of KwaZulu-Natal
Durban, 4001
MzinyaneB@ukzn.ac.za

Siphiwe Motloung
Lecturer
Social Work
University of KwaZulu-Natal
Durban, 4001
motloungs@ukzn.ac.za

Chapter 12

A Rapid Forced Adjustment in Assessment Strategy in a Time of Disruption: The Idea, the Impact and the Change

Shamola Pramjeeth
ORCID: https://orcid.org/0000-0002-8673-1634

Willy H. Engelbrecht
ORCID: https://orcid.org/0000-0002-6983-0032

Gillian Mooney

Priya Ramgovind
ORCID: https://orcid.org/0000-0002-3171-7050

Abstract

The Covid-19 pandemic and the intermittent lockdown restrictions since March 2020 have caused significant disruptions to higher education institutions' (HEIs) assessment strategy in South Africa. With traditional, campus-based assessments' completion and marking unable to continue, many HEIs had to rethink assessment principles and approaches to ensure the continuation and completion of the 2020 academic year. This chapter aims to reflect critically upon the revised assessment strategy applied by a private HEI (PHEI) due to the disruptions caused by the Covid-19 pandemic. This is achieved by reflecting on the conceptualisation, process and implementation of an equitable offering of online assessment delivery in an approach to enable students to complete the 2020 academic year successfully. The assessment strategy change had three focus areas. Firstly, sit-down, campus-based assess-

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ments were converted to Take-Home Assessments (THA). Secondly, staggered submission due dates were replaced with final submission end dates for all semester-one assessments. Within this timeframe, students had the opportunity to submit their assessment once for feedback to their lecturer and use the feedback to submit an improved assessment. Lastly, the marking process changed from hardcopy to online, a concept that lecturers were unfamiliar with.

This chapter reflects on the sudden change in assessment strategy to adapt to the unfamiliar digital teaching and learning context and reflect on the lessons learned from the adoption of an assessment policy, causing more disruption and anxiety amongst students and staff. The findings suggest that the pandemic enabled the PHEI to change the traditional ways of assessing and utilising technology to assess students' work during a time of uncertainty. The PHEI showcased its agility and flexibility within a disruptive environment through innovative, student-centric thinking on which institutional policies, processes and systems were updated to ensure principle decision-making remains the constant variable in a time of chaos.

Keywords: assessment strategy; Covid-19; disruption; higher education; lessons learned; principles; teaching and learning

1 Introduction

Governments imposed strict lockdown regulations impacting almost every industry globally in an attempt to minimise the spread of the novel coronavirus (Lyons, Chrisopoulos & Brock 2020; Ozili 2020). The closure of HEIs impacted approximately 80% of the world's student population (Sahu 2020; Toquero 2020). Learning Management Systems (LMS) permitted HEIs to transfer and facilitate students' learning and completion of assessments online (Gewin 2020; Marshall, Roache & Moody-Marshall 2020). However, online learning had a detrimental impact on under-privileged students, who might not have had the infrastructure (stable internet, Wi-Fi or data) and equipment (laptop, smartphone or computer or textbooks) required to study online and/or at home. In most rural areas in South Africa, infrastructure posed a significant risk to students learning, as the internet is either unstable or has poor reception from mobile communication network providers (Cuaton 2020; Mathiba 2020; Ozili 2020). UNESCO supported the move to online learning; however, the

challenges faced by underprivileged students in developing economies were not considered, compared to their counterparts in developed economies (Ozili, 2020).

Considering the challenges some students faced, HEIs showcased their support towards students' success in completing the academic year (Kay 2013). Through digital technology platforms such as institutional LMSs, teaching and learning continued; however, access to a device, Wi-Fi, and data did pose a challenge for many students (Ramgovind 2020). The disruption caused by Covid-19 further stressed the importance of evaluating the eligibility of traditional assessment strategies applied in the 21st century amidst a world pandemic.

The PHEI understudy amended its teaching and learning strategy and assessment policy to address the social inequalities that some students faced, ensuring equal and equitable opportunities for all students to complete the first semester of 2020 successfully and return to lectures in the second semester. The purpose of this chapter is to reflect critically on how the PHEI's changes in the assessment and teaching and learning policies impacted the associated anxiety, stress and frustration levels of students and staff.

2 Literature Review

The literature review briefly considers the Covid-19 pandemic in context with higher education. The focus of the review is a brief analysis of the model used at the PHEI, including the theoretical foundation, and how it informed the development of the pandemic assessment strategy presented.

2.1 Higher Education

The higher education (HE) environment is highly regulated, with the Council on Higher Education (CHE) overseeing the accreditation of academic programmes for both public and PHEIs in South Africa (CHE 2018; DHET 2020). The success of an HEI is based on its ability to deliver employable graduates who contribute actively to the economy and society (Persichitte 2013). In the context of regulation and output demands, HEIs are also faced with increasing student numbers. In 2019, a record 208 978 students were enrolled at PHEIs in South Africa, 16% of the total higher education student population (DHET 2019). It was against this context of higher education and

the Covid-19 pandemic that the primary way in which HEIs operate was fundamentally altered.

The PHEI understudy employs a centralised model in which all curriculums are developed, quality-assured and distributed from the central support office to the multiple delivery sites across South Africa. The centralised model supports the principle of equity of delivery and standardisation. The assessments provided to students are all blind, in that no lecturer sees the assessment prior to the actual sitting.

2.2 The Institutional Model of Teaching and Learning: Vygotsky's Constructivist Approach and Changes to the Strategy due to the Pandemic

Vygotsky's sociocultural theory states that human development is viewed as a socially mediated process in which children acquire cultural values, beliefs, and problem-solving skills through collaborative conversations with more informed members of a culture (Vygotsky 1978).

In this conceptualisation, lecturers and curriculum developers are located as those who are experienced in the culture, or experts in a certain field (a discipline, the embedded skills of higher education). The students are positioned as novices in this culture, and learning the culture, which is a set of new tasks, places students in a state of conflict in order for learning to occur. This conflict is between the knowledge and skills already acquired (actual level of development) and the more advanced set of knowledge and skills (potential level of development). In Figure 1, the arrow represents thinking that is unchanged. The triangle represents thinking that is changed to a more advanced level through the incorporation of a new tool.

However, the teaching and learning circumstances created by the pandemic meant that both lecturers, curriculum developers and students were placed in a position in which new tasks had to be performed, and new knowledge and skills had to be acquired.

2.2.1 The Curriculum Developers

Curriculum developers are employed at the central academic office of the institution under study. The actual level of development requirements for curriculum developers are designing assessments to be completed under

standardised conditions. These standardised conditions include completing a range of assessments within a time constraint, with no access to existing resources, no requirement to source and use additional resources, and generally no requirement to reference sources correctly.

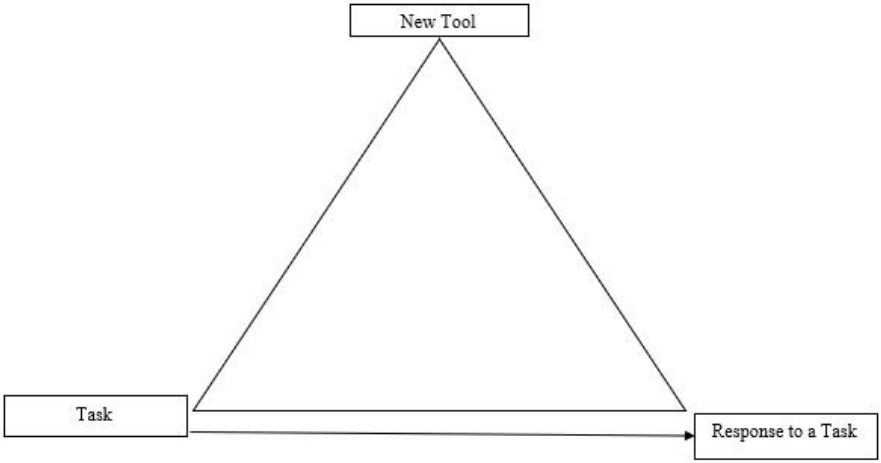

Figure 1: The development practice of our curriculum developers

The potential level of development relates to the design of assessments that are completed under non-standardised conditions, which include assessments that require additional completion time, access to all course materials, access to additional materials, and the requirement to follow intellecttual integrity conventions.

