

UNIVERSITY OF KWAZULU-NATAL

**E-LEARNING JOURNEYS USING MOODLE AT A PRIVATE HIGHER
EDUCATION INSTITUTION IN SOUTH AFRICA.**

By

Raessa Jabar

A thesis submitted in fulfillment of the requirements for the degree of

Doctor of Philosophy

219091679

**School of Education, Technology Education
Faculty of Education**

Supervisor: Prof D.W Govender

October 2023

DECLARATION

This study is the original work of the author and has not otherwise been submitted in any form for any degree or diploma to any university. Where use has been made of other work, such has been duly acknowledged in the text.



Signature (R Jabar)

31 October 2023

Date

Durban

Place

CONTENTS

TABLE OF CONTENTS

DECLARATION	ii
CONTENTS	iii
LIST OF TABLES	xi
LIST OF FIGURES.....	xii
LIST OF ABBREVIATIONS.....	xiii
ABSTRACT	xiv
ACKNOWLEDGEMENTS.....	xvi
CHAPTER ONE: INTRODUCTION.....	1
1.1 Introduction	1
1.2 Purpose of the study.....	1
1.3 Background to the study	1
1.4 Motivation	4
1.5 The context of Distance Higher Education Providers for this study	5
1.6 Problem statement.....	7
1.7 Theoretical and conceptual frameworks	9
1.8 Objectives.....	10
1.9 Research Questions.....	10
1.10 Structure of the Study.....	10
1.11 Conclusion.....	11
CHAPTER TWO – LITERATURE REVIEW.....	12
2.1 Introduction	12
2.2 Concept clarification.....	13
2.2.1 Moodle.....	14
2.2.2 Online courses.....	14
2.2.3 Distance Education	15

2.3.4 Information and Communication Technology (ICT)	15
2.2.5 Information Technology (IT)	16
2.2.6 Communication Technology (CT).....	17
2.2.7 E-learning	17
2.2.8 Coronavirus	17
2.2.9 Blended learning	17
2.3 Learner Manager Systems (LMSs) in Higher Education.....	18
2.4 LMSs and mobile-learning.....	19
2.5 Mobile LMSs and academic achievement.....	19
2.6 E-learning in Higher Education Institutions	20
2.7 Studies based on lecturer and student experience with LMS e-learning	20
2.8 Students readiness for blended learning	26
2.9 Student attitudes to online learning.....	27
2.10 E-learning system challenges.....	28
2.11 Online-learning challenges reported by tertiary lecturers during the coronavirus pandemic	30
2.11.1 Internet speed/network connectivity	30
2.11.2 Technical issues	31
2.11.3 Lack of face-to-face contact	31
2.11.4 Loadshedding	31
2.11.5 Training academic staff	31
2.11.6 Adoption/Adapting	31
2.11.7 Examinations	32
2.12 Online-learning benefits reported by tertiary lecturers during the coronavirus pandemic	32
2.13 Online-learning challenges reported by tertiary students during the coronavirus pandemic	33
2.14 Online-learning benefited reported by tertiary students during the coronavirus pandemic	36
2.15 Functionalities of Moodle for students and lecturers.....	39
2.16 Effectiveness of e-learning.....	41
2.17 Evolution of e-learning.....	42

2.18 How COVID-19 transformed learning in Higher Education.....	43
2.19 E-learning and Distance Education during COVID-19	45
2.20 Microsoft Teams and Zoom as tools.....	46
2.21 Pedagogies	47
2.22 Conclusion.....	48
CHAPTER THREE – THEORETICAL AND CONCEPTUAL FRAMEWORKS	49
3.1 Introduction	49
3.2 Unified Theory of Acceptance and Use of Technology (UTAUT)	49
3.3 Technological Pedagogical and Content Knowledge (TPACK)	51
3.4 Theoretical and conceptual frameworks	53
3.4.1 Framework constructs	54
3.4.2 Mapping constructs of the conceptual frameworks onto the RQs.....	57
3.5 Conclusion.....	58
CHAPTER 4 – RESEARCH METHODOLOGY	59
4.1 Introduction	59
4.2 Research paradigm	59
4.3 Sampling.....	61
4.4 Methods of data generation.....	62
4.4.1 Questionnaire	62
4.4.2 Interviews	64
4.5 Data analysis	65
4.6 Validity, reliability, and rigour	66
4.6.1 Reliability	66
4.6.2 Validity	66
4.6.3 Trustworthiness	67
4.7 Ethical issues	69
4.8 Conclusion.....	69
CHAPTER FIVE: QUANTITATIVE ANALYSIS (LECTURER AND STUDENT)	70
5.1 Introduction	70
5.2 Overview of the questionnaire	70

5.3 Data preparation.....	71
5.4 Section A: Social demographics (students).....	71
5.4.1 The year the students were registered for	71
5.4.2 Gender demographics for students.....	72
5.4.3 The age groups of the students	73
5.5 Length of time and frequency with which students used Moodle	74
5.5.1 The length of time students had been using Moodle	74
5.5.2 The frequency with which students used Moodle	75
5.6 Section A: Social demographics (lecturers).....	76
5.6.1 Gender demographics for lecturers.....	76
5.6.2 The age group of the lecturers using Moodle.....	77
5.7 Length of time and frequency with which lecturers used Moodle	78
5.7.1 The length of time lecturers had been using Moodle	78
5.7.2 The frequency with which lecturers used Moodle	79
5.7.3 The length of time working at the institution	80
5.8 Student statistics	81
5.9 Lecturer statistics	83
5.10 Discussion of statistical results	85
5.11 Conclusion.....	87
CHAPTER SIX – QUALITATIVE ANALYSIS AND DISCUSSION (LECTURERS) .	88
6.1 Introduction	88
6.2 What are the experiences of lecturers when using Moodle for e-learning in a learning journey?	89
6.2.1 Advantages.....	89
6.2.2 Disadvantages.....	91
6.3 What functionalities of Moodle do lecturers use when using Moodle for e-learning in a learning journey?	98
6.3.1 Functionality	99
6.4 Why do the lecturers use Moodle for e-learning in a learning journey the way they do?	100
6.4.1 Convenience and cost saving	100
6.4.2 Accessibility	102
6.4.3 Safety	103

6.5 How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?	104
6.5.1 Microsoft Teams as a tool	104
6.5.2 Pedagogies.....	106
6.5.3 The Transformation of learning in Higher Education	109
6.5.4 Communication.....	112
6.6 Conclusion.....	113
CHAPTER SEVEN – QUALITATIVE ANALYSIS AND DISCUSSION (STUDENTS)	115
7.1 Introduction	115
7.2 RQ2: What functionalities of Moodle do students use when using Moodle for e-learning in a learning journey?	116
7.2.1 Functionalities of Moodle.....	116
7.3 RQ1: What are the experiences of students when using Moodle for e-learning in a learning journey?	118
To understand the experiences of students using Moodle for e-learning in a learning journey at a Private Distance Higher Education Institution in a COVID-19 environment.	118
7.3.1 Advantages.....	118
7.3.2 Disadvantages.....	122
7.4 RQ3: Why do the students use Moodle for e-learning in a learning journey the way they do?	125
7.4.1 Reasons students use Moodle the way they do.....	125
7.5 RQ4: How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?.....	131
7.5.1 Transformation in Education	132
7.6 Conclusion.....	137
CHAPTER EIGHT: SYNTHESIS AND DISCUSSION.....	138
8.1 Introduction	138
8.2 Interpreting findings from the analyses of lecturer data	138
UTAUT CONSTRUCTS	138

8.2.1 Performance Expectancy	138
8.2.2 Effort Expectancy	139
8.2.3 Social Influence	140
8.2.4 Facilitating Conditions	141
8.2.5 Hedonic Motivation	141
8.2.6 Habit	142
8.2.7 Price Value	142
8.2.8 Personal Innovativeness in the domain of IT	143
8.2.9 Behavioural Intention.....	144
TPACK CONSTRUCTS	144
8.2.10 Content Knowledge	144
8.2.11 Pedagogical Knowledge	145
8.2.12 Technological Knowledge	146
8.2.13 Pedagogical Content Knowledge	147
8.2.14 Technological Content Knowledge.....	148
8.2.15 Technological Pedagogical Knowledge	149
8.2.16 Technological Pedagogical Content Knowledge.....	150
8.3 Interpreting findings from the analyses of student data	151
8.3.1 Performance Expectancy	151
8.3.2 Effort Expectancy	152
8.3.3 Social Influence	153
8.3.4 Facilitating Conditions	154
8.3.5 Hedonic Motivation	155
8.3.6 Habit	155
8.3.7 Price Value	156
8.3.8 Personal Innovativeness in the domain of IT	157
8.3.9 Behavioural Intention.....	157
8.4 Revisiting the research questions	159
RQ2: What Functionalities of Moodle do lecturers and students use when using Moodle for e-learning in a learning journey?	159
8.4.1 What are the experiences of lecturers and students when using Moodle for e-learning in a learning journey?	161
8.4.2 What Functionalities of Moodle do lecturers and students use when using Moodle for e-learning in a learning journey?	163
8.4.3 Why do the lectures and students use Moodle for e-learning in a learning journey the way they do?	164
8.4.4 How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?.....	165

8.5 Limitations and Further Research.....	166
8.5.1 Limited Pedagogical Knowledge for the online environment	166
8.5.2 Insufficient Technological Knowledge	166
8.5.3 Insufficient Pedagogical Content Knowledge	167
8.5.4 Additional training on appropriate technological methods	167
8.5.5 Using the TPACK framework	167
8.6 Conclusion.....	168
CHAPTER NINE – RECOMMENDATIONS AND CONCLUSIONS	169
9.1 Introduction	169
9.2 Recommendations	169
9.2.1 Students.....	169
9.2.1.1 Upgrade internet packages	169
9.2.1.2 Backup power supply	169
9.2.1.3 Prepare for loadshedding	169
9.2.2 Lecturers	170
9.2.2.1 Upgrade internet packages	170
9.2.2.2 Backup power supply	170
9.2.3 Institution.....	170
9.2.3.1 Communication	170
9.2.3.2 Academic representation.....	170
9.2.3.3 Moodle training	170
9.2.3.4 Technical support.....	171
9.2.3.5 Compulsory training	171
9.2.3.6 Using Moodle frequently.....	171
9.2.3.7 Use of functionalities	171
9.2.3.8 Communication on Moodle.....	172
9.2.3.9 Plagiarism checker	172
9.2.3.10 Online methodology training	172
9.2.3.11 Student authentication.....	173
9.3 Conclusion.....	173
BIBLIOGRAPHY.....	174
APPENDIX A	205
APPENDIX B	210
APPENDIX C	214

APPENDIX D	228
APPENDIX E	240
APPENDIX F.....	242
APPENDIX G	244

LIST OF TABLES

Table 5.1: Statistics for students.....	82
Table 5.2: Cronbach's Alpha for students.....	83
Table 5.3: Statistics for lecturers	84
Table 5.4: Cronbach's alpha for lecturers	85

LIST OF FIGURES

Figure 2.1: Evolution of e-learning	42
Figure 3.1: Research model for the UTAUT	49
Figure 3.2: Research model for the UTAUT 3	51
Figure 3.3: TPACK Framework	52
Figure 3.4: Theoretical and conceptual frameworks.....	54
Figure 5.1: The year students were registered for.....	71
Figure 5.2: Student gender demographics	72
Figure 5.3: Student age groups	73
Figure 5.4: The length of time students had been using Moodle.....	74
Figure 5.5: How frequently the students used Moodle	75
Figure 5.6: Gender demographics for lecturers.....	77
Figure 5.7: Age group of lecturers using Moodle.....	77
Figure 5.8: The length of time lecturers had been using Moodle.....	78
Figure 5.9: Frequency with which lecturers used Moodle.....	79
Figure 5.10: Length of time lecturers had been working at the institution.....	81

LIST OF ABBREVIATIONS

4IR	Fourth Industrial Revolution
CK	Content Knowledge
CMS	Course Management System
EdTech	Educational Technology
EE	Effort Expectancy
FC	Facilitating Conditions
HEI	Higher Education Institution
LMSs	Learning Management Systems
MBA	Masters in Business Administration
Moodle	Modular Object-Oriented Dynamic Learning Environment
OSA	Summative Assessments
OSS	Open-Source Software
PC	Personal Computer
PE	Performance Expectancy
PK	Pedagogical Knowledge
POPIA	Protection of Personal Protection Act
SA	South Africa
SI	Social Influence
SRL	Self-regulated learning
TK	Technological Knowledge
TPACK	Technological Pedagogical and Content Knowledge
UNESCO	United Nations Educational Science and Cultural Organization
UTAUT-3	Unified Theory of Use and Acceptance of Technology
WHO	World Health Organisation

ABSTRACT

E-learning tools and Learning Management Systems (LMSs), such as Moodle, have been in existence for decades. However, there has been an accelerated use of such platforms due to the COVID-19 pandemic. Countries all over the world underwent hard lockdowns that limited face-to-face contact in everyday aspects of our lives. Higher Education Providers responded to ensure that education was accessible via online platforms to allow students to continue their studies during the pandemic. Thus, LMSs were not merely used for uploading or downloading content, but for completing online courses, including assignments, examinations and lectures. Using an LMS became the only means of survival for many educational institutions during the COVID-19 pandemic. This study explores these aspects from a student and lecturer perspective during COVID-19, using constructs from the Technological Pedagogical and Content Knowledge (TPACK) framework and Unified Theory of Use and Acceptance of Technology (UTAUT-3) theory. The aim of the study was: To understand the experiences of lecturers and students using Moodle for e-learning in a learning journey at a Private Distance Higher Education Institution in a COVID-19 environment.

This study is based on the pragmatist paradigm, this methodology was deemed appropriate for this study as the study uses a mixed methodology for collecting and analysing qualitative and quantitative data. This study captures the experiences of lecturers and students using interviews as well as questionnaires. This study was conducted at a Private Distance Higher Education Institution and the sample population were students and lecturers who are part of the MBA programme.

The final result of the research revealed that despite initial adaptation challenges in Moodle, lecturers performed as expected and were able to complete their job function during COVID-19 as the platform was accessible and user-friendly. The research further revealed, despite classes moving online, most of the lecturers did not change their teaching methods and that engagement during online sessions was limited. Regarding students, the results revealed that despite having initial adaptation challenges students found the system to be user friendly, pleasurable and beneficial.

Students were already equipped for e-learning as they were already using Moodle prior to the pandemic, the research further revealed that students incurred a cost saving as they did not need to travel to lecture venues, the library or examination venues whilst using Moodle as a tool for e-learning.

Some of the recommendations arising from the findings of the study for both students and lecturers included upgrading internet packages and making preparation for loadshedding to ensure that studies are not interrupted. Recommendations for the institution included improved communication with both students and lecturers regarding training and support available to maximise the benefits of online engagement and online teaching methodologies.

ACKNOWLEDGEMENTS

To those who contributed to my journey:

My most heartfelt gratitude goes to my mother Zaheeda Jabar, Thank you for your tolerance and patience during this very challenging journey. Your love, support and, enthusiasm and most importantly encouragement is valued and appreciated greatly.

A special thank you to my grandmother Latiffa Jabar, for your warmth, kindness and unconditional love. I consider you the greatest blessing in my life.

I thank the Jabar family for the ongoing enthusiasm throughout my journey. Thank you for believing in me before I believed in myself.

I thank my supervisor and mentor Professor Desmond Govender for his ongoing support, guidance and encouragement. I can't thank you enough for your patience and wisdom during my journey. Thank you for making my doctoral journey a memorable one.

I would like to express my gratitude to my editor Dr Xenia Kyriacou for her assistance with the editing on my thesis.

To the participants in this study, both students and lecturers, who took time out of their busy schedules to provide imperative insights. I express my sincerest gratitude to you for participating in my study

I dedicate this study to my little brother, Mohammed Ruwaid, who I lost during my PhD journey to Duchenne muscular dystrophy in 2022. You are loved and missed dearly my darling baby brother.

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Prior to Covid -19, many Higher Education Providers were already making use of Learning Management Systems (LMSs), such as Moodle. However, based on the researcher's experience working in Private Higher Education, the COVID-19 pandemic accelerated the use of LMSs because face-to-face contact was restricted during this period. During COVID-19, many face-to-face academic functions moved online, such as, submission of assignments, examinations, marking of scripts, presentation of lectures, and reporting results. This research was conducted to investigate aspects of this changeover as it occurred at a Private Distance Education Provider, and focused on the MBA (Masters in Business Administration) students registered at the institution. This chapter will introduce the purpose of the study and the background to the study. A rationale for the research is also provided, together with a problem statement. Lastly, the research objectives and research questions are given. An overview of the structure of the thesis is also provided.

1.2 Purpose of the study

The purpose of this study was to critically analyse the use of Moodle for e-Learning in a learning journey at a Private Distance Higher Education Institution (HEI).

1.3 Background to the study

Post-Apartheid policies in South Africa (SA) were explicitly formulated to promote access to education for previously disadvantaged race groups (Dumbrajs, de Jager & Bergström-Nyberg, 2013). Since 1994, education reformation to promote equality among all race groups has been a priority (Gumede & Biyase, 2016). In this regard, legislative change, policy development, curriculum reform, and the implementation of new modes of education delivery have shown progress (Gumede & Biyase, 2016).

According to the White Paper Policy (2014) there has been a process of change in Higher Education from traditional approaches of teaching. Distance Education now offers contact as well as support to students; and students are exposed to tutoring and mentoring.

This change is due to the introduction of well-designed learning resources (White Paper Policy, 2014). Additionally, digital technology and e-learning have become more accessible in South Africa, despite being a developing country. Thus, it is important to include these developments into planning for various possible provision models (White Paper Policy, 2014). E-learning can be usefully mapped onto a continuum from digitally supported to fully online; with digitally dependent, internet-supported and internet-dependent along the continuum (White Paper Policy, 2014).

The Fourth Industrial Revolution (4IR), also known as the digital era, has ensured that many individuals are able to stay connected and manage their lives through technology (Schwab, 2015). Today, almost every company in every industry has been affected by digital technology, including Higher Education (Schwab, 2015). According to Gaebel, Veronika, Morais and Elizabeth (2015), developed countries have made progress with the integration of e-learning platforms into Higher Education. On the other hand, developing countries have not been as effective in integrated e-learning (Makokha & Mutisya, 2016).

Several challenges to the quality of e-learning integration into HEIs in developing countries have been identified (Makokha & Mutisya, 2016). The challenges they identified may be situated at a structural through to an individual level. Tarus, Gichoya and Muumbo (2015) concurs that, although e-learning has benefits that can improve teaching and learning, there may also be a number of barriers to the adoption of this technology that different individuals may experience.

According to Prensky (2001) there are three types of individuals: digital natives, digital immigrants, and digital refugees. Digital natives grew up with technology and the digital language of computers, video games, and the internet (Prensky, 2001). According to Zur and Zur (2011) 'digital native' is a term for people born in the digital era. Digital natives speak the 'language' of computers and the culture of the internet. Digital immigrants never grew up with computers, but do use technology, some more than others, when they find it useful and helpful. Digital immigrants sometimes default into non-digital behaviour (Prensky, 2001). Digital refugees do not like the digital world and are not likely to use a mobile phone or computer (Prensky, 2001).

Since digital natives were born into the digital era, they are among those most likely to accept and benefit from e-learning (Chaves, Maia Filho & Melo, 2016).

The issues discussed above are likely to contribute to learners' 'internal barriers' as they are likely to affect an individual's attitude and behaviour when they interact with Learning Management Systems (LMSs). Ali, Uppal and Gulliver (2018) add that individuals may have negative attitudes toward e-learning because of factors such as limited availability of technology, past negative experience, and personal assumptions about their lack of capacity and skill. Other contributing factors influence the standard of e-learning materials, which may affect motivation, especially where there is inadequate support. Additionally, these authors warn that e-learning can be experienced as a lonely journey lacking community involvement and which may lead to learner boredom.

It is relevant here to mention the distinct difference between blended learning and distance e-learning. Blended learning contains a face-to-face component along with the intervention of technology. Distance Education, on the other hand, is solely reliant on technology. Consequently, distance-learning students do not have the privilege of attending face-to-face classes, which may exacerbate this sense of isolation. However, quality e-learning platforms (such as Moodle) do provide a learning community. As well as accessing relevant content, students can also attend webinars, chat to lecturers and fellow students via blogs, and access any additional resources (Nuere & De Miguel, 2021). Learning programmes are set up on Modular Object-Oriented Dynamic Learning Environment (Moodle) via an instructional designer, assisting the student along a learning journey for each of the modules that she or he is registered for.

Moodle is an open-source LMS that can be easily downloaded (www.moodle.org) (Goyal & Tambe, 2015). Moodle can also be customised by the user. Additionally, Moodle's extensive user community is able to customise the software (Goyal & Tambe, 2015). As stated previously, post Covid-19, we saw an increase in the use of LMSs and its functionalities.

The World Health Organisation (2020, p.1) defines coronavirus disease (COVID-19) as “an infectious disease caused by a newly discovered coronavirus”. The WHO further explains that a COVID-19 infection may cause a mild to moderate respiratory illness that clears without treatment. However, individuals at risk (advanced age and co-morbid conditions) are more likely to develop a severe illness which may lead to death. Despite several attempts to slow down transmission, and because of its reproductive rate, the virus spread globally. Governments worldwide responded by restricting the movement of people, shutting down schools and Higher Education Institutions, and many businesses that were considered to provide ‘non-essential’ services. This unexpected closure of schools and educational institutions prompted several education institutions to adopt e-learning. Remote teaching and learning provided a viable solution for education during the COVID-19 pandemic.

1.4 Motivation

The rationale for conducting this study was two-fold. Firstly, personal interest and experience and, secondly, on what the literature suggests. Based on my experience within the context of Higher Education, I have observed that several Higher Education Providers still utilise conventional and more traditional methods of teaching. I have worked in Private Higher Education Institutions over the past five years and many of these have been integrating technology into their teaching-and-learning. Most commonly, Learning Management Systems (LMSs), are used to communicate with students, provide information, and even conduct assessments, including the institution where I currently work. The use of this type of technology appears to be particularly useful for Distance Higher Education Providers as their students are geographically dispersed. In my experience, Moodle is not simply used to upload assignments and provide easy access to content for students, but to package and deliver fully-fledged courses such as higher certificates and degrees (in bite-sized chunks).

Students are required to study the content and connect to the webinars prior to taking a quiz or knowledge check at the end of each unit/chapter. Assignments and examinations can now also be conducted online via Moodle. Online courses/programmes for distance students have further advantages, including access to webinars, blogs, and tabs for downloading resources.

Moodle is a powerful open-source LMS providing features and functions such as assignments, forums, journals, quizzes, surveys, chat rooms, and workshops (Kumar & Sharma, 2016).

More recently the use of e-learning has become integral globally due to COVID-19. According to the United Nations Educational Science and Cultural Organisation (UNESCO) (2020) the closure of universities and schools due to COVID-19 had several negative impacts on students, including the interruption of their studies and career trajectories. Hence the reliance on e-learning, which is helping to address this problem by providing access to learning opportunities through online mediums. E-learning tools played a crucial role during the global pandemic by facilitating teaching and learning between lecturers and students during the period when universities had to adhere to lockdown regulations. Essentially, e-learning helped to ensure continuous learning during the lockdown. However, Almaiah, Al-Khasawneh and Althunibat (2020) caution that a thorough analysis still needs to be conducted on challenges to the use of e-learning systems experienced during COVID-19.

1.5 The context of Distance Higher Education Providers for this study

When a student registers for a programme, such as a Higher Certificate in Social Media, or a Bachelor of Commerce in Project Management, they need to complete a learning journey for each module they register for. The journey starts with a welcome followed by content for each unit/chapter. The student is required to complete the knowledge check/test at the end of each unit to proceed to the next unit. Marks are allocated to the students at the end of the journey. Some modules require assignments to be submitted that lecturers mark online. Marks allocated are available on the online platform. Webinars are provided along the journey and blogs are initiated for student and lecturer engagement. Upon successful completion of the module, the learning journey ends. The learning journey is designed according to stages, like an arcade game.

Upon successful completion of a stage, the gamer progresses to the next stage. The e-learning journey for the student is similar – the student progresses to the next unit upon successful completion of each previous unit until the module is complete.

This study aims to analyse the use of an LMS, not merely for uploading or downloading content, emails, posts, reminders, and messages; but for completing online courses, including assignments, examinations, and webinars. The study explores these aspects from both a student and lecturer perspective during COVID-19.

E-learning has been widely used, and continues to be widely used, in most universities worldwide (El-Seoud, Ghenghesh, Seddiek, Nosseir, Taj-Eddin & El-Khouly, 2013), but not without difficulties. For example, Information Technology programmes at many Egyptian universities experience challenges that can be overcome using technology-enhanced learning (El-Seoud et al., 2013). Consequently, an open-source Moodle e-learning platform was introduced at certain universities to assist in the provision of e-content in the form of asynchronous web-based modules (El-Seoud et al., 2013). Shraim and Khlaif (2010) explored the potential of LMSs, in Palestinian areas undergoing conflict, to provide continuous access to education. The results showed that both students and teachers viewed e-learning positively, but that they were not always ready to fully adopt them (Shraim & Khlaif, 2010).

E-learning is considered necessary to enable twenty-first century learners to adapt to global changes (Shraim & Khlaif, 2010). Many e-learning tools are currently available for use in education; and these tools can provide training and education to a large number of students with diverse cultural backgrounds and educational levels (Alkhateeb et al., 2010; Alkhateeb, AlMaghayreh, Aljawarneh, Muhsin and Nsour (2010). E-learning decreases educational costs and it is more effective and convenient than traditional learning (Alkhateeb et al., 2010).

Two main categories of barriers to e-learning using LMSs have been identified (Al Meajel & Sharadgah, 2018; Rogers, 2000). These barriers are grouped according to internal and external factors. Internal factors include attitude and the perception of users about their competence and confidence to use technology.

The perception of a lack of time can also pose a barrier; as well as a lack of skills and the inability to envision a final product. External factors include those related to hardware and software; as well as a lack of technical support and training from an institution.

The provision and usage of online and e-learning systems presented major challenges for many universities during the COVID-19 pandemic (Almaiah et al., 2020). E-learning systems have many embedded features that could potentially have proved invaluable during the pandemic. However, to ensure the success of LMSs adoption, a thorough understanding is needed of the main challenges associated with successful usage and implementation of learning systems (Almaiah et al., 2020). The study conducted by Almaiah et al.(2020) explains key aspects of successful e-learning system usage; and provides recommendations for policy-makers, researchers, developers and designers.

Online learning is not new to many learners, particularly distance learners. However, COVID-19 increased the urgency of adopting digital education. Consequently, the COVID-19 environment has introduced a new dynamic into teaching and learning. This study explores and analyses a learning journey using Moodle as an e-learning tool for online courses at a South African Private Distance Higher Education Provider during the COVID-19 lockdown period in South Africa.

1.6 Problem statement

There is a growing body of literature that focuses on Learning Management Systems, such as Moodle. One such study examined South African university students' perceptions of the university's e-learning support systems, which are Moodle and Student Central Systems (Miya, 2015). Miya's study made recommendations that a further in-depth study should also be conducted among the academic staff. Another study (Al-Kindi & Al-Suqri, 2017) looked at Moodle and online tools via smartphones. The main purpose was to explore students' LMS (Moodle) skill level and their knowledge of online tools or technologies. The study identified a positive correlation between smartphone and online tool use, and Moodle for learning. Again, this study was too student centric and did not provide information regarding the lecturers. In fact, the criticism of much of the existing literature is that very little is known about instructors' use of LMSs (Abdullah & Ward, 2016). Online instructors have a greater chance of utilising tools more comprehensively to meet the requirements for effective online teaching (Schoonenboom, 2014). An understanding of their perspectives is thus crucial.

Additionally, Wingo, Ivankova and Moss (2017) reported that many instructors doubt that teaching online will achieve the same student outcomes as face-to-face teaching. More research is also needed on how to use technology in a learner-focused environment where it can have maximum impact (Kirkwood & Price, 2013). Knowing more about the impact of various technology choices can provide evidence that appropriate choices may have immense transformative potential.

Many other studies based on Moodle, online courses and LMSs focus on public universities (e.g., Sarfo & Yidana, 2016; Salhab, 2019). Several studies based on Moodle, online courses and LMSs have been conducted in the face-to-face mode of delivery (e.g., Noval, 2016; Ishtaiwa, 2011; Gomez, 2015). Some studies examine student experiences as opposed to lecturer experiences (e.g., Tuapawa, 2017; Phahamane, 2011). Additionally, others deal with high-school contexts (e.g., Magubane, 2014; Mudaly, 2012).

Due to the COVID-19 pandemic, Higher Education Institutions have swiftly moved to online-learning. COVID-19 has forced both face-to-face and Distance Education institutions around the world to adopt online learning. Due to the state of emergency worldwide, institutions and students are required to react differently to the availability of e-learning systems and mobile-learning applications (Almaiah, Al-Khasawneh & Althunibat, 2020).

Aboagye, Yawson and Appiah (2020) have cautioned that developing countries face greater challenges than developed countries. The use of e-learning in developing countries poses several challenges because of poor internet connectivity, insufficient ICT skills, and inadequate content, since delivering content through ICT applications is still new to many lecturers in developing countries – even at HEIs. Further, it is important to consider the level of student preparedness for e-learning and the online environment (Aboagye et al., 2020).

Some of the challenges faced by students at HEIs during COVID-19 included accessibility, learner motivation, learner intent to use ICT, level of student and lecturer skill, as well as other general academic and social issues (Aboagye et al., 2020).

The research suggested that the most common and important issue affecting student adoption of e-learning was accessibility (Aboagye et al., 2020).

Despite e-learning having been around for a relatively long time, many HEIs were still using conventional methods for teaching and learning and merely using Moodle for uploading and downloading content. Due to COVID-19, HEIs were forced to use Moodle for more than just uploading. At the Private Distance Education Institutions where this study was conducted, it has now become compulsory for lecturers to conduct webinars via Moodle, marking, and (more recently) Online Summative Assessments (OSA) – essentially the student’s examination that is administered via Moodle. While several institutions are currently integrating online modes of delivery, using a LMS has become the only means of survival for Distance Education institutions since the COVID-19 pandemic.

The beneficiaries of this study will be threefold: lecturers who will gain insight on how to improve their teaching and learning strategies; students who will be able to gain insight on how to potentially improve their study methods; institutions who will gain insight on how to improve the overall lecturer and student experience.

1.7 Theoretical and conceptual frameworks

This study uses constructs from both an extended Unified Theory of Use and Acceptance of Technology (UTAUT-3) and Technological Pedagogical and Content Knowledge (TPACK) to construct a conceptual framework. The use of the constructs of UTAUT-3 may help to identify changes in perceptions about technology and technology adoption because of the COVID-19 environment that participants were subjected to. For example, constructs such as Personal Innovativeness and Habit may indicate how participants in this study have changed their use of LMS platforms due to COVID-19. The impact of these changes may also be illuminated through the analytical lens of these constructs.

1.8 Objectives

The objectives of the study are listed below:

- To understand the experiences of lecturers and students using Moodle for e-learning in a learning journey at a Private Distance Higher Education Institution in a COVID-19 environment.
- To explore the functionalities of Moodle being used for e-learning in a learning journey at a Private Distance Higher Education Institution in a COVID-19 environment.
- To determine why the lecturers and students use Moodle for e-learning in a learning journey the way they do at a Private Distance Higher Education Institution in a COVID-19 environment.
- To explore how using Moodle for e-learning in a learning journey has transformed distance learning at a Private Distance Higher Education Institution in a COVID-19 environment.

1.9 Research Questions

The research questions of the study are listed below:

- What are the experiences of lecturers and students when using Moodle for e-learning in a learning journey?
- What functionalities of Moodle do lecturers and students use when using Moodle for e-learning in a learning journey?
- Why do the lecturers and students use Moodle for e-learning in a learning journey the way they do?
- How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?

1.10 Structure of the Study

This study consists of nine chapters. The structure of the study is as indicated below:

Chapter one – Introduction

Chapter two – Literature review

Chapter three – Theoretical and conceptual frameworks

Chapter four – Research methodology

Chapter five – Quantitative analysis (lecturers and students)

Chapter six – Qualitative analysis and discussion (lecturers)

Chapter seven – Qualitative analysis and discussion (students)

Chapter eight – Synthesis and discussion

Chapter nine – Recommendations and conclusions

1.11 Conclusion

This chapter has introduced the study and context; as well as the purpose of the study, the background to the study, the rationale/motivation of the study, the problem statement, objectives, research questions, and the structure of the study. The next chapter will provide a detailed literature review.