To ensure the curriculum developers were clear as to the changes taking place, training was conducted online by the dean overseeing teaching and learning. The interventions included both group workshops and individual interventions and monitoring. The PHEI opted to change all sit-down tests and examinations to THA. In addition, a series of guidelines for THAs were iteratively developed.

Figure 2 represents a fundamental shift in assessment practice or understanding both the nature and purpose of assessment and the constructive alignment between the module outcomes and assessment tasks.

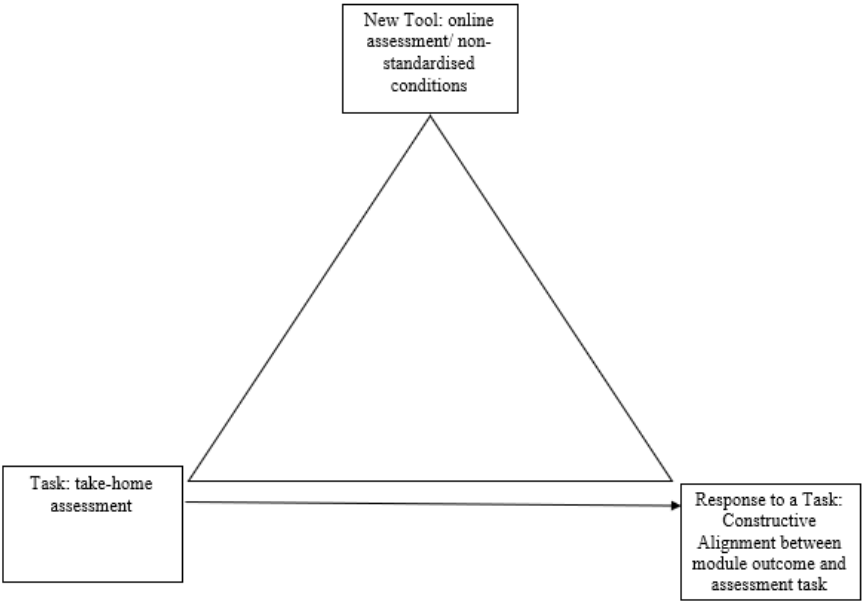

Figure 2: Shift in development practice of our curriculum developers

2.2.2 The Lecturers

The lecturers' actual level of ability involved their proficiency in 'brick-and-mortar' (delivery and developing skills for face-to-face classrooms) and marking handwritten hardcopy assessments. The lecturers' potential level of development centred on online course delivery and assessing student work on an online platform.

Firstly, LMS training involved the development of an institutional Short Learning Programme (SLP) (creating an online emotional presence) and individualised training on the LMS (including the LMS functionality and conducting online teaching). Secondly, training for online marking was provided. The essence of Vygotsky's Theory (Figure 3) is that the task (the assessment of students) is fundamentally changed with the introduction of a new tool (online platforms, rather than hardcopy, handwritten student work). The triangle is representative of the fundamental shift in thinking and practice that are required in order to perform this task.

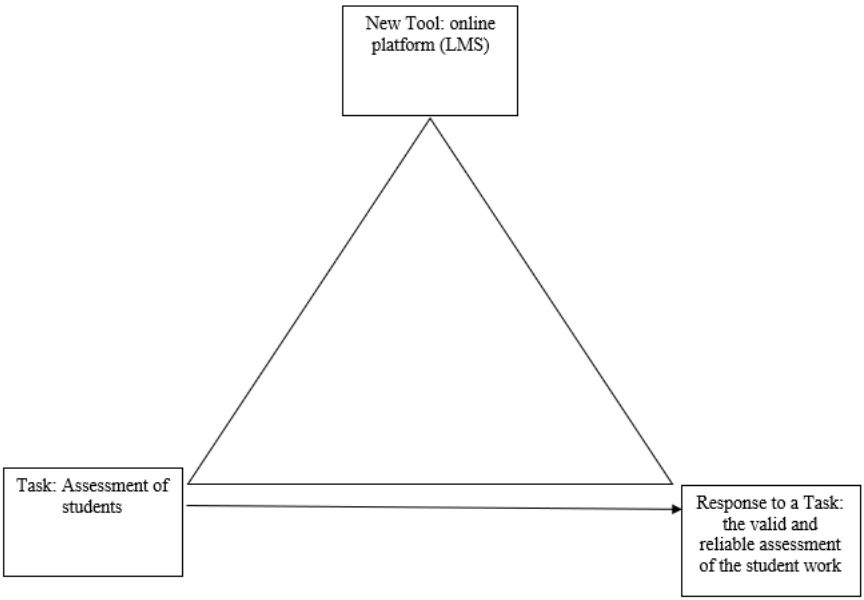

Figure 3: The development practice of our lecturers

2.2.*3 The Students*

The most important aspect here is the nature of the dialectic present in Vygotskian thinking. The students' actual level of development involved face-to-face contact with lecturers and completing some assessments under standardised conditions. For many students, particularly in their first year of tertiary study, this actual level of development had not yet been achieved. The students' potential level of development (Figure 4) involved learning in a fully online environment, particularly demonstrating knowledge and skills using an online platform.

2.3 Assessment in Pandemic Conditions

Whether face-to-face or online learning, assessments remain vital to creating a quality learning experience (Heng & Sol 2020). The presence of the Covid-19 pandemic and the transition to online learning added a layer of complexity to the development and administration of assessments (Adedoyin & Soykan 2020).

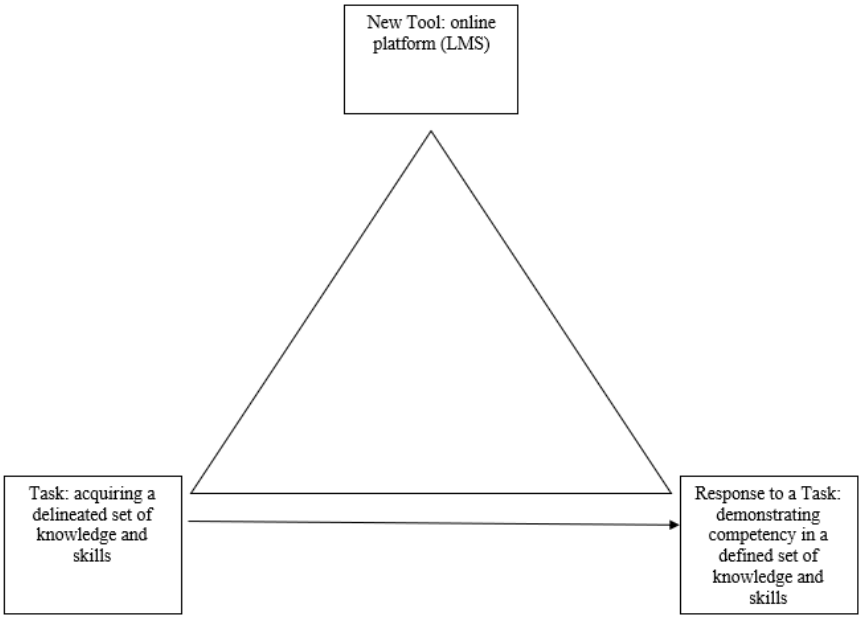

Figure 4: The development practice of our students

2.3.1 A Change from Assessments Written under Standardised Conditions to Take-Home Assessments

During the pandemic, the PHEI selected THAs to replace assessments written under standardised conditions (tests and examinations) as THAs aligned with constructivist theories (Bengtsson 2019). Other forms of assessment (e.g. assignments or portfolios of evidence) that were not designed to be completed under standardised examination conditions remained in place.