CHAPTER TWO – LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of literature relevant to the overall objectives of this study; and to provide foundational knowledge relevant to the research. This chapter will provide a clarification of concepts and constructs related to Moodle, online courses, Distance Education, Information and Communication Technology (ICT), Information Technology (IT), e-learning, coronavirus, and blended learning. Establishing a clear understanding of these constructs is necessary to interrogate the use of Moodle for e-learning in a learning journey at a Private Distance Higher Education Institution.

E-learning has been widely used as a tool in most of the international universities worldwide (El-Seoud, Ghenghesh, Seddiek, Nosseir, Taj-Eddin & El-Khouly, 2013). An open-source Moodle e-learning platform has been introduced at many universities to deliver e-content and to provide asynchronous e-learning web-based modules (El-Seoud et al., 2013). Studies show that both students and teachers have positive attitudes towards e-learning, but that they may not yet have the level of preparedness needed to adopt it (Shraim & Khlaif, 2010).

E-learning is recognised internationally as necessary to enable twenty-first century learners to navigate to global changes (Shraim & Khlaif, 2010). According to Alkhateeb, AlMaghayreh, Aljawarneh, Muhsin and Nsour (2010) e-learning can provide training and education to large numbers of diverse students, it reduces the cost of education, and it is more effective than traditional learning; as well as more accessible and convenient (Alkhateeb et al., 2010). Although there are many benefits to e-learning, there are often barriers associated with e-learning.

As mentioned in Chapter 1, Rogers (2000) and Al Meajel and Sharadgah (2018) have identified both internal and external barriers to e-learning. Internal barriers include attitudes about technology, and self-perceptions about competency with technology. Additional internal barriers include low student confidence, time and skill constraints, and an absence of vision.

External barriers relate to hardware, software, technical support, institutional support, and training programmes. Consequently, successful usage and adoption rely on an understanding of those factors that pose challenges to e-learning systems (Almaiah, Khasawneh and Althunibat, 2020). It is the intention of the researcher that findings from this study help to inform policy-makers, researchers, and designers and developers of e-learning systems and materials.

The core of this chapter is based on exploring and analysing a learning journey using Moodle as an e-learning tool for online courses at a South African Private Distance Higher Education Provider during the COVID-19 lockdown period. Further, the study attempts to understand new dynamics and their effects that were introduced into teaching and learning during COVID-19.

As well as presenting key literature relevant to the study, this chapter also discusses the gaps and limitations in current research; and how this study sought to contribute to the academic debate in this field.

2.2 Concept clarification

According to Steinberg (2007) a concept is a word to which scientists in the field assign the same meaning. In accordance with literature, the following concepts used in this research are discussed:

- Moodle
- Online courses
- Distance Education
- Information and Communication Technology (ICT)
- Information Technology (IT)
- E-learning
- Coronavirus
- Blended learning.

2.2.1 Moodle

According to Moodle.Org (2018) Moodle is an integrated and secure learning platform that provides educators, students and administrators with a learning environment that can be personalised. Moodle currently powers many thousands of small and large institutions globally, including Shell, London School of Economics, State University of New York, Microsoft, and the Open University. According to Luna et al. (2017) Moodle is a virtual environment designed to enhance the e-learning experience with virtual lessons, information, questions and answers, and other resources. Moodle is also an open-source LMS.

Teachers who use Moodle have access to an array of powerful tools, including assignments, forums, journals, quizzes, surveys, chat rooms, and workshops (Kumar & Sharma, 2016). According to Costa, Alvelos and Teixeira (2012), Moodle is a widely used open-source platform. It facilitates the creation of websites that give exclusive access to enrolled students. Additionally, geographical boundaries do not hamper the exchange of information via synchronous (chats) and asynchronous (discussion forums) channels (Costa et al., 2012).

Users of Moodle across both academic and business fields number more than 90 million worldwide (Moodle.org, 2018). Over more than a decade, Moodle developers have followed social constructionist pedagogical principles. Consequently, student-centric tools and collaborative learning environments have been incorporated to assist both teachers and learners (Moodle.Org, 2018). The working definition for this study is that Moodle is an open-source LMS.

2.2.2 Online courses

An online course is primarily internet based (Swan, James & Daston, 2017). According to Soffer and Nachmias (2018), although online courses are not new to Higher Education, there has been a recent rapid growth in these courses (Toven, Lindsey, Rhoads & Lozano, 2015). New technologies have emerged that provide greater versatility and ease of implementation, together with cost savings (Farinella, Hobbs & Weeks, 2000), thus, making these learning platforms more accessible to universities and students.

Consequently, present-day students are far more likely to use a learning platform than students in the past (Tichavsky, Hunt, Driscoll & Jicha, 2015). For example, in 2011 at least one online course was attended by 32% of all enrolled students (Allen & Seaman, 2015). Academic institutions now consider online academic courses to be a critical long-term strategy for improving their offerings and for reaching wider audiences (Allen & Seaman, 2015). The working definition for this study is that an online course is one which is primarily internet based (Swan, James & Daston, 2017).

2.2.3 Distance Education

Distance Education can be explained as a range of pedagogical methods as well as a mode of delivery. With regard to the methods used, Distance Education aims to communicate and mediate the curriculum without lecturers and students being in the same place at one time (Distance Higher Education Programmes in a Digital Era: Good Practice Guide, 2014). Distance Education is less a philosophy and more a *method* of education (Teixeira, Bates & Mota, 2019) allowing students to study at a time and place of their choice and without face-to-face contact with a teacher (Teixeira, Bates & Mota, 2019). Technology is a critical element of Distance Education (Teixeira, Bates & Mota, 2019). According to Keegan (2013) the practice of teaching at a distance began 150 years ago. However, Distance Education, as we know it today, would not have been possible without developments in technology, especially in ICT.

Distance Education uses teaching, learning and assessment approaches that strive to provide education to students who are dispersed (Distance Higher Education Programmes in a Digital Era: Good Practice Guide, 2014). The guide clarifies that this can be done with or without supporting technology. The working definition for this study is, Distance Education allows students to study in their own time, at a place of their choice (home, work or learning centre), and without face-to-face contact with a teacher (Teixeira, Bates & Mota, 2019).

2.3.4 Information and Communication Technology (ICT)

Information and Communication Technology (ICT) is at the interface between Information Technology (IT) and Communication Technology (CT). Previously, separate units of data and technologies were not connected, but were used solely for

the storage and retrieval of information, as well as for data processing. These have now been linked for collaboration by new communication technologies (Herselman & Britton, 2002). These networked ICT systems comprise electronic resources for e-communication and e-collaboration and include the hardware, software and networks necessary for data processing, information storage, retrieval and understanding (El-Shtewi, 2004).

According to Albarrak and Aboalsamh (2010), ICT has led to significant changes in teaching-and-learning methodologies, which have resulted in the development of new learning environments. E-learning aims to use ICT as a tool to improve education, as well as the availability and accessibility of educational opportunities. The internet plays a pivotal role here and has become one of the most imperative tools in e-learning. LMSs provide a series of tools and functions to support both teaching and learning, including management tools, online group chats and discussion forums, and assessment tools for managing and grading. For clarity, ICT can be defined as the result of the interaction between three parts, i.e., Information Technology (IT), Communication Technology (CT), and Information and Communication Technology (ICT), which is a combination of IT and CT.

2.2.5 Information Technology (IT)

Information Technology (IT) includes the equipment, processes, procedures, and systems needed to provide and maintain information systems within an institution. It includes the skills, knowledge, and understanding needed to employ ICT appropriately and securely (El-Shtewi, 2004). Additionally, IT is the technology that involves developing, maintaining, and using computer systems, software, and networks for the processing and distribution of data (Vallance, 2008). Further, IT refers to items of hardware such as laptops, digital cameras, overhead projectors, scanners, computers, and software. Software, also known as computer programs, allow users to access, transmit, receive, process, store, retrieve, organise, and present information via electronic means (Alexandrou, 2009). The working definition for this study is that IT includes the equipment, processes, procedures, and systems used to provide and maintain information systems within an institution (Kent Country Council, 2004).

2.2.6 Communication Technology (CT)

Communication Technology (CT) facilitates communication between individuals or groups who are not situated in the same location (Alexandrou, 2009). Devices such as telephones, radio, telex, fax, television, and video are included, as well as more recent computer-based technologies, including, electronic data interchange and e-mail (Alexandrou, 2009). The working definition for this study is that CT facilitates communication between individuals or groups who are geographically dispersed (Alexandrou, 2009).

2.2.7 E-learning

Moll, Adam, Backhaus and Mhlang (2007) have defined e-learning as flexible-learning using ICT resources, tools, and applications. E-learning focuses on accessing information, interaction among teachers, students, and the online environment (i.e., collaborative learning) (Moll et al., 2007). E-learning is the use of technological interventions for teaching, learning, and assessment (Moll et al., 2007).

2.2.8 Coronavirus

According to the World Health Organisation (2020, p.1) “coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus”. The World Health Organisation (WHO) further assert that individuals who are infected with COVID-19 may experience mild to moderate respiratory illness and recover without treatment. However, older individuals and those with underlying health conditions are more likely to develop severe sickness and even death. Despite several attempts to slow down transmission and the reproductive rate of the virus, it has still spread globally. Consequently, most governments closed schools and HEIs, as well as many businesses that provided non-essential services.

2.2.9 Blended Learning

Blended learning integrates online instruction with face-to-face instruction (Graham, Woodfield & Harrison, 2013). Much research has been conducted over the past decade with the increased use of blended learning; and much of this research focusses on tertiary education (Halverson et al., 2012). Blended learning uses face-to-face learning and combines these methods with technology in order to improve

Higher Education (Graham, Woodfield & Harrison, 2013). Blended learning can be explained as a mode of instruction that combines e-learning methods with traditional classroom methods (Lu, Huang, Huang, Lin, Ogata & Yang, 2018). However, Crawford and Jenkins (2018) argue that blended learning is difficult to define. It can simply be defined as a hybrid of traditional face-to-face learning and technology. An alternative view is that blended learning is more complex and necessitates unique pedagogical approaches.

2.3 Learning Manager Systems (LMSs) in Higher Education

Zanjani (2017) states that LMS usage has become extremely popular in Higher Education in recent years. LMSs have unique e-learning tools that are well suited to HEIs since they enable knowledge sharing and community building opportunities, which are prerequisites for the development of critical thinking and higher-order learning. Despite these advantages, the adoption and acceptance of LMSs by lecturers and students is not always assured (Zanjani, 2017). To these ends, LMSs have recently incorporated a variety of multimedia and communication tools to encourage lecturers to move away from traditional approaches (Zanjani, 2017). Awanga and Darusa (2012) add that LMSs are software packages for delivering and managing course materials over the internet and offering features for online collaboration. LMSs provide online-learning, online assessment, and collaborative learning. A few LMSs have been released with an Open-Source Software (OSS) license, such as, Claroline, Moodle, and others.

LMSs enable the management and delivery of learning content and resources to students using mostly web-based platforms to facilitate learning anytime and anywhere, thus expanding students' access to learning (Awang & Darusa, 2012). LMS application also provides functions for student registration, and the delivery of e-learning courses and content. These courses and the progress of students can be tracked and assessed. Depending on the institution, instructor-led classes, student self-service, and self-enrolment can also be facilitated and managed (Awang & Darusa, 2012).

Generally LMSs can be categorised into two categories: open-source LMSs and proprietary LMSs. The most popular open-source LMSs are Claroline and Moodle. The advantage of OSS is that it is free and can be adapted and extended to meet individual needs. Another advantage of OSS is that it can profile e-learning according to the educational methods an institution plans to use (De Vries, 2004). The working definition for this study is that LMS usage has become extremely popular in Higher Education in recent years, and can be used to engage both students and lecturers (Zanjani, 2017).

2.4 LMSs and mobile-learning

When mobile devices are used for e-learning, the system is called mobile-learning. Mobile devices include mobile phones, personal computers (PCs), tablets, and personal media players (Herrington & Herrington, 2007). Mobile-learning has become increasingly popular due to the development of high-tech mobile devices with advanced wireless communication technology that enable learning 'on the move'. Mobile-learning technology allows students to access study material from different locations (Jones, 2013). This technology also allows the sharing of content (Woodill, 2010). Because mobile-learning is so effective, HEIs have embraced the technology as it meets their students' needs and expectations (Woodill, 2010).

Mobile LMSs that support portable mobile devices are being enthusiastically promoted by HEIs because of their many convenient functions. These functions allow access to course materials and grades, the sharing of resources and content, collaboration and the uploading of assignments (Lowenthal, 2010).

2.5 Mobile LMSs and academic achievement

Mobile LMSs and devices are considered to be promising learning support tools to improve academic achievement. Mobile devices appear to encourage student participation in, and engagement with, educational activities (Han & Shin, 2016).

There is a concern that the use of mobile devices may distract, and thus negatively affect, student's attention (Gehlen-Baum & Weinberger, 2012). Overall, however, mobile-learning is still considered one of the most effective learning systems because of its accessibility and flexibility (Jacob & Issac, 2014).

Mobile LMSs allow students to view lectures, participate in discussions, interact and share ideas; and this can be achieved anywhere and at any time. Since most students are cell phone or smartphone users, HEIs can use this to the benefit of the students' education and encourage the use of these devices – even providing technical support. Additionally, evaluation studies should be conducted for purposes of measuring the benefits of mobile-learning (Hong & Kang, 2012).

2.6 E-learning in Higher Education Institutions

E-learning, also known as 'learning facilitated online through network technologies', emerged in the 1990s among South African HEIs (Ravjee, 2007). Consequently, this new development heralded in new e-learning best practices and a new vocabulary; as well as new policies, structures and budgets (Ravjee, 2007). Today, e-learning is widespread throughout HEIs and includes e-mail, online journals, and networked libraries. LMS software now also facilitates information management for teaching, research, and administration.

E-learning arguably improves problem-solving skills and enables educators to disseminate and impart knowledge (Mlitwa & Van Belle, 2011). Consequently, e-learning has been advocated as being essential for the improvement of students' performance; as well as for engagement, flexibility, interest and motivation (Millham, Thakur & Malan, 2014). These authors argue that the success of e-learning lies in its ability to promote active participation and self-regulated learning. Such constructivist, self-paced learning is the ideal for achieving learning outcomes (Millham et al., 2014).

2.7 Studies based on lecturer and student experience with LMS e-learning

Noval (2016) explored the use of an LMS at an allied health faculty using a mixed methods study. This mixed methods study explored the faculty's experiences in LMS usage, including factors that affected the extent of LMS usage to enhance experiences in the face-to-face courses. The study contributed to an understanding of the use of tools among faculty members of the various allied health departments. The study aimed to understand if there were significant differences in the usage of a LMS, and to explore faculty members' experiences of LMS usage – including factors that affected the extent of LMS usage to support learning experiences in face-to-face

courses. This study was limited to a face-to-face context and only focused on the experiences of the faculty members.

Ishtaiwa (2011) conducted a Jordanian case study on faculty attitudes and the use of the Moodle Course Management System (CMS) to supplement face-to-face Instruction. The study examined the attitudes of faculty members, at a private university, towards Moodle and their use of various Moodle CMS tools. The aim of the study was to evaluate the faculty's current use of Moodle for instruction and communication; as well as general attitudes toward Moodle. The significance of the study was to provide valuable insights into faculty usage and attitudes towards the use of Moodle. Similar to the study by Noval (2016), this study focused on the experiences of the faculty members – yet again leaving a gap for further studies on learner experiences using Moodle.

Gomez (2015) conducted a study in a Californian State Higher Education Faculty on the use of an LMS to supplement face-to-face classes. The purpose of this study was two-fold. First, it examined how a Higher Education Faculty applies a LMS with face-to-face classes. Secondly, it identified characteristics of the faculty that contributed to LMS usage. The findings revealed that the top five LMS features used by the faculty included: posting syllabi, emails/messages, grade books, and allowing students to upload their assignments and link to web resources. This study focussed solely on the use of LMSs from a faculty perspective in a face-to-face class, like the studies of Noval (2016) and Ishtaiwa (2011).

Another study by Sarfo and Yidana (2016) was conducted on university lecturer experiences of the design and use of Moodle for blended learning. The lecturers in this study were involved in the design and development of Moodle-based courses; and the research focused on how they used the system to facilitate teaching and learning and which factors facilitated or impeded implementation. However, the findings do not say much about the journey using Moodle as an e-learning tool for online courses. A more recent study by Salhab (2019) explored faculty members' attitudes towards using Moodle at a Palestinian Technical Khadoorie University. Collectively, these studies provide important insights into the experiences and attitudes of faculty members in a

face-to-face set-up as well as in a blended-learning set-up. However, these studies do not provide any insight into the use of LMSs in different settings, such as, in Distance Education; and there is a research gap in terms of student experiences, which are integral and need to be explored.

Magubane (2014) conducted a self-study on how a teacher can ensure that learners remain motivated to learn technology by making it more enjoyable and interesting. This study was conducted from a teacher's point of view – a teacher reflecting on his/her practice as a practitioner who teaches technology at a high school in a township. Clearly, findings from a study on the use of technology at a high school cannot be readily applied to a Higher Education context. Additionally, the use of technology would also differ in a face-to-face learning context, as opposed to a distance-learning context; and the motivation to use technology would differ for a Private Education Provider as opposed to a Public Education Provider in a township. However, this study contributed to an understanding of a facilitator's experience of teaching technology, albeit not necessarily about VLE or Moodle as tool. This study was further limited to teachers and based in a high school, thus further exposing the need for studies to be conducted in Higher Education.

Some fascinating work done locally on the use of LMSs to support teaching and learning in a Grade 10 Information Technology class. The study focused on learners' attitudes, learner experiences, and the benefits that students derive from using LMS tools (Mudaly, 2012). This study was conducted in a secondary school, which is basic education in South Africa, rather than in Higher Education. This study was limited to learners and was based in a high school; again indicating the dearth of research conducted in Higher Education and (in particular) in Private Higher Education in South Africa.

Radif, Fan and McLaughlin (2015) have identified internal and external barriers influencing LMS implementation in Iraqi Higher Education. The primary objective of this work was to identify the most important internal and external barriers; and to assist academic staff with the optimal use of LMS tools. The results showed that supplying the required technological infrastructure does not automatically ensure optimal

implementation by all academic staff. The study focused on the barriers to, and limitations of, LMS usage – as opposed to the advantages of LMS usage.

Asiri, Mahmud, Abu Bakar, Ayub and Bakadam (2015) conducted a study on barriers to the use of the Jusur Learning Management System in Saudi Arabia Universities. The purpose of this study was to determine the main barriers faced by faculty members to using Jusur LMS. Barriers such as administrative and technological obstacles were identified for consideration. As in the work of Radif et al. (2015), this Saudi study focused on the barriers to, and limitations of, the LMS as opposed to the advantages of LMS usage.

Alenezi (2018) conducted a study similar to that of Asiri et al. (2015) and Radif et al. (2015) on barriers to participation in LMSs in Saudi Arabian universities. This study was designed to identify barriers that have hindered the adoption of LMSs in Saudi Arabian universities. Learning Management Systems (LMSs) have been adopted in many learning institutions because of their functionalities and applications, which improve pedagogy. Thus, universities have been encouraged to use LMSs to enhance learning as is the case at the institution in this study.

Tuapawa (2017) conducted a phenomenological study on interpreting experiences of students using educational online technologies (EOT) to interact with teachers in blended-learning tertiary environments. This study documented the interpretations of students' experiences with teachers. This research provided a phenomenological interpretation of key stakeholders' EOT experiences. Its purpose was to establish their current EOT needs and challenges, and to provide a basis from which to recommend methods for effective EOT support. The findings of the study were limited to student experience in a blended environment.

Phahamane (2011) conducted a similar study on the experiences of students participating in a blended-learning module. The aim of the study was to explore the experiences of university students using blended learning for a course on Educational Technology (EdTech). EdTech deals with the effective use of different technologies to support and improve teaching and learning, and the blend of face-to-face approaches

with online-learning techniques was deemed likely to modify students' experiences of learning. This study provided insights into full-time and part-time student experiences, but with little attention to lecturer experience. This leaves a need for more research in a Higher Education setting, which is the setting of the current study. There is even a greater need to explore the use of LMSs in Distance Education, with all its contextual differences to Higher Education Institutions, since LMSs at distance institutions are used to complete courses online from start to finish.

Ishtaiwa (2011) has shown that instructors hold a strong interest in using Moodle, and that they see it as an effective tool for enhancing teaching and learning. However, as Noval (2016) warns, faculty members may underutilise the advanced capabilities of an LMS if they are not obliged to use it. He adds that there is a possibility that learning outcomes will not be best achieved when LMSs are underused in blended courses. According to Noval (2016), more studies are needed to explore faculty members' experiences of LMS usage, including factors that affect the extent of LMS usage to facilitate learning experiences. Noval (2016) suggests that faculty members tend to focus on tools that help them manage large classes and distribute course materials, without changing their pedagogy or the course content. The most important motivating factors found to encourage faculty members to use Moodle tools were: the convenient dissemination of learning materials, the ability to enhance communication with students, and the ability to improve student achievement (Noval, 2016). The most important inhibiting factors were a perceived workload increase and time management challenges, poor technology skills and limited access to technology among some students. Additionally, insufficient professional development programmes on the use of Moodle were identified (Noval, 2016). Sarfo and Yidana (2016) agree with Noval (2016) that academics underuse Moodle for simply preparing and presenting lessons, and for chatting with students before and after face-to-face lesson in the classroom.

The findings of Salhab (2019) revealed that faculty members had positive attitudes towards Moodle. Nevertheless, there was significant variation in faculty member's attitudes towards training sessions offered by their institution. Radif, Fan and McLaughlin (2015) concur that ICT skills development and ICT training provision for teachers and faculty members is paramount for the effective use of LMSs.

Sarfo and Yidana (2016) add that LMS implementation by users (teachers and academics) present several challenges that need to be addressed through skills development to achieve the full potential of LMSs to promote the development of the 21st century competencies.

According to Radif, Fan and McLaughlin (2015), the following limitations pose significant challenges to LMS implementation:

- Insufficient pedagogical training
- Inability to apply a constructivist pedagogy
- Limited experience with LMSs
- Insufficient technical support
- Unavailability of the correct educational software.

Many Higher Educational Institutions have adopted an LMS to increase the quality of the education and skills development offered to students; and to enable interaction and collaboration without the limits imposed by time and space. However, research has shown that supplying the required technological infrastructure does not ensure optimal acceptance and implementation of a new technology. Thus, the responsibility lies with the HEI to enable the effective and successful integration of technology into teaching and learning (Radif et al., 2015). Overcoming internal and external barriers identified by research is essential to enable a focus on pedagogy and increased e-learning, rather than simply on logistics (Radif et al., 2015).

Other barriers to the use of LMSs include Insufficient technical support and training provided by the institution, and negative attitudes toward technology (Radif, Fan & McLaughlin, 2015; Alenezi, 2018). Minor barriers found in Alenezi's study encompassed the more technical aspects, such as, poor internet access and connectivity, limited infrastructure such as hardware and software, and challenges with English language proficiency. This is consistent with the findings of Sarfo and Yidana (2016) who identified the major challenges as low technology competencies, cumbersome institutional culture, and lack of adequate ICT facilities.

In a study on faculty members, usage, and reasons for usage, Gomez (2015) identified some differences according to faculty characteristics, but mostly LMS use was consistent across the demographics in his study. Gomez argued that the blending of an LMS with face-to-face classes can no longer be considered to be a choice as it is critical to a robust 21st century education. Gomez advised that LMSs provide excellent tools for personalised teaching-and-learning experiences as they free learning from the limitation of physical space – the only requirement for entering a classroom being a device with internet access.

The research findings of Mudaly (2012) indicated that learners had a positive attitude towards the use of LMSs to support teaching and learning. Digital technology is breaking down the barriers of traditional teaching and learning. However, no one tool can meet all classroom needs (Mudaly, 2012). As a researcher, I believe that the use of the LMSs provide an innovative way to complement traditional student–teacher interaction. I agree with the assertion that LMS usage increases learner access to existing resources and creates opportunities for collaboration and independent learning (Mudaly, 2012). Mudaly adds that digital technologies, such as LMSs, have dramatically changed the teaching process, and expanded new learning opportunities and access to educational resources beyond those of the traditional classroom. It is evident from the literature that LMSs present a very useful innovative and supportive tool for teaching and learning. However, further research needs to be conducted to investigate both learner and teacher experiences when using LMSs in the classroom.

2.8 Students readiness for blended learning

Many researchers advise that blended learning promotes continuity in learning and, as a result, better student grades. Further, blended learning improves skill and knowledge development (Adams, Tan & Sumintono, 2020). Schwirzke, Vashaw and Watson (2018) believes that blended learning may even emerge as a predominant model of the future. Student readiness is imperative for the successful rollout of blended learning (Adams et al., 2020). When assessing student readiness, many variables must be considered, such as, knowledge, technology skills, availability of technology, ability to self-direct learning, the functioning of computers and the internet, as well as student attitudes (Kumar, 2017).

However, some concerns must be noted when venturing into blended learning, e.g., the combination of e-learning with face-to-face learning may result in student disengagement as students may struggle adapting to this new approach and may be reluctant to lead their own learning (Vaughan, 2007). Students who have network/connectivity issues may struggle to adjust to an online course structure (Tayebinik & Puteh, 2012). In developing countries, the cost of data or Wi-Fi may impede the success of online learning.

However, Heidi and Neo (2015) assert that, while the concerns are noted, the benefits and advantages certainly outweigh the concerns. Blended learning allows flexible learning for students and enables them to experience multiple benefits (Shahnaz & Hussain, 2016). The findings of Adams et al. (2020) suggest that students are ready for blended learning and have the required technological skills, but that there are differences in their readiness based on gender, age, ethnicity, the field of study, and level of education.

2.9 Student attitudes to online learning

The success of any technological system or platform is dependent on how the system is used (Almaiah, 2018). Hence, in the e-learning context, the most important criterion is to have acceptance from the student. Students are required to take a more active role in their learning as the online learning set-up is not teacher-centred or teacher-driven. Students who engage in online learning are required to manage their own time and learning progress (Liaw, Huang & Chen, 2007).

The student's attitude toward learning online often depends on the nature of the programme or online course. If the online course is well designed and user friendly, the student is more likely to find it purposeful; and the success of using the platform will be far more significant (Pituch & Lee, 2006). Students appreciate a platform that communicates efficiently and readily provides access to the content/course work, as this encourages learning (Pituch & Lee, 2006). Selim (2007) noted that students' previous experiences with computers and the internet influence their willingness to participate in, and their level of engagement with, online learning.

Additionally, familiarity with internet use plays a significant role in encouraging engagement with, and with the success of learners in, the online learning environment (Yang & Lin, 2010). Many students, however, remain resistant to online learning, which may be based on their perceptions that online courses and online learning tends to be difficult, overwhelming, and demanding (Zsohar & Smith, 2008).

According to Adnan and Anwar (2020), students traditionally study with peers at a central venue, which allows them to share their perspectives and thoughts with one another. These conditions change with online learning platforms such as Moodle. It is, however, essential to note that online learning can assist students who are geographically dispersed to access education.

Wang, Zhao and Zhang (2020) advise that poor network connectivity emerged as one of the greatest challenges for students during online webinars/ lectures; and students who have poor internet connectivity are less likely to complete their online lessons. According to Ben (2013), e-learning is indeed a new and powerful method for teaching and learning. However, security issues such as cyber-attack and cyber viruses are of great concern to learners and service providers. Ben (2013) adds that while administering online tests, authenticating the individuals who are taking the test is a major challenge as institutions are unable to monitor students in an online examination environment.

Despite these challenges, students still appear to have a passion for learning in an online classroom (Allan, 2020). Other studies on web-based learning found that some students feel there is a lack of response in the online classroom and less engagement (Allan, 2020). However, driven by the COVID-19 pandemic, online learning has become the only option for many students; and they have been forced to adapt and learn new skills, many of which will be of help to them in their future careers and studies (Allan, 2020).

2.10 E-learning system challenges

Many Higher Education Institutions have faced challenges while using and adapting to e-learning. These challenges are faced in both developed countries as well as

developing countries (Eltahir, 2019). Students in developed countries, however, are less of a concern as they are significantly more readily accepting of an e-learning system or platform (Almaiah et al., 2016). As Eltahir (2019) asserts, the adoption of e-learning in developing countries poses greater challenges and the digital divide between developing and developed countries persists.

Aung and Khaing (2015) indicated that challenges can be classified into four main categories as follows:

- Technological challenges
- Individual challenges
- Cultural challenges
- Course challenges.

Aung and Khaing (2015) argue that the above challenges vary widely between different countries because of differences in ICT knowledge, the quality of content development, and the condition of the network infrastructure, all of which are common challenges to the adoption of e-learning in developing countries.

Kanwal and Rehman (2017) showed that the characteristics of an e-learning system, internet access/experience, and computer self-efficacy were the main issues that impeded the successful adoption of e-learning system in countries like Pakistan. Mulhanga and Lima (2017) identified poor interface design, lack of IT skills, and inadequate technical support as the foundational barriers that served as a hindrance to the successful implementation of e-learning projects. Cultural, political, and economical constraints have been identified as the main barriers to e-learning initiatives in Libya (Kenan, Pislaru, Othman & Elzawi, 2013).

From the literature above, accessibility appears as the main challenge in developing countries. Essentially, poor internet connectivity, and inadequate knowledge of the use of ICT pose challenges for students trying to transition from a traditional to an online e-learning environment.

2.11 Online-learning challenges reported by tertiary lecturers during the coronavirus pandemic

Several researcher's reported challenges that lecturers faced during online-learning during the pandemic, some of these challenges reported are discussed below.

2.11.1 Internet speed/network connectivity

According to Mwila, Mudenda, Kampamba, Mufwambi, Lufungulo and Phiri (2021), all educational institutions globally embraced e-learning during the pandemic and there were several factors that had to be considered when they transitioned to e-learning, including, internet quality, internet speed, and accessibility of online resources.

Muliyah, Aminatun, Nasution, Hastomo and Sitepu (2020) have highlighted that e-learning requires a good network connection. It is common for educational institutions in developing countries to struggle with transforming their traditional classrooms to online classrooms purely because of the lack of access to a reliable internet connection for both students and lecturers (Neuwirth, Jović & Mukherji, 2021).

In a study conducted by Ghounane (2020), all respondents described internet connectivity as unstable. One student reported having to ride a bicycle 65 km to reach a venue that had only slightly better internet connectivity. Most of the students in the study reported missing online lectures due to challenges with the internet (Ghounane, 2020). A study conducted in South Africa also reported that students in rural areas were faced with poor internet connectivity during online learning during the COVID-19 pandemic (Ghounane, 2020).

As emphasised in the literature, a good internet connection is pivotal to the success of online teaching and learning. Challenges with internet connectivity have been highlighted as the leading factor that affected online learning during COVID-19 (Dawadi, Giri & Simkhada, 2020). According to Mamun & Griffiths (2020) unreliable internet has been reported to be the main reason for non-participation in online learning. Since developing countries struggle with poor internet connectivity, these countries are likely to experience the greatest challenges (Maatuk et al., 2022).

2.11.2 Technical issues

O'Keefe, Rafferty, Gunder and Vignare (2020) noted that technical issues occur during online learning, but that lecturers do not always have technical support readily available.

2.11.3 Lack of face-to-face contact

Several researchers support that one of the challenges of e-learning is that personal interaction is absent between lecturers and their student, as well as between students and fellow students (Maatuk et al., 2022). Additionally, “digital activities may lead to students being distracted by other online content, which may inhibit their engagement in the class lesson or activity” (Bailey & Lee, 2020, p. 179). Furthermore, there are problems when using a one-size-fits-all approach to learning, which may restrict participation and classroom engagement (Gillett-Swan, 2017).

2.11.4 Loadshedding

E-learning becomes very challenging when a country is subjected to loadshedding – Since internet connectivity is affected and electronic devices cannot be charged (Sana & Mariam, 2013). Again, an example can be taken from Pakistani literature, where it is reported that electricity is sometimes limited to 12 hours per day. Similar situations are common in developing countries and have serious consequences for e-learning (Tahir, Haoyong, Larik & Adnan, 2018).

2.11.5 Training academic staff

Ghounane (2020) emphasises the importance of training, saying that educational institutions need to provide training to both lecturers and students on how to use ICTs for teaching and learning. All faculty members should be included depending on their roles (Mukhtar, Javed, Arooj & Sethi, 2020). Ghounane (2020) suggests webinars on how to use platforms such as Moodle, Zoom and Google Classrooms

2.11.6 Adoption/Adapting

According to Sari and Oktaviani (2021) it is challenging to adapt to a new online learning platform for both the student and the lecturer.