THAs are a combination of question formats similar to traditional homework, open-book exams (Biswas 2020) and other assessment types such as assignments and portfolios of evidence. THAs as an assessment instrument has been validated in terms of learning outcomes (Guangul *et al.* 2020).

The advantages of THA include the alignment of the assessment to Bloom's higher taxonomy levels, as it allows students to reflect, promoting

higher-order thinking (Bengtsson 2019), and students have access to "a range of materials and are expected to analyse them, draw connections and logically present your ideas" (University of Melbourne 2021:1). THAs are also more closely related to real-world work experience (University of Melbourne 2021).

The primary disadvantage of a THA is students' unethical behaviour, especially during the undergraduate qualifications (Biswas 2020). Although it is a challenge for lecturers to assess students' authenticity when completing THAs, similarity tools such as Turn-it-In and SafeAssign could assist in managing students' ethical conduct on the completion of THA (Heng & Sol 2020).

2.3.2 The Submission of Assessments

Staggered submission dates require of lecturers to mark at regular intervals, instead of receiving all submissions at once, making marking loads manageable. Due to the Covid-19 pandemic and the lockdown restrictions, staggered submission dates of assessments as previously set were not applicable. In a bid to save the academic year, HEIs could opt to adapt examinations schedules to the immediate closure of campuses, modify the academic calendar, postpone examinations or replace examinations.

The PHEI opted to formally remove the staggered submission dates and set one final date for all submissions. Students were provided with several options in this regard. Campuses set staggered assessment dates to assist students with progression through the work. Students could submit before the final submission deadline, receive feedback on their work, and resubmit the assessment. However, the primary lesson learned was that flexibility in assessment submission did not assist students in completing the assessments. Instead, the majority of students waited until the final deadline to submit their work.

2.3.3 Online Marking

Shaw (2008) and Hast (2021) argue that marking online assessments is equally valid as hardcopy assessment marking, with online feedback preferred by students and faculty. Online assessments facilitate an easier submission process, access and feedback with benefits associated with technology-based approaches that monitor academic integrity (Batane 2010; Hast & Healy 2016).

However, the PHEI experienced several hindrances in the transition to online marking. Several lecturers did not manage the technological shift to students and lecturers not having the appropriate infrastructure and skills to support the submission, access and feedback process.

3 Research Methodology

An action research methodology was applied, using an interpretivist paradigm, enabling the researchers to reflect critically on the documentation used to communicate and inform students and staff about assessment strategy changes during the 2020 academic year. This methodology supports the investigation and reflection of changes made to the PHEI's assessment strategy due to the Covid-19 pandemic (Cohen, Manion & Morrison 2007; Grundy 1982; Holter & Schwartz-Barcott 1993).

The researchers applied the four-step process of the action research methodology, namely planning, acting, observing and reflecting (Coe et al. 2017; Jacobs 2014). Because of the state of crisis in which the PHEI was placed, the research process was iterative, and three of the steps of action research were conducted simultaneously. In summary, planning was conducted by sourcing the PHEIs' assessment strategy prior to the Covid-19 pandemic, reviewing the changes made to the assessment strategy after March 2020, reviewing the communication via letters and e-mails sent to institutional stakeholders, informing them of the changes to be implemented; and reviewing minutes and recordings from institutional training sessions where changes were discussed and applied in module-specific contexts. By coding these source documents and recordings, the researchers identified suggested changes, the rationale and principle of the change and finally determined the impact on students. Observation and interpretation of the findings occurred during the coding and afterwards, where themes were identified. This paper reports on the final stage of the cycle of action research, namely the reflection on the observations and interpretation of the analysis done. The authors acknowledge that this is not the classic manner in which action research is conducted. However, the evolving teaching and learning situation in the time of a crisis never seen before dictated that such methodological manoeuvring was required.

The Vygotskian approach provides both ontological (the model of teaching and learning used in the PHEI) and epistemological (dialectical

historical materialism) imperatives (Mooney 2009). This method of analysis has three steps. Firstly, a problem of context is described, namely teaching and learning at a HEI in South Africa during a time of lockdown resulting from pandemic conditions. Secondly, all the parts of the problem are fully analysed. The parts of the problem that have been identified include all aspects of curriculum delivery (e.g. institutional policies and the LMS), assessment, curriculum developers, lecturers and students. The analysis of these parts was framed by Vygotsky's ontological position, centrally the nature and purpose of the task, the new cultural tool to be used in the accomplishment of the task, and the response to the task. Thirdly, all the parts are viewed in relationship to one another. In this paper, there is a focus on assessment, and all the other parts are discussed in relation to this.

Area of focus (the part of the problem in context)	**The nature and purpose of the task**	**The new cultural tool required**	**The response to the task**	**Data**
Policies	Management of institutional teaching and learning	Fully online teaching and learning		Pre-pandemic policies; pandemic policies & post-pandemic policies
Assessment	Fit-for-purpose assessments	An assessment conducted under non-standardised conditions	Fit-for-purpose assessments	Pre-pandemic tests & examinations and pandemic THA
Curriculum developers	The design of fit-for-purpose assessments	An assessment conducted under non-standardised conditions	The design of fit-for-purpose assessments	Individual and group interventions relating to assessment design
Lecturers	The valid and reliable assessment of	Online marking	The valid and reliable assessment of	Standardised SLP on online teaching &

	student competencies		student competencies	individual and group interventions relating to marking student work
Students	Demonstrating competency in a defined set of knowledge and skills	Completion of assessment tasks using an online platform	Demonstrating competency in a defined set of knowledge and skills	Standardised SLP on online learning; Communication to students (formal institutional letters); LMS intellectual integrity reports & online assessments

4 Conceptualisation of a Revised Assessment Strategy: Rationale and Challenges

The PHEI follows a clearly defined, principle-driven policy approach to the educational offering, which informs all institutional processes, procedures, systems, and decision-making. This section will unpack the conceptualisation and revision of the assessment strategy based on the policy-driven approach by the PHEI.

4.1 Policy

The PHEI had a robust system of policies in place that were based on the fundamental assumptions present in the management of teaching and learning in the contact mode of offering. The lockdown necessitated changes to two primary policies: the assessments and management of intellectual integrity. Consequently, what was created is known as "pandemic policies".

Firstly, the pandemic policy relating to assessment contained details discussed below in terms of assessment. This policy was in place until the end of the first semester of 2020. Subsequently, the standard policy on assessment was revised to include additional assessment types, most notably, the THA.

Secondly, the PHEI created an addendum to the intellectual integrity policy based on the pandemic. We did not alter the fundamental nature of intellectual integrity, but the procedures for intellectual integrity, such as having more assessments requiring referencing conventions to be followed and assessed. However, what became evident was that there was an increase in contract cheating, for example, students copying online responses from other students. This led to investigations of contract cheating websites. We noted that the scale of this problem increased during the pandemic. The pandemic thus resulted in a significant change to our intellectual integrity policies post the pandemic. While we had previously included cheating in our policy, we revised the intellectual policy to clearly demarcate different forms of contract cheating. We have also included severe penalties for students who either facilitate or who use contract cheating platforms. Our focus has shifted from plagiarism (the use of published sources) to cheating (the use of student sources).

The above illustrates that policies concerning teaching and learning in HE are 'living', in that they need to adapt to environmental conditions and continuously develop their practices. In short, it is imperative for institutions to be agile, and it is possible for large institutions to adapt quickly and fundamentally alter their practices going forward.

4.2 The Learning Management System (LMS)

The PHEI had a standardised LMS in place. The model for the learning design on the LMS was based on the constructivist approach, centring on the provision of activities, links to the prescribed text and additional external resources, intellectual integrity management tools and platforms for both synchronous and asynchronous lecturer-student interaction.

4.3 Assessment

While in the best interest of students, sudden changes to the assessment policy had a significant impact on our assessment practices. Given the time constraints and the number of modules (over 900), it was decided to convert existing assessments (designed to be written under standardised conditions) to THA. The conversion involved considering the impact of time constraints, access to resources, and intellectual integrity requirements. This conversion

resulted in errors in assessments, incorrect papers being converted to a THA, and assessments that were not fit-for-purpose for a THA.

Lessons learned were that existing assessments that were converted did not necessarily assess Bloom's higher-order skills, as there were questions that required declarative knowledge only. This problem was also evident in the marking schemes, in which the reproduction of knowledge was rewarded more highly than any skill involved (compare, evaluation, etc.). Consequently, the crisis of the pandemic uncovered a flaw that may not necessarily have been noticed otherwise. The PHEI institutional learning here occurred because never before had we reviewed all tests and examinations in all disciplines at one time and institute such a seismic change in assessments in a very short, constrained time-frame. At this point, it was clear that significant changes to our assessment practices were required.

In the second semester of 2020, because there was more time than in semester one, we could capitalise on important learnings where assessments were specifically designed according to the THA strategy. Thus, we did not attempt to convert potentially problematic assessments into a different form of assessment; we started with the THA framework and were keenly focused on ensuring that Bloom's higher-order skills were assessed. This practice continued to develop for the 2021 cycle. We did not want to be in the position of being reactive, rather than being proactive again, planning for the impact of the pandemic. Furthermore, we reflected that we had improved our existing assessment practices significantly, and we did not want to disregard this learning. Accordingly, we continued to use the THA strategy and reduced the number of assessments written under standardised conditions. Exit-level modules and numeracy modules reverted to unseen written exams that were campus-based. Using online examinations with time limits and randomisation of questions is an assessment method that the PHEI does not employ. The PHEI is working with its LMS developers to adapt the system and review other providers to allow online examinations.

Reflecting on the THA principles cited by the University of Melbourne (2021) and the University of Surrey (2021), going forward, for consistent production of quality assessments, the PHEI will ensure:

- Assessment questions should always clearly assess both knowledge and skills, aligning to the principles of Bloom's taxonomy. This requires of students to show what they can do with knowledge.

- Ensure that, where relevant, a marking rubric accompanies assessments. The marking rubrics clearly illustrate marking categories and mark allocations that assess the question(s) in the assessment from both a theoretical and application perspective.
- Actively manage the development of intellectual integrity through assessments. This can be done by emphasising intellectual integrity in all assessments. To leverage assessments while promoting intellectual integrity, lecturers must share meaning regarding plagiarism and technically correct referencing. Additionally, changing the referencing format used by the PHEI from the Harvard style referencing to the APA style may go some way towards creating shared meaning amongst both lecturers and students.

4.4 Curriculum Developers

There were three primary layers to the intervention with the curriculum developers in the first semester of 2020. Firstly, the Academic Head responsible for teaching and learning, met with the curriculum developers to discuss changes to the assessments. This was done because curriculum developers needed to understand the nature and purpose of any changes in their specific discipline contexts. Secondly, communities of practice were established, involving collaborations between the dean and groups of curriculum developers working in allied disciplines. Such an intervention was practical, given that there was not enough time for the dean to meet individually with over forty curriculum developers. The intervention was also aligned with the theoretical orientation of the PHEI, namely Vygotsky's social constructivist approach, in which peer learning is leveraged. This illustrates that some theoretical approaches are more suited to be used in pandemic circumstances. In addition, while the pandemic has forced us to reconsider many of our practices, this reconsideration can occur within the framework of a robust theoretical system.

This series of workshops and individual interventions resulted in a series of guidelines relating to the assessment being created. These guidelines were simplified descriptions of the existing assessment policy and provided examples of good practice (not provided in the policy). All templates for the development of learning material and assessments were revised, given the problems that we uncovered in our existing assessments. All curriculum deve-

lopers are now part of an online team, in which examples of good practices, readings, workshop recordings and presentations are placed for future reference. Regular workshops on curriculum matters are also conducted.

We have been trying proactively to improve our assessment practices, which illustrates that times of crisis can indeed rejuvenate existing practices and move these practices into a more advanced state.

4.5 Lecturers

Before the pandemic, the PHEI only accepted hardcopy assessments written under examination conditions. These assessments were collated, administered and batched for the relevant lecturer to collect for marking. It was a very manual and labour-intensive process. However, due to the health risks the pandemic posed to the students, lecturers and staff, this administration process was moved online using the PHEIs' LMS.

A process new to all stakeholders required training and how-to guides to be provided for staff, students and lecturers to facilitate an easy transition. However, lecturers found the new submission process and marking challenging, given that this was the first time most lecturers completed online marking. There is a perception that online marking is more difficult and time-consuming, which is partially true due to the unfamiliarity of lecturers using the tool.

The LMS platform was not user friendly, requiring of lecturers to reset their annotation settings for each student, and the time limit on the platform resulted in the pages being closed and lecturers needing to start again. Students submitted multiple attempts, which lecturers were required to mark; hence increasing lecturers' marking load. Due to the lack of data and access to an appropriate device, students submitted the assessments in various formats, adding further complexities to the marking.

However, the little time spent on training did assist, but was not enough, given the challenges experienced by the lecturers in adjusting to this new way of marking, the system, the process and coping with personal challenges brought about by the pandemic.

In the 2021 cycle, we increased the number of assessments that needed to be marked online. A series of training workshops were held with lecturers to develop their proficiency in online marking further. Additionally, the move back to staggered submission deadlines assisted lecturers in mana-

ging their workload. The above highlights that institutions need to continue to focus on their lecturers' proficiency and digital literacies related to teaching and learning.

4.6 Students

The PHEI set a revised and delayed submission end date for all semester-one modules at the end of July 2020, intending to give all students adequate time to complete their assessments. Students had an opportunity to submit their assessments, receive feedback, make the necessary corrections, and resubmit. Many students did not take up this opportunity, and for those that did, there were delays in the marking where students did not receive feedback before the end of July, forcing the PHEI to grant an extension to the end of August 2020. With an extended single end date for all submissions, students worked towards this; however, only working on their assessments closer to the deadline. The PHEI did not anticipate this and the resulting pressure it placed on the lecturers, the operations department and semester-one results finalisation. The lesson learned here is that students are deadline-driven and need a firm assessment structure in place. In the second semester of 2020, we reverted to our pre-pandemic practice of structured assessment deadlines. Thus, HEIs need to find a balance between pre-and post-pandemic practices.

Because assessment submission through the LMS was unfamiliar for students, many students submitted their assessment in incorrect places, resulting in lecturers not being aware of it and the student attaining a zero score. Thus, the PHEI implemented a predicate week where students checked their results, and if any were missing, they informed the PHEI of the date, time and place where they had submitted their assessment, and the PHEI searched the system for the missing assessment. To ensure equity to all students, students that did not have a laptop and could not type out their work, could submit a photo of their hand-written assessment, which could be e-mailed or sent per WhatsApp to the lecturer. This resulted in a gap in the tracking of the assessments and complexity in marking. Late submissions resulted in marking backlogs, impacting semester-one results finalisation and registering for semester-two modules that had prerequisites. This caused immense anxiety and stress on the operations and registrations teams as well as students.