Changing educational systems during the pandemic also came with adaptation challenges for students and lecturers as they were required to shift from a traditional classroom to an online classroom (Mandasari & Wahyudin, 2021).

Baticulon, Alberto, Mabulay, Rizada and Reyes (2021) conducted a study of barriers to online learning in the time of COVID-19. The findings of the study indicated that students experienced difficulties adjusting as they were not sufficiently prepared for online delivery (Mseleku, 2020). Academics facilitate online lectures at Higher Education Institutions and, hence, play a critical role in the online learning journey. However, academics were also required to suddenly adjust to new online teaching platforms due to the COVID-19 pandemic (Mseleku, 2020). Because of this sudden shift, many academics did not have sufficient time for their own adjustment, which impacted their ability to assist students (Burgess & Sievertsen, 2020).

2.11.7 Examinations

Many researchers have similar concerns, according to Kakepoto, Talpur, Memon, Halepoto and Jalbani (2021), LMS systems can be used to administer online test and examinations and allow lecturers to grade test, assignments, and examinations. However, they have cautioned that online assessment can be faulty as the quality of the scripts submitted is often compromised. Maatuk et al. (2022) have also expressed concern about assessment that is limited to posing objective questions. In such cases, technology may be misused, and that the submission of unreliable scripts is common. Additionally, one of the biggest risks associated with online assessments and examinations is plagiarism (Sahu, 2020). While e-learning certainly has its benefits, some of the limitations include maintaining academic integrity (Mukhtar, Javed, Arooj & Sethi, 2020).

2.12 Online-learning benefits reported by tertiary lecturers during the coronavirus pandemic

Several researcher's reported benefits that lecturers faced during online-learning during the pandemic, some of the reported benefits are discussed below.

2.12.1 Cost

Some studies have revealed that e-learning may be seen as a financial burden due to the cost of purchasing data bundles (Ghounane, 2020). However, other studies found that Moodle was affordable and easy to use (e.g., Maatuk et al., 2022).

2.12.2 Accessibility

One of the benefits of remote learning being comfort and accessibility (Mukhtar, Javed, Arooj & Sethi, 2020). Institutions all over the world including, for example, Indonesia, believe that online platforms can be easily accessed by lecturers and students (Churiyah, Sholikhah, Filiant & Sakdiyyah, 2020). According to Muliyah et al. (2020), most students want to enrol for programmes at universities in other countries around the world. Today this is possible as students can study and graduate online without going anywhere (Muliyah et al., 2020).

2.12.3 Safety

Educational institutions all over the world closed their doors due to the emergence of COVID-19. Authorities in various countries suggested that alternative teaching-and-learning methods needed to be adopted as traditional classes were too much of a risk. Educational institutions adopted e-learning methods to ensure students did not have to sacrifice education for safety (Saxena, Baber & Kumar, 2021). Since maintaining social distancing was a preventative measure to avoid contracting the virus, online learning became critical during this global crisis (Saxena, Baber & Kumar, 2021). Thus, until a vaccine was developed, social distancing remained imperative and had to be prioritised to prevent the community spread of COVID-19 (Koo et al., 2020). Adopting e-learning was the best option to ensure that COVID-19 did not spread. Hence traditional learning was replaced by e-learning (Saxena, Baber & Kumar, 2021).

2.13 Online-learning challenges reported by tertiary students during the coronavirus pandemic

Several reported challenges that students faced during online-learning during the pandemic are given below.

2.13.1 Technical and connectivity challenges

According to Aboagye, Yawson and Appiah (2020), Higher Education Institutions have faced challenges with e-learning due to the coronavirus pandemic. Their study revealed that, while accessibility was certainly a challenge, students were not prepared for a completely online learning experience (Aboagye et al., 2020). Accessibility issues are not limited to internet connectivity, but also compatibility between devices, such as, smartphones and laptops. It was further identified that the cost of accessing the internet created a barrier for students (Aboagye et al., 2020). Additionally, in some developing countries, internet connectivity is the least of concerns for students since many of them do not have access to portable devices, such as smart phones, laptops, and tablets, that can navigate the internet and grant them access to e-learning (Aboagye et al., 2020).

According to Hamid, SENTRYO and HASAN (2020), who claim that lecturers and students do not have proper internet connection in Nepal, the success of online learning is supported by stable internet access as well as a stable electricity supply.

According to Henaku (2020) students were hampered by 'network problems' which caused connectivity problems and poor mobile networks. The students in their study admitted that they sometimes miss lectures due to the issues experienced with internet access (Henaku, 2020). Additionally, students were concerned by internet/data bundles being very expensive to purchase as online learning consumes a lot of data. Some students missed lectures as they did not have the funds to purchase internet/data bundles (Henaku, 2020).

Mahmud and Gope (2009) also noted that students in Bangladesh struggle with network connectivity and bandwidth issues. They further noted that internet usage in Bangladesh is one of the lowest in the world with parts of Bangladesh experiencing loadshedding every day.

2.13.2 Training

According to Shawaqfeh, Al Bekairy, Al-Azayzih, Alkatheri, Qandil, Obaidat and Muflih (2020) training is extremely important for both the lecturer and the student.

The study by Shawaqfeh et al. (2020) revealed that lecturer and student training needs are associated with barriers to success in online teaching and learning. Training is beneficial for effective delivery of online courses (Shawaqfeh et al., 2020). According to Leo, Alsharari, Abbas and Alshurideh (2021), who concur, it is critical to conduct intensive training when introducing technological education to avoid calamitous situations.

2.13.3 Study habits during COVID-19

According to Hwang, Rabheru, Peisah, Reichman and Ikeda (2020), online education allows students to interact independently and to achieve their study goals. Student-coordinated learning has become more prominent because of online learning, and students now need to adapt their study habits to achieve their learning objectives (Hwang et al., 2020).

Students also need to be very active in online lectures as they need to pose questions to lecturers. Additionally, they are required to access additional resources and references (Angkarini, 2021). Time management is now more critical as it is crucial for student preparation (Angkarini, 2021). Kumi-Yeboah and Smith (2016) note that students now have flexibility and convenience, but that there is a lack of support, hence students require more self-confidence. Not everyone has been inducted into this new reality of learning. Many rural communities and regions still practise face-to-face learning where the lecturer is present explaining the content of the lesson (Angkarini, 2021).

According to Angkarini (2021), every student is different and will therefore not have the same study habits. Some study well in crowded places while others prefer studying in a more private environment. To develop good study habits, it is essential for a student to have the desire to learn and to have self-discipline (Çapan, 2010). Some students have poor study habits, which suggests that they lack time-management skills, concentration, and discipline (Çapan, 2010). Ahiatrogah, Deku and Dramanu (2008) note that not all online students are young students. Some are adults with jobs and family responsibilities. It is inevitable, therefore, that their study habits will differ.

Angkarini (2021) further notes that distance students do not have as much time for self-study due to work and family responsibilities. Angkarini (2021) adds that if students are working it is evident that they will have to divide their time between work and studies. Consequently, students who have family responsibilities and work commitments will have their studies impacted (Ahiatrogah, Deku & Dramanu, 2008).

Angkarini (2021) recommends that online students be guided by their lecturers on how to manage their time for their studies. Lectures should educate students on how to prepare for examinations and lecturers should assist with the preparation process. Additionally, lecturers should encourage students to adopt good study habits such as note taking, reading prior to the lecture, and planning and preparation.

2.14 Online-learning benefited reported by tertiary students during the coronavirus pandemic

Several researcher's reported benefits that students faced during online-learning during the pandemic, some of these benefits reported are as follows:

2.14.1 Accessibility and flexibility

Casey and Wilson (2005) have described flexible learning as flexible in the context of education means flexible start times and end times; studies can take place from any location; students can choose the times that works best for them; essentially learning can occur at anytime from anywhere that suits the student. Students can easily access lectures and study material regardless of where they are (Gautam, 2020). Some reported that e-learning is beneficial as it offers students flexible learning experiences (Albrahim, 2020) by, for example, "opening channels for synchronous and asynchronous communication and interaction, allowing for more collaboration and interaction with peers, providing access to learning resources in various formats, and promoting authentic and situated learning" (Albrahim, 2020, p. 3).

2.14.2 Communication

According to Zharova, Trapitsin, Timchenko and Skurihina (2020) "Moodle combines diverse means of communication that other electronic communication channels may provide and it allows not only to perform many functions, but also to integrate them into one platform".

Zharova et al. (2020) supports this and adds that students and lecturers prefer the same means of communication for personal as well as social interaction, such as, email and WhatsApp.

Ismatovna (2021) has argued for the importance of students being able to access their study material on Moodle, as and when required, regardless of where they are. Moodle also has discussion forums for student-to-student communication and student-to-lecturer communication (Ismatovna, 2021). The student can also receive feedback from lecturers on assessments and examinations. Additional tools can be plugged into Moodle, such as, journals and online libraries for the students' convenience (Ismatovna, 2021).

2.14.3 Moodle transforming e-learning

According to Ajani (2021) Moodle was used as a tool to salvage education during the COVID-19 pandemic. Moodle was used to deliver curriculum to students by Higher Education Providers. Higher Education Providers in South Africa used Moodle for teaching and learning during the pandemic with the aim of salvaging the academic year (Ajani, 2021).

Moodle is known to be a critical tool for learning and teaching globally as traditional methods of teaching, even prior to COVID-19, were being replaced by Moodle due to convenience (Ajani, 2021). The adoption of LMSs, especially Moodle, for curriculum delivery among academic staff in South African universities is enhancing learning and teaching activities (Ajani, 2021).

2.14.4 Intrinsic motivation

Motivation is a factor that drives a person to something because of a perceived need (Lisnani & Putri, 2020). According to Li et al. (2022), intrinsic motivation is concerned with the activity itself – a learning activity that motivates is one that is enjoyable and optimally challenging, thus allowing learners to develop their own learning behaviours and reflect on their own values and interests. Hence, online learning requires students to have self-discipline and to be more intrinsically motivated (Li et al., 2022).

2.14.5 Self-discipline and time management /Self-regulated learning

Gelles, Lord, Hoople, Chen and Mejia (2020) argue that, in this online era, students tend to take responsibility for their own learning. Additionally, the faculty should help students to adapt to the online learning environment. With online learning, it is essential for students to set boundaries, remove any distraction and practise time management (Gelles et al., 2020). In essence this means that students are required to be self-disciplined (Gelles et al., 2020). Students agreed that time management was an integral characteristic of being self-disciplined, which was crucial for successful remote learning (Gelles et al., 2020).

Li, Luo, Lei, Xu and Chen (2022) support this argument, i.e., that self-regulated learning (SRL) requires a student to have proactive control over their own learning process. SRL is necessary for remote learning, which promotes greater student autonomy and lesser lecturer presence (Li et al., 2022). As defined by Zimmerman and Schunk (2011, p. 9) "SRL is a dynamic process where learners continuously adjust their learning to attain personal goals".

2.14.6 User-friendly/easy to use/convenience

According to research by Paudel (2021), students agreed that they considered the conveniences of online learning to be an advantage; and online learning was especially beneficial during COVID-19. Moodle is convenient for students as they can adapt their pace of studying according to their lifestyle and expectations, as activities and lessons can be repeated on Moodle as many times as the student requires (Paudel, 2021).

2.14.7 Online examination

Elzainy, Sadik and Al Abdulmonem (2020) have noted that online examinations were common during COVID-19, and institutions introduced formative testing as well as summative examinations online. Additionally, an online examination (also known as an e-exam) can contain an assortment of questions, such as multiple-choice questions, true-and-false questions, matching questions, and essay-style questions (Elzainy, Sadik & Al Abdulmonem, 2020).

Some institutions prepared questions and question–answer banks, which were inputted into the system and programmed to provide immediate results to a student upon completion of the examination (Elzainy, Sadik & Al Abdulmonem, 2020). However, the Private Higher Education Provider in this study did not provide examination results immediately upon completion of the examination, as the examinations needed to be allocated to lecturers for marking before the institution could post results on Moodle, since the examination questions were open-ended (e.g., evaluation, discussion, practical application and case study questions) and thus needed to be reviewed and marked by an academic.

2.14.8 Cost of e-learning

Other authors agree that e-learning is cost effective for students as they no longer needed to commute to lecture and examination venues (Leo et al., 2021). With e-learning, travel expenses can be significantly reduced as compared to traditional learning (Maatuk et al., 2022). Nevertheless, it seems that students have been introduced to new learning platforms like Moodle, not as a matter of choice but rather because of the pandemic.

2.15 Functionalities of Moodle for students and lecturers

Martinez and Jagannathan (2012) assert that LMS platforms are now popular for planning, delivering, and managing blended-learning models of instruction in Higher Education Institutions, since LMSs, such as Moodle and Blackboard, provide tools to enable communications between lecturers and students online. Pellas and Kazandis (2015) add that LMSs are powerful tools to track student activities, such as, the submission of assignments, blogs, and online discussion forums; facilitate group work, and even as an administrative tool to eliminate the administrative burden.

According to Coll, Coll and Treagust (2018), Moodle grants students independence when learning, which helps to promote learning. Moodle is readily accessible on Android and iOS platforms (Sarrab, Hafedh & Bader, 2015).

Moodle provides access to several resources and functionalities for academic staff (Chicioreanu & Cosma, 2017):

- Links to a web pages;
- Text and images in the course materials can be included with labels and messages; and
- An Integrated Management System (IMS) content pack that facilitates visualisation; with the specifications for IMS content packaging.

Various authors agree that Moodle provides an interactive network for academic staff and students and offers many resources (Jebari, Boussedra & Ettouhami, 2017; Zainuddin, Idrus & Jamal, 2016):

- Forums for discussions and the exchange of ideas;
- Chat facilities, to enable student and lecturer engagement as and when required;
- Access to Wiki information;
- Access to comments from lecturers and a space for collaborative work;
- Glossary functionality to create and maintain a list of definitions that students can readily use;
- Groups functionality where students can be separated into groups based on the module they are registered for;
- Students can upload and submit assignments to lecturers and lecturers can mark the assignments and upload to Moodle to enable the student to view their results;
- Lessons can be uploaded by the lecturer and questions can be asked for evaluation purposes;
- A database is available with custom fields for records and data sharing as required;
- Workshops where webinars and online lectures can be facilitated; and
- Quizzes for student and peer evaluations in the form of multiple-choice and true-or-false questions.

From the above it is evident that students and lecturers who use Moodle have a wide range of functionalities available for teaching and learning. Chicioareanu and Cosma (2017) have advised that these are the following advantages to be noted when using Moodle:

- Interaction between the lecturer and the student occurs in real time;
- User-friendly platform;
- Documents can be edited easily, as required;
- Backup copies of information can be created and restored with ease;
- Registers of grades/results can be uploaded and downloaded in the form of spreadsheets for ease of reference; and
- Academic staff can easily access all information uploaded.

Petrovici and Ciobanu (2016) have advised that these are the following disadvantages to be noted when using Moodle:

- There are no guarantees about final tests results;
- Solving questions can be achieved by copying and pasting;
- Difficulty assessing the creative and critical-thinking competencies of students; and
- There is no guarantee that students study the prescribed content.

2.16 Effectiveness of e-learning

New teaching-and-learning methods are essential in this era of the 'information society' which is ICT based (Kim, 2016). E-learning aids can improve critical thinking, developing better problem-solving skills, and assist in improving productivity and efficiency (Blackburn, 2016). E-learning provides opportunities for educational transformation (Blackburn, 2016). It is, thus, essential that HEIs integrate improved technological systems into their operations, but it is equally essential that these systems are accessible to both students and lecturers (Blackburn, 2016). Accessibility includes ensuring that users have the relevant ICT skills – both in terms of training and on-going support. Should students and/or lecturers not be comfortable using the systems, then this will pose a barrier that will hinder the learning process (Blackburn, 2016).

Bezuidenhout (2018) has argued that lecturers who operate in the distance mode of delivery need to be prepared for this ever-changing digital environment. Essentially, lecturers in distance Higher Education need to develop the necessary competencies for the digital era (Poalses & Bezuidenhout, 2018). According to Poalses and Bezuidenhout (2018) students and lecturers in Distance Education need to unlearn their traditional/conventional habits of teaching and learning and adopt new behaviours and skills to enable them to cope better with the digital era. Additionally, HEIs need to develop a training strategy aligned to the needs of their business (Rothmann & Cooper, 2015).

2.17 Evolution of e-learning

The evolution of e-learning from the 1970s is presented in Figure 2.1 (Alshaher, 2013).