Increased levels of plagiarism and cheating were also detected. The problem was that cheating was harder to take place in an assessment written

under examination conditions. Moving to the THA strategy merely escalated the problem. Websites that enabled contract cheating by allowing the uploading and downloading of assessments and the use of consultants to complete assessments became a huge problem for the PHEI.

The use of the LMS and electronic submission made cheating easily apparent. Further to the policy changes discussed above, the PHEI issued legal letters to the various websites requesting for the PHEI's intellectual property to be removed. Letters were issued to students informing them that it is a contravention of the Intellectual Integrity Policy to use such sites and consultants, which could result in severe penalties, most notably suspension and expulsion.

Upon reviewing module pass and success rates, it was established that many modules had a very high pass rate compared to previous years' performance. Thus, the results must be interpreted with caution, as they might be skewed and not reflect students' actual performance compared to previous years. This inadvertently makes qualification analysis, at-risk module identification, student tracking and the implementation of support interventions difficult for programme managers. Due to higher module success rates, students now qualified for entry into qualifications they would not necessarily have qualified for before the assessment strategy change. However, with the move back to written unseen exams, students struggle to pass the modules in their new qualification and students who gained entry into the honours programme cannot keep up with the requirements and pace of the qualification.

5 Conclusion

An ignorance by HEIs towards being proactive towards pandemics is why the sudden change in online learning had massive implications for students and staff at HEIs, purely because HEIs did not prepare adequately for the pandemic (Al-Baadani & Abbas 2020).

The pandemic may have forced everyone to do things 'quickly' rather than 'properly', i.e., we needed to work with what we had, as it was impossible to redesign all assessments because of the volume of assessments and centrally because of the timelines involved. The pandemic has forced a fundamental change in teaching and learning in HE. These lessons are necessarily iterative, and institutions must continue to evolve and embed reflective practices.

The world has changed, education has changed, and our students have

changed. Thus, as a PHEI, it is vital to reflect on these changes and what it means for education, the institution, the student and what is required for the new workplace. The pandemic has made us reflect on our practices and realise that we cannot just ignore what has happened and default to our old traditional methods of teaching. We must teach students how to apply their knowledge, assess the students' skills, create strategies to adapt to change and be innovative in finding new ways to teach and assess students relevant to this environment.

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Dr. Shamola Pramjeeth
Deputy Head of School of Management
The IIE Varsity College
Sandton
spramjeeth@varsitycollege.co.za

Dr. Willy H. Engelbrecht
Dean: Research and Postgraduate Studies
The Independent Institute of Education
Sandton
wengelbrecht@iie.ac.za

Dr. Gillian Mooney
Dean: Academic Support and Development
The Independent Institute of Education
Sandton
gmooney@iie.ac.za

Priya Ramgovind
Senior Head of Programme
The Independent Institute of Education
Sandton
pramgovind@iie.ac.za

Chapter 13

Chronicling Lecturers' and Students' Experiences in Using Digital Technologies for Continuous Assessment Practice in Some South African Universities

Vusi Mncube
ORCiD iD: https://orcid.org/0000-0003-2103-2530

Shepherd Ndondo

Babawande Emmanuel Olawale
ORCiD iD: https://orcid.org/0000-0001-5265-1583

Abstract

Assessment of students' work is an indispensable aspect of the teaching and learning process; hence it should be understood in terms of pedagogy. To this end, the digital development in the teaching and learning process has seen a rising demand in digital assessment practices. Owing to an unexpected shift in pedagogy from a face-to-face mode to online education delivery necessitated by COVID-19 lockdown, an urgent need there came for reform in assessment to realign it with technological developments in teaching and learning. This new teaching and learning dispensation which started as a temporary measure was becoming a norm in higher learning institutions. The prolonged presence of COVID-19 has led to stakeholders' scrutiny about the effectiveness of the digital continuous assessment practices which they feel are not utilized. This chapter interrogates the nature of continuous assessment in the context of digitalization in South African Universities. A desktop review was utilized in which survey of literature from books, journals and websites were undertaken to examine the nature of digital assessment in higher

education institutions, as well as the experiences of lecturers and students. The review also examines the extent to which lecturers and students succeed in the use of digital technologies in assessment and ways of enhancing digital continuous assessment. This study revealed that, although digital technologies were used in assessment, the socio-economic inequalities prevalent in society has led to lack of institutional support in the use of digital technologies. Furthermore, findings point to societal rampant inequalities as the main cause of lecturer and student incapacitation in the use of digital technologies that has seen a reluctancy in implementation of assessment procedures. Therefore, the creation of environments which allow lecturer and student participation in digital assessment by governments and institutions is recommended.

Keywords: Continuous assessment, digital technologies, networking, online education, transformation

1 Introduction

Technological advancements in recent decades have triggered a cultural revolution that has influenced our social routines, communication and work practices. As a result, the development of static and hand-held devices with networking and information-sharing capabilities has been fuelled by the advancement of digital technology (Yang 2013). This technological advancement has a big influence on the education sector (Yang 2013; Dalby & Swan 2018; Mncube & Olawale 2020). Digital technologies are now prevalent in many parts of our daily lives, and have shaped the lives of many students today in ways we cannot fully conceive yet, given that many future careers will entail the use of yet-to-be-developed technologies (Department of Education and Skills [DES] 2020). Given that digital technologies are associated with the preparation of students for jobs and life, increasing learning outcomes, as well as school improvement, there is a lot of promise in using digital technologies in assessment (Hammond 2013; Organisation for Economic Co-operation Development 2018).

Over the past four to five decades, the role of assessments in structured learning and teaching has grown in importance (Stobart 2008; Blundell 2021). The traditional function of assessing learning outcomes has evolved to encompass the assessment of learning processes, to the point that assessment is now

considered essential to successful teaching (Carless 2007; Stobart 2008; Tan 2011; Blundell 2021). This transition is due in part to the rise of cognitive and constructivist learning theories, as well as mounting evidence of feedback's effectiveness in teaching and learning (Hattie & Timperley 2007; Blundell 2021). This transition in assessing learning outcomes has resulted in assessment that falls into three categories which are: assessment of learning, assessment for learning, and assessment as learning (Blundell 2021). Thus, given that both formative and summative assessment are firmly ingrained in today's educational institutions in which both serve a unique educational goal, both are not necessarily exclusive processes and are often intertwined in the teaching and learning process (Oldfield, Broadfoot, Sutherland & Timmis 2013).

The notion that digital technology may aid in the transformation of education, particularly in the assessment process, is not new. This is because of its potentially positive features, its affordance, the provision of a more customised, immediate and/or engaging assessment experiences – which opens new opportunities (Hammond 2013; Oldfield, Broadfoot, Sutherland & Timmis 2013). Despite the promising potential in using digital technologies for assessment – often referred to as e-assessment, literature such as those of Hammond (2013) and Yang (2013) argue that the use of digital technology has yet to be 'transformative' and is frequently employed through traditional assessment techniques (Oldfield, Broadfoot, Sutherland & Timmis 2013; Yang 2013; Dalby & Swan 2018). Therefore, given the importance of assessment in teaching and learning, this chapter assesses empirical research on the current nature of assessment in the digital domain in higher education institutions, teachers and students' experiences of continuous assessment in the digital domain, as well as available support for implementing digital assessment in some South African higher learning institutions.