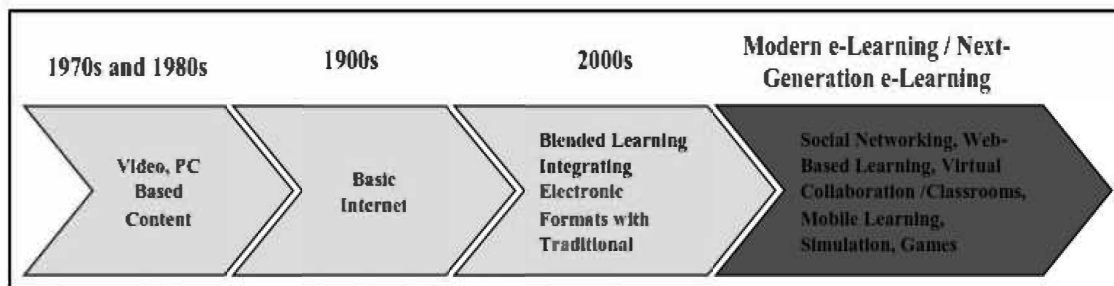


Figure 2.1: Evolution of e-learning

Source: Adapted from Alshaher (2013)

The advancement of e-learning technologies, specifically mobile technologies (smartphones and tablets), has brought e-learning from the 'old' CD-ROM media to personalised tools, adaptive learning, and personalised content (Bari, Djouab & Hoa, 2018). This evolution started with text-based networks (CD-ROM), which were followed by the internet, intranet and extranet (text-based and multi-timed media). The third step was the appearance of wireless broadband access technologies, such as, visual communities, interactive whiteboard, and iPads. This was followed by game authorising tools such as smartphones and online games; and lastly, personalised tools, adaptive learning, and personalised contexts (Bari, Djouab & Hoa, 2018).

2.18 How COVID-19 transformed learning in Higher Education

COVID-19 has challenged Higher Education to revisit the teaching-and-learning methodologies used within their institutions. The global pandemic has demanded unprecedented changes in education for many institutions. Many Higher Education Institutions have moved into a blended mode of delivery for programmes/courses. The future is likely to host a new normal in education, which will require students and lecturers to adapt to new methodologies. Blended learning has been widely adopted across several Higher Education Institutions, with some scholars referring to it as the 'new norm' (Adams et al., 2020).

There is much literature available on e-learning. However, it is essential to take note of the 'flip side' of the coin which is e-teaching. E-teaching is a combination of subject knowledge, pedagogy, skills in the use of various media sources, and the application of learning theories to these new modes of delivery. An e-teacher essentially uses a computer along with the internet to enable them to teach; hence, an e-teacher must be conversant with technology and how to use this technology to enable them to impart knowledge to students (Hoskins, 2010).

Innovative technologies and Learning Management Systems have provided policy makers at many Higher Education Institutions with solutions for teaching, learning, and assessment. Several educational institutions worldwide have become reliant on e-learning since the pandemic, as this was the only way to impart knowledge and keep institutions operational (Allan et al., 2020). E-learning has proved successful in delivering course work and has provided students with flexibility and safety. However, e-learning does have some limitations, such as, lack of engagement during lessons, and connectivity issues. The adoption of e-learning systems has been challenging for many Higher Education Institutions. However, e-learning systems such as Moodle have functionalities that potentially address these challenges, and which proved valuable during the COVID-19 pandemic (Allan et al., 2020).

The literature agrees that the digital transformation of education was accelerated by the COVID-19 pandemic, as 4IR tools had to be adopted by several institutions during

the lockdown (Mhlanga & Moloji, 2020). Because e-learning had to be adopted, LMSs, such as Moodle, had to be used to ensure learning continued (Ajani, 2021).

Traditional face-to-face learning is now being replaced by other types of learning, including, e-learning, virtual or cyber learning, hybrid learning, and online learning (Muniasamy, Ejalani & Anandhavalli, 2014). Education has transformed so much that students walk into the classroom holding devices that are already connected to the internet (Palloff & Pratt, 2013); and the lecturers can use e-books, YouTube videos, and even social media for teaching and learning (Fulton, 2012).

Accordingly, Higher Education policies have been transformed, which is inevitable as education is impacted by surrounding influences (Siemens & Matheos, 2010). Education has transformed for several reasons, including, financial issues and cost (Zusman, 2015). Education now includes using LMS systems – the student syllabus is uploaded to the LMS and the system is further used to host tests and grade scripts (Palloff & Pratt, 2013).

Moodle is known to be a critical tool for teaching and learning globally as traditional methods of teaching, even prior to COVID-19, were being replaced by Moodle due to convenience and cost factors (Ajani, 2021). Moodle was used as a tool to salvage education during the COVID-19 pandemic by delivering the curriculum to students for Higher Education Providers, including those in South Africa (Ajani, 2021).

According to Heyde and Siebrits (2019) several universities within South Africa made efforts to use LMS as a tool to, not only transform, but promote education as well. The adoption of LMSs, especially Moodle for curriculum delivery among academic staff in South Africa, has the potential to enhance teaching-and-learning activities (Ajani, 2021). “Thus, the present pandemic era calls for the full adoption of Moodle by academics to deliver learning materials for learning-and teaching activities, this explains why academics should be encouraged, supported and trained to adopt Moodle for curriculum delivery in the system” (Ajani, 2021, p.715).

Kasim and Khalid (2016) believe that Moodle is also significant for the advancement of teaching and learning activities as it provides a more convenient means for students to access learning activities. Using Moodle for curriculum delivery presents academics with new learning-and-teaching environments via the internet and intranet to promote a blended-learning approach at various institutions, thus allowing student engagements, and the sharing of instructional materials and information (Zaharias & Mehlenbacher, 2012). Govender and Mkhize (2015) concur that Moodle provides students with several opportunities, including opportunities to participate, engage, and interact. Essentially using Moodle as a tool for e-learning is beneficial and enhances teaching and learning (Ajani, 2021).

2.19 E-learning and Distance Education during COVID-19

Due to lockdown restrictions worldwide, educational institutions were required to implement innovative methods such as e-learning systems and mobile-learning applications. Online learning and distance learning is certainly not a new concept, but lockdown necessitated need to explore new online teaching-and-learning technologies.

The closure of universities and schools interrupted learning, potentially depriving students of opportunities for educational growth and development. Fortunately, e-learning systems were able to address this problem for many students by providing ongoing access to learning (UNESCO, 2020)

According to Ülker and Yılmaz (2016), e-learning systems can assist to manage, plan, deliver and track the learning-and-teaching process, which helps both lecturers and students with access to continuous learning. According to Durak and Çankaya (2020), Distance Education is a concept that is commonly known. However, for many, Distance Education became the new norm during the COVID-19 pandemic. Due to quarantine, many countries limited educational activities, forcing educational intuitions to introduce a distance mode of delivery. Some countries quickly moved to Distance Education as their sole method. However, other countries used Distance Education to support their traditional modes of delivery, later moving over to Distance Education as their sole method of delivery (Durak & Çankaya, 2020).

Most activities related to education and training were eventually provided via a Distance Education model. Education, has various dimensions, these dimensions include the student, lecturer, technology, support services, method, and evaluation (Durak & Çankaya, 2020). Much of these dimensions do surface in the conceptual framework that was constructed.

2.20 Microsoft Teams and Zoom as tools

Other institutions also saw the importance of using Teams. Universities all over the world adopted social networking sites (SNSs) such as Facebook and WhatsApp, as well as digital communication platforms such Microsoft (MS) Teams and Zoom, for teaching during the COVID-19 pandemic (Sobaih, Salem, Hasanein & Elnasr, 2021). Post COVID-19, Higher Education Providers were obligated to use online mediums to communicate; and policy makers at institutions had to ensure that learning during COVID-19 continued and did not stagnate (Sobaih et al., 2021). Additionally, decision makers at institutions in developing countries, such as in Egypt, had to explore other tools and platforms to ensure learning continued during the pandemic. Hence MHESR in Egypt partnered with the Microsoft Corporation to use MS Teams for the purpose of teaching and learning (Sobaih et al., 2021).

According to Microsoft (2020, p.1) “Microsoft Teams is the ultimate messaging app for your organisation, a workspace for real-time collaboration and communication, meetings, file and app sharing, and even the occasional emoji! All in one place, all in the open, all accessible to everyone”. MS Teams is considered a super application because it is able to integrate several applications, such as, online meetings, video chat, chats, and assessments in one program (Sobaih et al., 2021).

A variety of online tools had to be employed to support education during COVID-19, hence the use of web-based tools became imperative for online learning. LMSs were used to ensure learning material was accessible to both students and lecturers. LMSs also allowed institutions to monitor student involvement while providing support and while using the LMS as a communication tool (Kanetaki, Stergiou, Bekas, Troussas & Sgouropoulou, 2021).

MS Teams and Zoom were used during the pandemic to build virtual classrooms which were introduced as a virtual study room for student engagement (Ma, Azemi & Buechler, 2021). MS Teams was found to be user friendly for both students and lecturers and were used alongside Moodle and e-classes to share learning material. Both platforms are currently being used for supporting online university models (Kanetaki et al., 2021).

2.21 Pedagogies

In modern-day schooling online pedagogy is not only relevant but imperative. However, lecturers need to understand the nature of online pedagogy and acquire the necessary skills for the online teaching-and-learning environment (Ferri, Grifoni & Guzzo, 2020). These authors argue that due to the shift toward online learning, there are new expectations for lecturers. Lecturers are now required to possess skills to combine content knowledge and pedagogical strategies for student engagement, while using the affordances of technology (Ferri, et al., 2020).

The foundational components of online pedagogy comprise five pillars grounded in the principles of learner-centeredness, constructivism, and situated learning. These pillars include the ability to:

- Build relationships and community
- Incorporate active learning
- Leverage learner agency
- Embrace Mastery learning
- Personalise the learning process.

(Ferri, et al., 2020).

Due to these changes, new teaching pedagogies, learning skills, and assessment methods have emerged (Brown, 2015). Staff in Higher Education, especially lecturers, should champion these new innovative paradigms in Higher Education (Siemens & Matheos, 2010). This includes being aware of who the students are, what they need to learn, how to teach them, as well as the skills that they, as instructors, need to master to effectively execute their role (Palloff & Pratt, 2013; Scobey, 2012).

2.22 Conclusion

The literature review provided in this chapter highlighted some of the findings and conclusions of key researchers in the field of e-learning. This review explored the experiences of both lecturers and students who use LMSs (mainly Moodle) for e-learning, the functionalities of Moodle, why students and lecturers use Moodle the way they do, and how e-learning has transformed education – spurred on by lockdown during the COVID-19 pandemic. Based on research from various countries, this chapter aimed to provide an overview of e-learning and Moodle as a tool for e-learning in education. The researcher however identified some gaps in the research, the researcher was unable to find research that was specifically based on Private Higher Education Institutions during the COVID-19 pandemic. Whilst there were several studies that were conducted on e-learning and several studies conducted during the COVID-19 period there were however very limited information specifically about Private Higher Education Institutions during the COVID-19 era. The next chapter deals with the theoretical and conceptual frameworks used in this study.

CHAPTER THREE – THEORETICAL AND CONCEPTUAL FRAMEWORKS

3.1 Introduction

It is important for a researcher to choose the appropriate theoretical or conceptual frameworks to frame and guide the study. The Unified Theory of Acceptance and Use of Technology (UTAUT-3) and Technological Pedagogical and Content Knowledge (TPACK) were chosen as most appropriate frameworks from which constructs were used to construct a conceptual framework for the purpose of this study. These are discussed in detail in this chapter. While UTAUT-3 pertains to the students as well as the lecturers, TPACK pertains only to the lecturers.

3.2 Unified Theory of Acceptance and Use of Technology (UTAUT)

According to Venkatesh, Morris, Davis and Davis (2003), UTAUT allows an examination of user intentions and user behaviour. The theory states that four key constructs are direct determinants of usage intention and behaviour: Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), and Facilitating Conditions (FC). These relationships are illustrated in Figure 3.1.

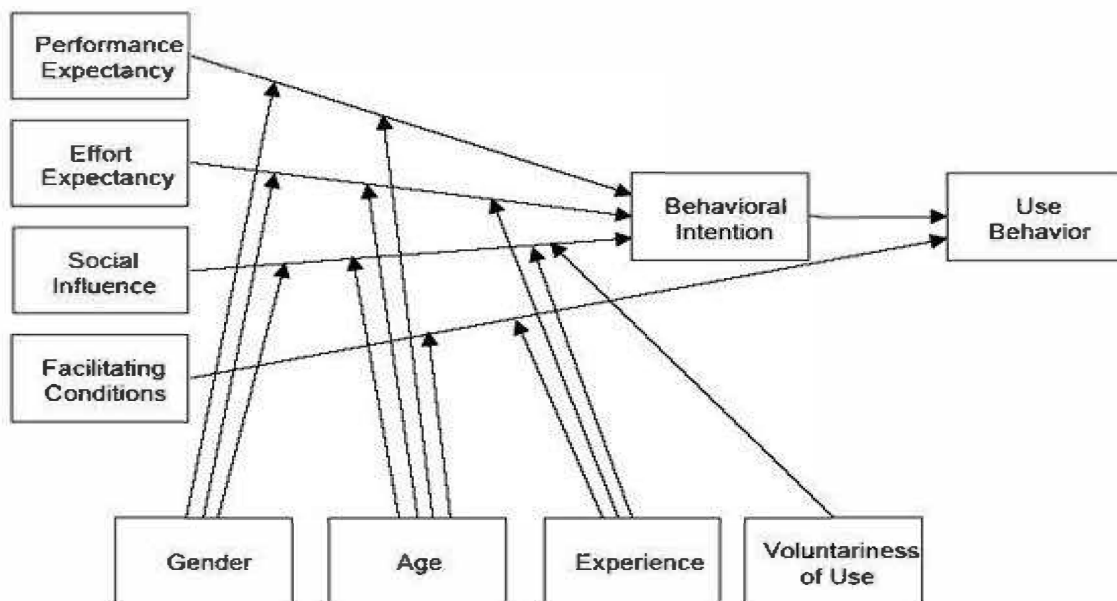


Figure 3.1: Research model for the UTAUT

(Source : Venkatesh, Morris, Davis & Davis, 2003)

According to Venkatesh et al. (2003), the UTAUT aims to improve on the various information-system models on technology adoption. The theory provides insights into user acceptance of a technology (Venkatesh et al., 2003). Relevant UTAUT constructs were used for this study.

The relationship between perceived usefulness (performance expectancy), ease of use (effort expectancy), and intention to use (behavioural intention) is moderated by age, gender, and experience. The UTAUT model attempts to explain this relationship because gender, age, experience, and intention have an indirect influence on the dependent variable, Behavioural Intention, via the four core constructs.

According to UTAUT, the effect of age and experience will be stronger for older workers, particularly with increasing experience. As mentioned, the UTAUT model has four moderators: gender, age, experience, and voluntariness (Venkatesh et al., 2003). UTAUT proposes that gender moderates the effect of Performance Expectancy and Effort Expectancy, except for Social Influences. As for gender, UTAUT proposes that men are more likely to rely on Performance Expectancy when determining whether to accept a technology, due to their higher task-oriented nature. Conversely, the technology acceptance for women may be determined by Effort Expectancy rather than Performance Expectancy.

The UTAUT model was further extended for the consumer context by Venkatesh et al. (2012) with three added constructs, namely, Hedonic Motivation (HM), Price Value (PV), and Habit (HB). The extended UTAUT was called UTAUT-2 and has seven significant predictive determinants of IS adoption behaviour.

A further extension of UTAUT-2 was made by Farooq, Salam, Jaafar, Fayolle, Ayupp, Radovic-Markovic and Sajid (2017). This is called UTAUT-3 and encompasses eight determinants of technology acceptance, i.e., Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Hedonic Motivation (HM), Habit (HB), Facilitating Conditions (FC), and Personal Innovativeness (PI) in IT. Personal Innovativeness in IT was added as the eighth determinant.