2 Methodology

To examine the experiences of lecturers' and students' experiences in using digital technologies for assessment practices in selected South African universities, this article employed a desktop/literature review approach which includes document analysis and conceptual analysis of secondary-sourced data. The sources of data include reports, newspaper articles, as well as several recently peer-reviewed journals. Similarly, the study benefited from policies and reports from both the national and international organisations on the use

of digital technologies for continuous assessments. The search was conducted through electronic data bases and search engines such as the GoogleScholar, ERIC, SCOPUS and Researchgate, as they are some of the most relevant information platforms that access the most significant publications of different areas of knowledge. In particular, with regard to issues of using digital technologies for assessment practices in higher education institutions, these data bases provide valuable information to the desktop review proposed in this chapter.

For the purpose of this review, articles were selected according to study designs. Based on this criteria, 506 records were screened for inclusion on title, abstract and keywords to identify papers that cited the use of digital technologies for assessment purposes in higher education institutions, and one or more following terms: the experiences of lecturers and students, digital technologies adopted for continuous assessments, diagnostic, formative, summative, feedback or evidence of learning, amongst many others. Articles that were not related to digital assessment in higher education institutions and/or focused on the principle of and framework for designing digital assessments were excluded. As such, a total of 420 records were excluded, thereby remaining with 86 papers, which were subjected to a full-text eligibility assessment. The inclusion criteria for full-text eligibility assessment was therefore based on the fact that these papers were written in English language, have a stated research approach, written within the context of educational assessment practices, focused on the use of digital technologies for assessment and published in peer-reviewed journals and conference proceedings published between 2009 and 2021. Based on the inclusion criteria, a total of 23 papers were identified as eligible and 63 were ineligible.

3 Nature of Digital Assessment in Higher Education Institutions

While assessment is widely acknowledged as one of the most essential and influential aspects of the educational process, it is also regarded as one of the most difficult to conduct (Oldfield, Broadfoot, Sutherland & Timmis 2013). Brown (1990) refers to assessment as a similar set of measurements used to determine a complex attribute of an individual or a group of persons – this entails obtaining and evaluating information on a student's degree of achievement of learning objectives. Similarly, Ioannou-Georgiou (2003) defines assessment as a broad word that encompasses all techniques for gathering data

on students' knowledge, competences, comprehension, attitudes as well as motivation. Although most individuals confuse assessment with evaluation, there is a significant distinction between both (Taras 2005; Al Alhareth & Al Dighrir 2014). While evaluation determines the quality assigned to the present performance, assessment enhances future performance attributes. As such, the differences in meaning are found in feedback (Al Alhareth1 & Al Dighrir 2014). While feedback in assessment is based on observations and identifying the weakest and strongest areas, Dochy and Segers (2006) argue that evaluation feedback is based on the degree of quality in comparison to a standard.

Although a variety of words is used to characterise various forms of assessment, however, the type of assessment and the approach to that assessment are determined by the aim of the assessment as well as the learning outcome (Al Alhareth & Al Dighrir 2014; Yambi 2018). The major and most common forms of assessments are summative assessment, evaluation and accountability test, norm-referenced tests, formative assessment, and diagnostic assessment (Black & William 2003; Yambi 2018). In all the various forms of assessments, formative and summative assessments are the most commonly used form of assessment (Suskie 2009). As such, in exploring how digital technology may enable and assist changes in assessment innovation and reforms, it is vital to examine both forms of assessment, especially on how the risks and complexities of change differ for each (Timmis, Broadfoot, Sutherland & Oldfield 2015). Thus, on one hand, while digital technologies may appear to provide more possibilities of formative assessment because innovation for such purposes receives less attention and appears to be less risky; on the other hand, making use of digital technology for summative assessment purposes is less easy, because changes to more standardised examinations encounter a variety of restrictions (Oldfield, Broadfoot, Sutherland & Timmis 2013).

There has been a growing emphasis in the assessment literature (Khan & Khan 2019; Oldfield, Broadfoot, Sutherland & Timmis 2013; Olawale, Hendricks & Mncube 2021) on assessing students' progress over time and on the usage of digital technology (Mncube, Olawale & Hendricks 2019; Rapanta, Botturi, Goodyear, Guàrdia & Koole,2020). The International Baccalaureate Organization (2018) argues that it is vital to distinguish between the impact of technology to assist expert examiners (e-marking) and the use of technology to create assessment that is meaningful for students (on-screen

assessment [both for exams and internal assessment] and e-Portfolios). Such clarity is even more vital during a time of transition caused by the COVID-19 pandemic outbreak, given that the influence of technology on education, particularly assessment will be felt over the next decade. Given that the concepts of assessment do not change in a digital context, e-assessment is underpinned by the same concept of validity, flexibility and fairness as that of traditional assessment techniques, and it employs the same tactics (Booth, Hyde, Hartcher & Hungar 2002; Roelien & Lautenbach 2011). In other words, there is a need for a balanced sets of assessment tools and practices in e-assessment that include all of the aspects of fair testing (Olawale, Hendricks & Mncube 2021). Thus, Hricko and Howel (2006) argue that for e-assessment to be of benefit to students, and to ensure fair measurement, such e-assessment must guarantee that the tool contains conventional assessment aspects, matches the form of delivery, and legitimately measures the targeted results. Hence, one of the most essential factors for efficient digital assessment is the verification of tools to ascertain that it entails the concept of validity, flexibility and fairness, matches the manner of delivery, and legitimately assesses the desired outcome (Hricko & Howel 2006; Roelien & Lautenbach 2011).

In South African higher education institutions, digital assessment continues to gain attention, given the continuous increase in the number of students, a decrease in allotted class times (Roelien & Lautenbach 2011), as well as the outbreak of the COVID-19 pandemic (Guangul, Suhail, Khalit & Khidhir,2020; Mncube, Mutongoza & Olawale 2021). The South African higher education institution that has embraced the use of digital technologies in continuous assessment makes use of e-assessment products such as Skills Assessment Manager (SAM) – a web-based application that measures proficiency in Microsoft Office applications, including Microsoft Word, Microsoft Excel, Microsoft PowerPoint as well as Microsoft Access. The Skill Assessment Manager is also useful in measuring users' skills in Windows 2000, Windows XP as well as in the usage of internet (Roelien & Lautenbach 2011). In South Africa, higher education institutions such as the University of Witwatersrand, Nelson Mandela Metropolitan University and the University of South Africa, among many others, also adopt an Electric paper – this is an automated system of assessment for international Computer Driving Licence with immediate and accurate evaluation, which in a self-contained system which consists of software simulations that require no additional software applications to run it (Roelien & Lautenbach 2011).

In South Africa, the subdepartment End User Computing (EUC) at some higher education institutions such as the University of Johannesburg have implemented CompAssess as an e-assessment tool, which allows students at all levels to work in a simulated environment with MSWord, MSExcel, MSPowerPoint as well as MSAccess (Roelien & Lautenbach 2011). This digital assessment tool makes it easier to create customized assessments for any of the aforementioned software applications, allowing for the selection and customisation of generic built-in tests as well as the specification of assessment parameters such as time, question weighting and passing grades (Masterskill 2006; Roelien & Lautenbach 2011). Similarly, the input of student information, as well as exporting and printing of reports, are all included (Masterskill 2006). Thus, the EUC gives students the opportunity to apply skills in a realistic, simulated digital assessment environment (Roelien & Lautenbach 2011).

4 Lecturers' Experiences in the Use of Digital Technology in Assessment

The COVID-19 pandemic that saw educational institutions shutting down gave little or no chance to the traditional face to face pedagogies leaving online teaching as one of the most viable alternatives (Dutta 2020; Howshigan & Nadesan 2021). A major shift to online learning meant a corresponding move to digital assessment procedures. Universities have been using digital assessment as an optional platform, as such, most lecturers and students were reluctant to adapt to this new system in preference to the traditional ways of assessment. Though the pandemic can be viewed as a catalyst to the digital age that was approaching, lecturers expressed varied views in adapting to the novel system of assessment, mainly due to resources available for institutions in different geographical locations (Mhandu, Mahiya & Muzvidziwa 2021).