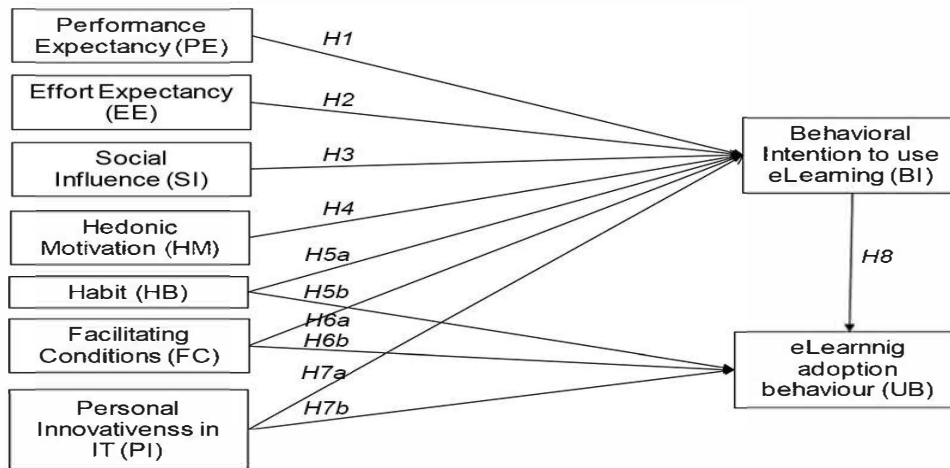


Figure 3.2: Research model for the UTAUT-3
 (Source: Gunasinghe, Hamid, Khatibi & Azam, 2019)

3.3 Technological Pedagogical and Content Knowledge (TPACK)

Mishra and Koehler (2006) developed the Technological Pedagogical and Content Knowledge (TPACK) model, which focuses on Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK). This model offers a productive approach to teachers who may face multiple dilemmas when implementing Educational Technology (EdTech) in the classroom. The TPACK model outlines how content should be taught, i.e., the pedagogy and how technology is used to support the pedagogy. These considerations are crucial foundational considerations for effective EdTech integration. The students' learning experience is influenced by how the technology is used, and how effectively it conveys the content and supports the pedagogy (Mishra & Koehler, 2006).

The TPACK model integrates Technological, Pedagogical and Content Knowledge for effective ICT-mediated teaching and learning (Gómez, 2015). Mishra and Koehler (2006) constructed the TPACK model by integrating Technological Knowledge with Content and Pedagogical Knowledge (Chua & Jamil, 2014). Content Knowledge (CK) refers to the subject content taught, Pedagogical Knowledge (PK) refers to teaching methods, and Technological Knowledge (TK) refers to the ICT tools used (Brantley-Dias & Ertmer, 2013; Almenara, Roig-Vila & Mengual-Andrés, 2017).

Pedagogical Content Knowledge (PCK) refers to the pedagogical practices used to achieve specific learning objectives. Technological Content Knowledge (TCK) refers to the technology used to teach the course and the relationships between these technologies and the learning objectives. Technological Pedagogical Knowledge (TPK) describes the relationships between technological tools and specific pedagogical practices (Almenara, Roig-Vila & Mengual-Andrés, 2017; Gómez, 2015).

The TPACK model has been used for courses in history (Vaerenewyck, Shinas & Steckel, 2017), languages (Sancar-Tokmak & Yanpar-Yelken, 2015), and mathematics (Kartal & Cinar, 2018). Further, use of the TPACK model has improved academic performance through the creation of digital stories in language courses (Sancar-Tokmak & Yanpar-Yelken, 2015). TPACK, as shown below, is a useful guide for educators when they start using digital tools and strategies in their teaching and learning (Mishra & Kohler, 2006). Mishra and Kohler (2006) based the model on the idea that content (*what* you teach) and pedagogy (*how* you teach) must be considered before the appropriate technology is selected. The circles in the TPACK diagram (Figure 3.3) represent Content Knowledge, Pedagogical Knowledge, and Technological Knowledge. The areas where the circles overlap show where the three areas of knowledge combine and interact.

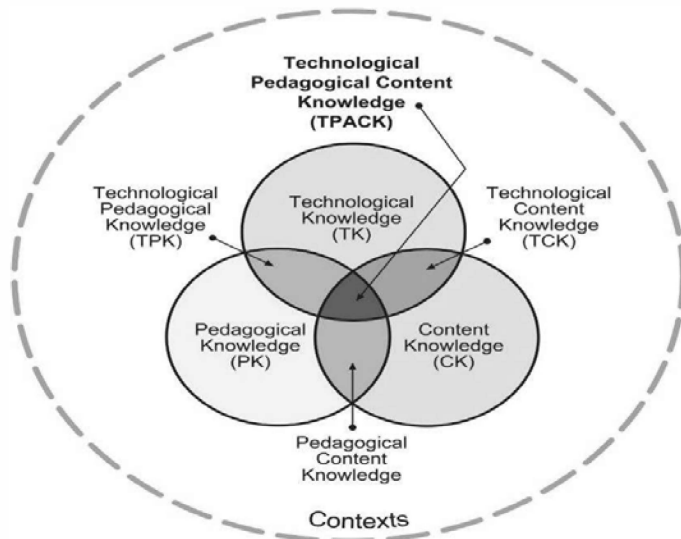


Figure 3.3: TPACK Framework
 (Source: TPACK.Org, 2019)

3.4 Theoretical and conceptual frameworks

This study was based on lecturers as well as students, whilst using UTAUT-3 for students was deemed appropriate, using UTAUT-3 alone for lecturers was not suitable hence, UTAUT-3 and TPACK was combined to be used as a conceptual framework for lecturers. UTAUT-3 is used to assess acceptance and actual behavioural intention whilst TPACK constructs affect actual behaviour.

UTAUT-3 has been employed in several studies to assess the user's acceptance however UTAUT-3 is not comprehensive enough to account for aspect pertaining to technological and pedagogical knowledge.

According to Scherer, Siddiq and Tondeur (2019) technology acceptance models does not determine types of knowledge required by lecturers and teachers to successfully incorporate technology in the process of learning and teaching. Teo & Zhou (2016) suggested that educational related factors are considered to explain technological acceptance better. Therefore UTAUT-3 and TPACK is used to form a conceptual framework for this study.

Several studies have combined UTAUT and TPACK, for example:

- Investigating Factors That Influence EFL Teachers' Adoption of Web 2.0 Technologies: Evidence from Applying the UTAUT and TPACK (Mohammad-Salehi, Vaez-Dalili & Heidari Tabrizi, 2021) where UTAUT was employed to test user acceptance and TPACK to determine the types of knowledge required by teachers;
- Efficient use of clickers: A mixed-method inquiry with university teachers (Cheung, Wan & Chan, 2018) where UTAUT and TPACK were combined to understand acceptance and user technological knowledge;
- Predicting academic staff behaviour intention and actual use of blended learning in higher education: Model development and validation (Anthony, Kamaludin & Romli, 2021) focused on behavioural intention as derived from UTAUT and factors to be employed as derived from TPACK.

This study aimed to use a hybrid module, hence, a combination of UTAUT-3 and TPACK were used. This conceptual framework provided the lens through which the data was analysed, interpreted and discussed. (Refer to Figure 434 for clarity.)

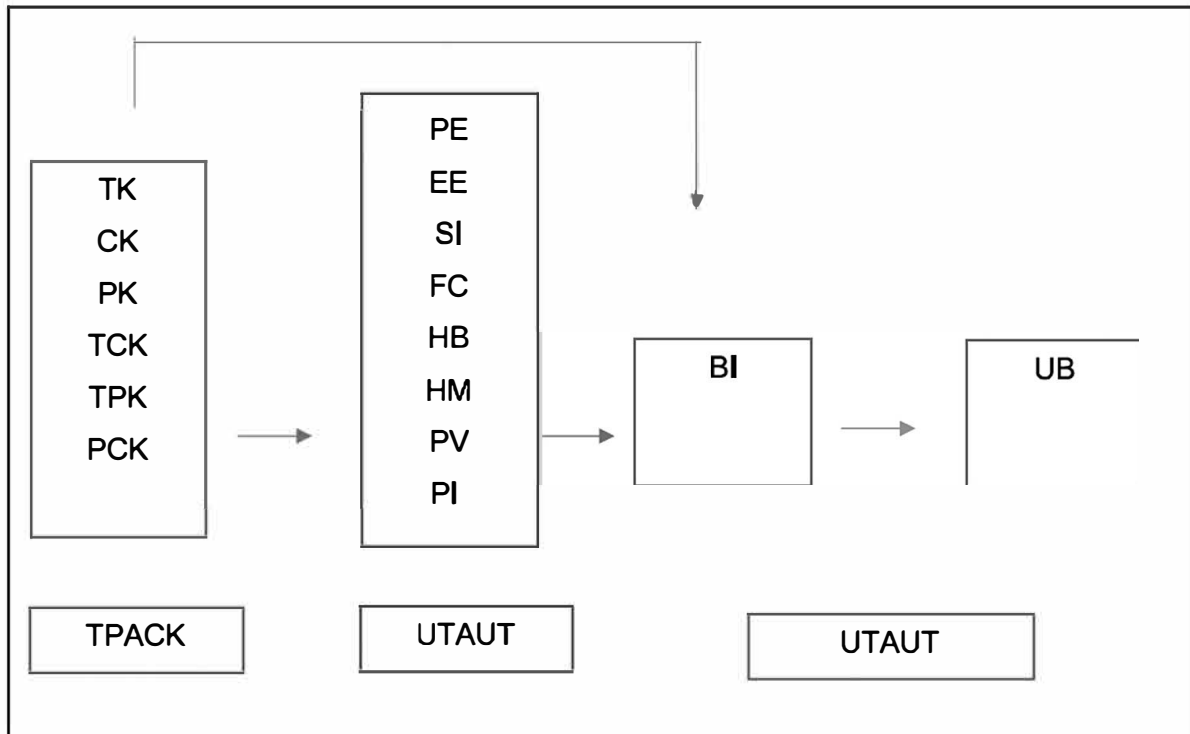


Figure 3.4: Theoretical and conceptual frameworks

3.4.1 Framework constructs

The sixteen constructs derived from the frameworks and used in this study are listed and discussed below.

1. *Performance Expectancy (PE): The degree to which an individual believes that using the system will help him/her to attain gains in job performance* (Venkatesh et al., 2003). The model depicts that Performance Expectancy directly influence Behavioural Intention, which is moderated by gender and age. Research on gender differences demonstrate that men have a stronger level of motivation to accomplish tasks. With regards age, research suggests that people who are younger have a stronger Performance Expectancy than older people (Venkatesh et al., 2003).

2. *Effort Expectancy (EE): The degree of ease associated with the use of systems* (Venkatesh et al., 2003). Effort Expectancy is influenced by gender, age, and experience.

As for gender, the research shows that women have a stronger Effort Expectancy than men (Venkatesh, Morris & Ackerman, 2000). According to Venkatesh et al. (2003), computer anxiety, concerns about ease of use, and level of Effort Expectancy for new information systems, are higher in women than men. EE is the belief of an individual that his or her interaction with the targeted technology will be trouble-free (Venkatesh et al., 2012).

3. *Social Influence (SI): The degree to which an individual perceives that important others believe he/she should use the new system* (Venkatesh et al., 2003). Social Influences affect all users, and include gender, age, experience, and voluntariness of use. Research suggests that women's intention toward using a system will be stronger, while women will be more aware of the opinions of others (Miller, 2012; Venkatesh et al., 2000). Older users tend to be more sensitive to Social Influence, but the effects decline with experience (Venkatesh et al., 2012). SI is the influence of the society or community on what an individual believes is expected of them when using a technology (Venkatesh et al., 2012). The effect of SI has been confirmed by Venkatesh et al. (2003) in mandatory settings. It is especially influential in the early stages of technology adoption (Venkatesh & Davis, 2000). Social Influence further refers to external pressure (such as peer or supervisory pressure, encouragement from the faculty, and so on) that affect her/his perception of e-learning (Venkatesh et al., 2012).

4. *Facilitating Conditions (FC): The degree to which an individual believes that an organisational and technical infrastructure exists to support use of the system* (Venkatesh et al., 2003). Facilitating Conditions will be moderated by age and experience. Technical infrastructure is imperative; this will include the required computer hardware and software. The influence of FC on usage will be moderated by age, monthly expense, and experience in favour of older workers with increasing experience. FC refers to the user belief that institutional support and infrastructure is available to assist in the use of the targeted technology (Venkatesh et al., 2012).

5. *Hedonic Motivation (HM): HM is defined as the fun or pleasure derived from using a technology. It has a direct influence on technology adoption* (Venkatesh et al., 2012).

6. *Habit (HB)*: HB is the degree to which an individual behaves unconsciously or automatically due to prior experience (Venkatesh et al., 2012). It is believed that HB has a significant effect on both user intention and actual use of technology (Venkatesh et al., 2012).

7. *Price Value (PV)*: This variable is most valid in a consumer context as it refers to a cognitive trade-off between the perceived benefits of using a technology and the cost of the technology (Gunasinghe, Abd Hamid, Khatibi, & Azam, 2019).

8. *Personal Innovativeness (PI) in the domain of IT*: Personal Innovativeness in IT makes individuals desire to try out new technology. PI influences both user intention and technology-use behaviour (Farooq, Salam, Jaafar, Fayolle, Ayupp, Radovic-Markovic & Sajid, 2017).

9. *Behavioural Intention (BI)*: Behavioural Intention is defined as the degree to which a user is motivated and intends to accept and use the system, which is the goal (Davis & Cosenza, 1993). Venkatesh et al. (2003), argue that BI has a significant influence on technology usage.

10. *Content Knowledge (CK)*: This refers to the subject matter expertise that a teacher possesses. It includes knowledge of theories and concepts. CK may differ based on the grade or level, for example, undergraduate courses may require less knowledge and a narrower scope as compared to postgraduate courses (Mishra & Kohler, 2006).

11. *Pedagogical Knowledge (PK)*: This refers to the methods a teacher uses for teaching and learning. PK also includes an understanding of the various student learning styles, classroom management skills, lesson planning, and assessments (Mishra & Kohler, 2006).

12. *Technological Knowledge (TK)*: This refers to the teacher's knowledge about technological resources and how to use them. Thus, TK requires an understanding of EdTech.

13. *Pedagogical Content Knowledge (PCK)*: This refers to teachers' knowledge of curriculum development, student assessment and reporting results, which are considered foundational areas of teaching and learning (Mishra & Kohler, 2006).

14. *Technological Content Knowledge (TCK)*: This refers to the teachers' understanding of how technology and content can influence each other. TCK is essentially the set of skills that assists with identifying the best technologies to support students as they learn specific content (Mishra & Kohler, 2006).

15. *Technological Pedagogical Knowledge (TPK)*: This refers to the teachers' understanding of how specific technologies can change both the teaching and the learning experience by introducing new pedagogical affordances and constraints. TPK is essentially a set of skills that teachers develop to identify the best technology to support a particular pedagogical approach (Mishra & Kohler, 2006).

16. *Technological Pedagogical Content Knowledge (TPCK)*: This refers to being able to use technology when teaching content (Mishra & Kohler, 2006).

3.4.2 Mapping constructs of the conceptual frameworks onto the RQs

The key constructs of UTAUT-3 and TPACK were mapped onto the research questions of the study as follows:

RQ1: To understand the experiences of lecturers and students using Moodle for e-learning in a learning journey at a Private Distance Higher Education Provider:

The constructs of UTAUT-3, i.e., PE, EE, SI, FC, HM, HB, PV, and PI, as well as BI and UB, were used to understand lecturer and student experiences.

RQ2: To determine why the lecturers and students use Moodle for e-learning in a learning journey the way they do at a Private Distance Higher Education Provider

UTAUT-3 was used to understand why users use Moodle the way they do. Further, TPACK (TK, CK, PK, TPK, TCK, and PCK) was used to examine and explore why users use Moodle the way they do.

UTAUT-3 and TPACK were used as tools to critically analyse a learning journey using Moodle as an e-learning tool. The UTAUT-3 provided an opportunity to enhance our understanding of user acceptance of a technology. The key constructs were used to critically analyse a learning journey using Moodle as an e-learning tool. TPACK analyses how the content is taught and which pedagogy is used. Essentially, how the teacher imparts that content to the student must form the foundation for any effective EdTech integration. To evaluate the UTAUT-3 and TPACK model, this study used a questionnaire that was developed using a five-point Likert scale to examine student and lecturer experiences with the use of Moodle. Since the key constructs of UTAUT-3 and TPACK were significant to this study, they were embedded in the questionnaire used in this study; and used to evaluate the results.

3.5 Conclusion

This chapter has discussed the conceptual framework of the study, UTAUT-3 and TPACK, and how they were used for the study. The next chapter deals with the research methodology used in the current the study.

CHAPTER 4 – RESEARCH METHODOLOGY

4.1 Introduction

It is critical that a researcher chooses the most appropriate methodology for their study. Hence, this chapter describes the methodology of choice and explains reasons for this choice. This chapter also deals with the research paradigm; as well as sampling methods, data collection methods, data generation, and data analysis methods; as well as ethics, reliability, and validity.