Globally, research shows that lecturers in selected universities in Britain, North America and Australia, as well as those from many universities in the Global South merit digital assessment for student-centeredness and flexibility (Rapanta, Botturi, Goodyear, Guàrdia & Koole 2020). Similarly, lecturers at some universities in the United Arab Emirates commended digital assessment for the provision of flexible tasks in terms of time and location of task conduction (Khan & Khan 2019). Furthermore, digital assessment is valued on account of quality feedback, which is constructive, timely and person-

alized, as well as its provision of a diversity of strategies and instruments of assessment (Khan & Khan 2019; Rapanta, Botturi, Goodyear, Guàrdia & Koole 2020). This may come in form of portfolios, self, peer and group assessment, which give a meaningful and holistic student assessment. In addition, there is a general belief that the use of ICT, an epitome for societal advancement, can add value to the assessment process, both for lecturers and students (Rapanta, Botturi, Goodyear, Guàrdia & Koole 2020).

Despite the positive attributes of digital assessment, there is a strong feeling among lecturers that the digital divide that exists in most of the world's economies hurts continuous assessment procedures (Mashau & Nyawo 2021). In the South African context, the pre-1994 era that was characterized by racial segregation in institutions of higher learning left a legacy affecting these institutions today. Though an effort was made by the government to address inequalities in higher education institutions (HEls) at the dawn of democracy, a lot needs to be done to dislodge the colonial imbalances so that the historically marginalized HEIs can benefit from digital learning. An effective online education delivery needs a well-trained and supported teaching staff, access to fast internet services and technological devices, among other imperatives (Maphalala & Adigun 2021).

The underdevelopment and financial distress that characterize most South African HEIs have constrained them from achieving their mandate as vibrant academic communities successfully (Matarirano, Jere, Sibanda & Panicker 2021).To this end, several studies have revealed that challenges faced by the historically disadvantaged HEIs in South Africa in using digital platforms namely; a deficit in ICT infrastructure, erratic Internet access, a low level of technical assistance/support, and inadequate training opportunities for e-learning activities on the university's e-learning platform have dampened the morale of the academics (Maphalala & Adigun 2021; Mashau & Nyawo 2021; Watermeyer, Crick, Knight & Goodall 2021). Considering that some academics are 'digital immigrants', a term used to refer to people who learnt to use computers at some stage during their adult life (Wang, Myers & Sundaram 2013), the lack of motivation and support has seen them failing to come up with creative interactive online and adequate digital continuous assessment procedures for their students (Maphalala & Adigun 2021).

While in South Africa, the Council on Higher Education (CHE) guidelines for remote learning underscores staff capacitation in remote assessment (CHE 2020: 19), poor training and support for lecturers have

further exacerbated the divide between the advantaged and disadvantaged South African communities (Maphalala & Adigun 2021). Owing to the inherent inequalities in South Africa, the goal of digital assessment of enhancing quality educational outcomes is far from being achieved in historically marginalized HEIs. Stemming from these inequalities, continuous assessment on Moodle, Google Class or Blackboard platforms is a source of great anxiety for lecturers who are in most cases considered to be 'Digital immigrants'. This has led to the poor use of these platforms bringing into question the credibility of the continuous assessment outcomes. For instance, one of the biggest challenges in digital assessment expressed by some South African lecturers emanates from the use of online platforms in the context of traditional ways of assessment, assessment techniques used in traditional face-to-face classrooms are normally employed to fit online instruction. Instead, online instruction needs a change in delivery modalities, this may entail adjusted formative and summative assessments to evaluate students' understanding of course content (Mashau & Nyawo 2021). This is only possible if lecturers are given an opportunity through training and support to redesign their pedagogical approaches and assessment procedures to empower students to participate meaningfully.

Literature reveals that lecturers always question the validity of continuous assessment tasks due to cases of dishonesty and cheating (Ngqondi, Maoneke & Mauwa 2021). Students could share tasks via social media platforms such as WhatsApp while assessments were being conducted. Some sophisticated cheating options were acknowledged at institutions of high social standing (Mahabeer & Pirtheepal 2019). These acts of dishonesty in digital assessment gave rise to the use of digital proctoring software to enhance institutional capacity to deal with cheating. While this software may enhance the validity and accountability in digital assessment, lecturers felt that this further widens societal inequalities, as the historically marginalized institutions may not afford the facilities. Furthermore, academic dishonesty has led lecturers to rethink effective assessment strategies beyond the recall of answers, an exercise that is unlikely to be done by incapacitated lecturers at historically marginalized HEIs (Ngqondi, Maoneke & Mauwa 2021). More so, lecturers believe that cheating in digital continuous assessment tasks may be a result of anxiety caused by fear of failure, especially for low-income students who are at home where the environments are not conducive to learning and assessment.

While the privileged HEIs can benefit from digital continuous assessment, for the historically disadvantaged institutions, the interpretation of student performance may be affected, resulting in inappropriate intervention measures being instituted. Also, the qualifications obtained from such institutions are likely to lose credibility, given the policy statement by the Department of Higher Education and Training in South Africa that universities offering distance education must try putting in place 'an assessment and examination regime that ensures integrity and credibility' (Department of Higher Education and Training 2017: 19). Since the highly compromised digital assessment system loses credibility, students graduating from such institutions are likely to be rated lowly thereby further exacerbating the social inequalities in society.

5 Students' Experiences in the Use of Digital Platforms in Assessment

As HEIs closed in an effort to contain the COVID-19 pandemic, many students moved out of campuses to their homes, in most cases rural, where they reunited with family members (Pillay, Singh & Prinsloo 2020). In this situation, institutions had to adapt to online platforms for the continuity of teaching and teaching and learning. Despite the indicating the benefits associated with online platforms, most students were reluctant to engage in online platforms, thinking that it was just a temporary measure that will go away when the situation normalise (Abera, Kedir & Beyabeyin 2017; Watermeyer, Crick, Knight & Goodall 2021). Also, students felt that online assessments were restrictive for the science courses due to increasing dependence on multiple-choice questions. Furthermore, the rigid technological settings hindered students from explaining their answers, resulting in increased anxiety for students (Khan & Khan 2019).

Students who are entering HEIs today are deemed 'Digital natives', a new generation of young people born into the digital age (Wang, Myers & Sundaram 2013). These students are expected to have a high degree of 'fluency' in the use of digital platforms, yet resource disparities that exist among them is a great barrier in the effective use of digital platforms in continuous assessment. In a move to address societal inequalities, the post-apartheid South African government opened doors to students from different socio-economic backgrounds to the traditionally white HEIs (Pather, Booi &

Pather 2020). Despite the noble gesture, HEIs saw increasing numbers of students from historically disadvantaged areas who could not benefit from digital learning platforms owing to their poorly resourced home backgrounds. Additionally, most of the historically disadvantaged former black institutions are struggling to adapt to the new norm of digital continuous assessment, because most of the students lack adequate exposure to technological devices from home (Azionya & Nhedzi 2021). Students in such institutions expressed a lot of incompetence in the use of digital technology in assessment (Mashau & Nyawo 2021). It can be noted that some students in these institutions begin to use computers in their first year at university. The effects of COVID-19 revealed a sad reality that many students reside in rural areas where connectivity is a problem (Dlamini & Ndzinisa 2020; Ngqondi, Maoneke & Mauwa 2021).

The lack of competence in the use of Blackboard, Moodle and institutional Learning Management Systems (LMSs), among other commonly used digital platforms, has led to anxiety and poor performance of tasks (Mashau & Nyawo 2021; Matarirano, Jere, Sibanda & Panicker 2021). In this case, the digital assessment platforms may not give a true reflection of the students' performance hence the critical purpose of assessment is not fulfilled at such institutions. In addition, when universities were closed, students moved away from campus where they could not engage in online learning, due to the lack of resources and family commitments (Pillay, Singh & Prinsloo 2020). This greatly affected students as digital assessment platforms could not be utilized, especially in South African low-income homes; hence, a call for special consideration of using these platforms before deciding on intervention strategies (Ngqondi, Maoneke & Mauwa 2021).

The digital inequalities which characterize South Africa's HEIs created a lot of uneasiness in students' continuous assessment tasks. The major source of anxiety in digital assessment is a poorly resourced rural home background where students can hardly access digital devices, the internet, and electricity to engage in online learning (Azionya & Nhedzi 2021). Coming from such environments, most students felt that they could not benefit from Moodle, Google Class, and Blackboard, among other commonly used digital platforms (Matarirano, Jere, Sibanda & Panicker 2021). Given this situation where most students in some South African HEIs are not getting the value of digital assessment because of social inequalities, it is imperative to consider ways of instituting digital continuous assessment in a way that enhances

quality educational outcomes, especially in historically marginalized institutions.

6 Enhancing Digital Continuous Assessment in Institutions of Higher Learning

As digital continuous assessment is one of the most viable ways of assessment, especially during this time of the pandemic, the literature recommends a reduction of economic and social inequalities in South African society (Azionya & Nhedzi 2021; Maphalala & Adigun 2021). Even though South Africa went through a great transition from apartheid to democracy in 1994, the nation is still characterized by glaring social and economic inequalities among its people (Msila 2013). This is reflected in part in how historically black universities are already left behind, while the former white universities thrive in the new terrain of online teaching and learning (Dlamini & Ndzinisa 2020). The government should make a great effort to ensure social justice through fair access and distribution of learning resources across communities, especially among historically disadvantaged groups (Dlamini & Ndzinisa 2020). An improved socio-economic status will place students from low-income families in a position to benefit from digital learning platforms through exposure to technological devices, access to internet and electricity.

Universities must be committed to embracing digital learning in teaching and learning, as this is now a norm defining pedagogy in this era. As such, institutions of higher learning should interrogate issues of invisible structures and gaps that exist in the South African context to ensure that equity and inclusivity in educational technologies is a reality (Dlamini & Ndzinisa 2020). Digital continuous assessment requires a reform in pedagogy to enhance suitable assessment procedures. To this end, lecturers need some training well supported by institutions (Maphalala & Adigun 2021) so that they have a deep understanding of the philosophy underpinning the use of digital technologies and develop competencies in handling online assessment platforms. This understanding and development of technological competencies will facilitate the effective use of digital technologies, as lecturers are not likely to tweak assessment techniques used in traditional face-to-face classrooms to fit online instruction (Mashau & Nyawo 2021; Abera, Kedir & Beyabeyin 2017). In addition, university lecturers should observe the learners more keenly to make sure that they strike a balance in assessing their cognitive, affective and

psychomotor outcomes so that a graduate with a balance of general knowledge, values and skills is produced (Mashau & Nyawo 2021).

An abrupt shift to online teaching and learning necessitated by the COVID-19 pandemic created a lot of stress and anxiety among lecturers and students, with greater intensity at the historically marginalized HEIs. This makes it important for students to be properly equipped with technological competencies to enable them to participate effectively in continuous assessment. Proper exposure to digital platforms should convince students to appreciate the usefulness of the transition to digital assessment (Khan & Khan 2019). A cultural revolution to a technological mode of education delivery in HEIs is imperative; universities can make it mandatory for undergraduate students to attend the computer literacy module, as there is a high correlation between attending computer-related modules and computer literacy (Mashau & Nyawo 2021).

7 Conclusion

The shift from traditional, face-to-face teaching and assessment to the use of digital platforms was evident in most universities, even before the advent of COVID-19. The unforeseen effects of the pandemic made the use of digital platforms more urgent, making most institutions, lecturers and students struggle to adapt to the new norm. This exposed some social and economic inequalities inherent in South Africa, as some students from historically disadvantaged institutions failed to benefit from digital learning. Owing to the scarcity of resources in such institutions, lecturers were neither trained nor supported to undertake a successful transition to online learning. On the other hand, students from low-income families lacked the competence to engage in online activities, as digital devices are just a luxury at home. During the COVID-19 lockdown period, most students from the historically disadvantaged HEIs travelled to their rural homes, where in most cases the environment was not conducive to digital learning, mainly due to family commitments, poor or no network connectivity, lack of technological devices and data bundles. Given that socio-economic inequalities are the main cause of poor utilization of digital platforms for teaching and learning at HEIs, this study recommends the government works towards improving the socio-economic well-being of marginalized communities and funding of HEIs so that lecturers and students benefit from digital platforms. HEIs are recom-

mended to take digital learning as an institutional culture and policy that manifest in adequate training for lecturers to roll out online learning to institutions located in historically disadvantaged. The training of students in the use of digital platforms in the form of a modular and/ or integrative approach is recommended as a strong force in developing an online learning culture. The commitment by the government, HEIs, lecturers and students will create a conducive environment for the use of digital learning platforms, thereby facilitating the achievement of desired educational goals.

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Vusi Mncube
Dean in the Faculty of Education
University of Fort Hare
vmncube@ufh.ac.za

Shepherd Ndondo
Postdoctoral Fellow
Faculty of Education
University of Fort Hare
ndondosh@gmail.com

Emmanuel Olawale
Postdoctoral Fellow
Faculty of Education
University of Fort Hare

Acknowledgements of Reviewers

We wish to acknowledge the participation of the following reviewers in the production of this volume of the *Alter*nation African Scholarship Book Series.

A. Burra, asmeetaburra@gmail.com
Antoinette Damant, University of KwaZulu-Natal, Damant@ukzn.ac.za
Chris Reddy, University of Stellenbosch, CPSR@sun.ac.za
Dinu-Ruth Lulua, WITS University, dina-ruth.lulua@wits.ac.za
Donda Buhle Maud, University of KwaZulu-Natal, donda@ukzn.ac.za
Enoch, Leanthea, University of KwaZulu-Natal, enochl@ukzn.ac.za
Felix Maringe, WITS University, Felix.Maringe@wits.ac.za
Jabulile Mzimela, University of KwaZulu-Natal, Ramas@ukzn.ac.za
Jeffrey Siphiwe Mkhize Mzimelaj@ukzn.ac.za
Jennifer Ann FELDMAN, Stellenbosch University, jfeldman@sun.ac.za
Moyra Keane, University of Johannesburg, moyrak@uj.ac.za
Ngwamba Feruzi , University of KwaZulu-Natal, ngwamba@ukzn.ac.za
Sadhana Manik, University of KwaZulu-Natal, Manik@ukzn.ac.za
Sarah Gibson, University of KwaZulu-Natal, Gibsons@ukzn.ac.za
Saras Reddy, University of KwaZulu-Natal, Reddys15@ukzn.ac.za
Shan Simmonds, North West University, shan.simmonds@nwu.ac.za
Sharmla Rama, University of KwaZulu-Natal, Ramas@ukzn.ac.za
Sofika Dumisa, University of KwaZulu-Natal, SofikaD@ukzn.ac.za
Vusi Jan Msiza, University of KwaZulu-Natal, MsizaV@ukzn.ac.za
Yashaen Luckan, University of KwaZulu-Natal, LuckanY@ukzn.ac.za