4.2 Research paradigm

In research, the term paradigm is used to describe a researcher's worldview (Mackenzie & Knipe, 2006). The choice of a research paradigm is influenced by a researcher's beliefs about truth and reality (Lather, 1986). Pragmatism was used to orientate this study. Pragmatism does not argue the question of singular versus multiple realities, but accepts that all are open to empirical inquiry. Pragmatism aims to provide practical solutions and does constrain the researcher by imposing choices, which may not always be applicable (Creswell & Clark, 2007).

Pragmatists are 'anti-dualists' (Rorty, 1999), i.e., this stance questions the philosophical divide between positivism and constructivism and suggests that quantitative and qualitative methods should be used according to pragmatic, rather than philosophical, applicability. Additionally, pragmatism rejects the notion that positivism and constructivism are different at a fundamental epistemological or ontological level; but that they share many commonalities in their research approaches (Hanson, 2008). Additionally, pragmatism rejects the distinctions between objective versus subjective phenomena, arguing that these distinctions reflect political divisions among social scientists and their distinctive skill sets for quantitative and qualitative research (Morgan, 2007; Hanson, 2008).

Pragmatists also hold an antirepresentational view of knowledge, i.e., that knowledge construction should not aim for an accurate representation of reality, but aim for a representation that has practical utility (Rorty, 1999). The notion of utility raises some difficult questions about how such a concept can be defined.

Pragmatism offers an alternative stance to both positivism and 'metaphysical' positions (the latter based on critical theory, post positivism, and participatory approaches) (Morgan, 2007), since pragmatism is outcome-oriented and interested solely in determining meaning that has utility (Onwuegbuzie & Johnson, 2006; Biesta, 2010). It emphasises communication and shared meaning-making to create practical solutions to social problems and places primary importance on the research question (Tashakkori & Teddlie, 2003). Pragmatism argues that theories can be both contextual and generalisable as they can be analysed for transferability. The pragmatic researcher accommodates both subjectivity and objectivity (the former in their reflections, and the latter in data collection and analysis). Pragmatism is often referred to as an 'approach' rather than a paradigm (Morgan, 2007) since it does not purport to represent an entirely encompassing worldview (Biesta, 2010).

According to Morgan (2007), pragmatism challenges three issues within metaphysical thinking: "how to define paradigms, whether those paradigms are incommensurate, and the extent to which metaphysical assumptions guide research in the social sciences" (p.1). He argues that, rather than relying on a "metaphysical paradigm's *a priori* limits on communication, pragmatism emphasises creating shared meanings and joint action" (p.2). These questions deal with whether or not quantitative and qualitative approaches can be combined to complement each other.

Thus, pragmatism offers several ways to deal with mixed-methods approaches and dissolves the distinctions between positivist and constructivist ways of knowing since both are considered meaningful (Biesta, 2010).

The pragmatist paradigm was chosen for this study as the study uses a mixed methodology for collecting and analysing qualitative and quantitative data. This study attempts to capture the experiences of lecturers and students using interviews as well as questionnaires. Data collected via questionnaires are analysed statistically: Data was collected using google forms, which generated spreadsheets in the form of CSV files that were then used on SPSS. Data collected via the interviews were manually reviewed and key themes were extracted.

4.3 Sampling

According to Zikmund (2013) a sample is a subset of the target population. Due to the magnitude of a target population, not all individuals can be tested, hence the use of a representative sample. However, the sample population needs to be large enough to allow for statistical analysis (Zikmund, 2013). Additionally, accurate sampling saves time and money when conducting research (Zikmund, 2013). It is very important that the sampling strategy be focused enough to allow researchers to gather the data required to answer the research questions and achieve the research objectives (Teddie & Tashakorrie, 2012).

Dawson (2019) explains that it is difficult to speak to every person within the research population unless there is sufficient budget, time, and a large team of interviewers. It is, therefore, more practical to take a smaller number of people, a representative sample, within the research population (sometimes called a census). Aslam (2018) concurs that a sample size is usually influenced by limitations of time finances.

The random sampling method was used in this study. An email was sent to all students in the sample population providing information about the study and providing them with the right to withdraw at any stage – ensuring compliance with POPIA (Protection of Personal Protection Act). The contact details of students who chose to withdraw were removed from the sample population.

The inclusion criteria used were as follows:

- The students participating in the study must be registered for an MBA at the institution and must have completed at least two modules on Moodle.
- Lecturers participating in the study must have used Moodle for the student leaning journey for 6 months or more.

The exclusion criteria used were as follows:

- Students who had not used Moodle in their MBA were excluded from participating in the study.
- Lecturers who had used Moodle for less than 6 months were excluded from participating in the study.

This study used a sample population for interviews as well as for questionnaires.

The sample populations for questionnaires were as follows:

- 1444 students nationally
- 38 lecturers nationally

The sample populations for interviews were as follows:

- 16 students nationally
- 14 lecturers nationally

4.4 Methods of data generation

The mixed-method data collection tools used in this study included both questionnaires (analysed quantitatively) and interviews (analysed qualitatively). Mixed methods enable a breadth and depth of knowledge achievement. The quantitative method, in the form of a questionnaire, was used first and the initial results informed the questionnaire, which was administered later. The data generated from the questionnaire was used to prompt discussion in the interviews, thus generating deeper understanding and more contextualised meaning. The same sample population was used for the interviews as well as for the questionnaires. This study was carried out in three regions:

- Durban
- Cape Town
- Johannesburg

However, due to the participants being geographically dispersed and due to COVID-19 restrictions, data was collected via electronic mediums. The quantitative data was collected via questionnaires on Google forms. The interviews were conducted on Zoom.

4.4.1 Questionnaire

According to Cohen, Manion and Morrison (2017) questionnaires contain a series of statements to be answered to provide meaningful data. A questionnaire allows the collection of numerical data for analysis using methods that can be generalised.

Additionally, a questionnaire can be administered by someone other than the researcher (Cohen et al., 2017).

A questionnaire has limitation in terms of the depth and scope of the questions that can be asked and the responses that can potentially be expected (Bell, 1993). Due to time constraints on lecturers and students, the data collection tool used should be quick and efficient to administer, without compromising reliability and validity. A questionnaire that is properly designed assists with the analysis process. When a researcher is involved with the design, the questionnaire can be further streamlined (Cohen et al., 2017). A questionnaire was used to generate data in this study as it is not time-consuming to administer. The questionnaire was constructed using a Likert scale ranging from 'Strongly disagree' to 'Strongly agree'.

The questionnaire was constructed after perusing other questionnaires from related studies where UTAUT-3 and TPACK was used and these have a direct bearing on this study. The aim was to put together a well-designed questionnaire, hence the process was guided by an extensive literature review. The questionnaire was designed around the conceptual framework and questions was based on constructs of UTAUT-3 and TPACK. The researcher ensured that the questions were aligned to the quantitative research questions and research objectives of the study. The questionnaire was designed with closed ended questionnaires and a few open-ended questions to probe engagement and discussion.

The researcher consulted with studies that used TPACK and UTAUT-3 to design their questionnaires who developed similar questionnaires. Such studies are Investigating Factors That Influence EFL Teachers' Adoption of Web 2.0 Technologies: Evidence from Applying the UTAUT-3 and TPACK (Mohammad-Salehi, Vaez-Dalili, & Heidari Tabrizi, 2021) where UTAUT-3 was employed to test user acceptance and TPACK to determine the types of knowledge required by teachers. Efficient use of clickers: A mixed-method inquiry with university teachers. Education Sciences (Cheung, Wan, & Chan, 2018) where UTAUT-3 and TPACK was combined to understand acceptance and user technological knowledge. Predicting academic staff behaviour intention and actual use of blended learning in higher education: Model development and validation.

Technology, Knowledge and Learning (Anthony, Kamaludin, & Romli, 2021) focused on behavioural intention as derived from UTAUT-3 and factors to be employed as derived by TPACK.

The lecturer questionnaires included constructs of both UTAUT-3 and TPACK, while the student questionnaires included constructs of UTAUT-3.

The questionnaire was administered through an online facility called Survey Monkey. Survey Monkey allows researchers to easily develop and administer online questionnaires. Each participant receives an email link that directs them to the online questionnaire. Upon successful completion, participants simply need to click 'submit'.

4.4.2 Interviews

An interview is a conversation between two participants, namely, the interviewer and the interviewee. The interviewer questions the interviewee to gain information (Eccles, 2012). Interviews can be formal, informal, structured, or unstructured and are widely used in research as they provide a structured but flexible instrument. It is important that interview responses are as detailed as possible since the interview is not a normal conversation but an instrument for data collection (Cohen et al., 2017).

Villa (2017) strongly recommends that interviews with participants are recorded. Wolcott's (1990) guidelines for qualitative research in education suggest that the interviewer select an interview environment and conditions that promote comfort, security, and the privacy to openly discuss experiences. In this study, face-to-face interviews were conducted on site (at the campus) as the interviewees were likely to be most comfortable in their own environment. When I was unable to travel to certain areas, interviews were conducted via Skype. Semi or unstructured interviewing techniques and direct observation as other basic qualitative approaches to data collection (Trochim, Donnelly & Arora, 2016). However, due to COVID-19, all interviews were conducted via MS Teams. Questions were generated prior to the interview and structured interview schedules were generated. All interviews were recorded via MS Teams and transcripts of the interviews were downloaded and archived.

Interviews play a critical role in research as data or information gathering instruments (Sejane, 2017; Bollapragada, 2019). This study conducted interviews on a one-on-one basis. The interview style was formal and the questions were structured prior to the interview. The questions were derived from the results of the questionnaires to assist with a more in-depth understanding and more accurate interpretations. All interviews were recorded by means of the recording application on a cell phone and transferred onto a USB.

4.5 Data analysis

Analysing data consists of breaking up complex data into manageable themes, patterns, trends, and relationships (Chambers, 2017). Analysing what the respondents have said in an interview requires the researcher to 're-live' the interview and to link responses to underlying theories, while looking for evidence that both supports and/or contradicts the theory (Gaskell, 2000). The researcher used a thematic analysis to analyse the qualitative data. Data from the themes were then used to address the research questions as applicable.

The first step was to produce a list of questions for the interviews. The interview questions were designed to address the research questions. The analysis included data from interviews and questionnaires. Initially a spreadsheet was used to capture the responses (in terms of actual numbers). These data enabled the process of generating a statistical representation of data in the form of graphs and percentages. Hence, data derived from the questionnaires were captured in Microsoft Excel. The five-point Likert scale used the following headings: 'Strongly disagree', 'Disagree', 'Neutral', 'Agree', and 'Strongly agree'. The data generated from these responses were further analysed statistically using SPSS and Cronbach's alpha test for reliability. The information generated from the interviews were analysed qualitatively. All interviews were recorded and reviewed as required. Patterns, in the form of common responses, were identified to address the research questions; and findings in areas that required further research were also identified. Triangulation was carried out with the two datasets (students and lecturers) to provide the findings of the study (see Chapter 8).

4.6 Validity, reliability, and rigour

Reliability and validity are the two most important and fundamental issues in the evaluation of any research instrument (Mohajan, 2017). Validity is concerned with how well an instrument measures what it purports to measure. Reliability is the degree to which any measuring tool controls for random error.

4.6.1 Reliability

According to Noble and Smith (2015), it is imperative that the results of a study are credible, trustworthy, and reliable. Reliability deals with the robustness of the questionnaire to ensure that consistent results are produced at any time. Noble and Smith (2015) state that, when ensuring that the results of a study are reliable, it is imperative that the quality of the study is evaluated. According to Check and Schutt (2012) reliability is the level of consistency the instrument can maintain, i.e., that the instrument consistently measures what was initially set out to be measured.

Reliability refers to the consistency with which an instrument captures information or measures a variable (Sejane, 2017; Bollapragada, 2017). Cohen, Manion and Morrison (2017) describe reliability as a synonym for dependability of the information gathered, requiring both precision and accuracy. For research results to be reliable, they should be very similar to results from a similar study (Cohen et al., 2017).

Cronbach's alpha was used in this study as a measure of consistency to ensure that the data was reliable.

4.6.2 Validity

Validity is the measure of how successful an instrument was in producing the necessary data (Sekaran & Bourgie, 2016). Valid data is significant and relevant to the study. Validity also ensures that the research questions are addressed. According to McNabb (2015), validity requires data to be gathered and analysed to assess how accurate the instrument was. Sejane (2017) adds that validity refers to the accuracy of information obtained or provided. There are a number of statistical methods and tests to assess the validity of quantitative instruments, e.g., pilot testing. The research tool used in this study (questionnaire) was piloted.

A link for the questions was sent via google forms for the piloting. No discrepancies were uncovered during the piloting stage. Hence the instrument was used in its original form.

Cohen et al. (2017) states that questionnaires can be validated in two ways. Firstly, if participants complete the questionnaire accurately, correctly, and honestly. The second way deals with participants who do not return their questionnaire. They must not be considered with the same importance as the participants who do complete the questionnaire. Cohen et al. (2017) further advises that a natural setting is the most appropriate environment for the principal source of data. This advice was adhered to in this study as students and lecturers were interviewed in their familiar settings.

Content validity was used in this study, extensive literature was reviewed to construct the questionnaires used in this study. The questionnaires were based on constructs of UTAUT-3 and TPACK and was based on similar questionnaires used in similar studies. The same standardised questionnaire was issued to all participants to evaluate results to maintain validity.

4.6.3 Trustworthiness

According to Feldman (2003), it may be impossible to show that the findings of one's research are true. Hence, good reasons must be provided to trust findings and consider them to be true. Connelly (2016) suggests member checking as one of the significant strategies with which researchers can establish trustworthiness of the study. The use of member checking in this study served to strengthen the trustworthiness of the findings. Essentially, students and lecturers were interviewed from the batch that answered the questionnaire, the questionnaire was issued first, and within the questionnaire participants were asked if they would consider being interviewed. Individuals were then invited for interviews using interview items similar to the questions in the questionnaire. However, the interviews questions were open ended as opposed to closed ended. The results for the qualitative and quantitative were similar, strengthening their trustworthiness.

Cohen et al. (2017) explains that reliability is central to trustworthiness. If the findings of a study are reliable, they are considered trustworthy. Should the study be repeated on the same sample group, then the results should be the same. Hence, reliability enhances trustworthiness since it can be assumed that participants provided honest answers, as opposed to having constructed false information to compromise the results. Should the result not be accurate, the information obtained may be misleading.

According to Lincoln and Guba (2016) the key criteria for trustworthiness are credibility, transferability, dependability, and confirmability. These are discussed below.

The transcripts attained from the interviews conducted were revised to cross check and assess the level of contradiction in the participants responses to assess trustworthiness.

4.6.3.1 Credibility

Collis and Hussey (2013) state that credibility refers to how accurately the researcher interprets the data obtained from the participants in the research. Credibility can be increased when the researcher spends long periods of time with the participants to gain greater insights into their lives. Research credibility is increased when the results of the study are believable by the participants. According to Lincoln and Guba (2016), credibility questions how congruent the findings of the research are to reality. Credibility of a study is enhanced when the researcher is familiar with the participants of the study.

4.6.3.2 Transferability

Collis and Hussey (2013) assert that transferability deals with the ability of applying the findings of the research to a similar situation, or set of circumstances, and obtaining similar results from the study. According to Lincoln and Guba (2016), transferability does not involve generalised claims but invites readers of research to make connections between elements of the study and their own experiences.

4.6.3.3 Dependability

Dependability refers to the quality of the integration that takes place. It includes every part of the quality process from data collection, data analysis, and theory generation

from the data that is collected (Lincoln & Guba, 2016). Dependability measures are built into the research design and assured through a rigorous implementation of that design. These include the way data is gathered and analysed as well as the researcher's reflective appraisal of the research process (Lincoln & Guba, 2016).

4.6.3.4 Confirmability

Collis and Hussey (2013) state that confirmability deals with how well the data collected supports the findings. Lincoln and Guba (2016) describe confirmability as the extent to which participants influence the findings of the study, as opposed to any researcher bias.

4.7 Ethical issues

According to Dawson (2019), ethical issues are vital to research. Research outcomes are not viable if ethical guidelines have not been followed. Research ethics relates to the way in which participants are treated, and the way in which the information they provide is handled. For example, De Vaus (2012) states that participants can be harmed in research if the confidentiality of responses is not ensured.

In the current study, a letter of consent was issued to each participant assuring them that all responses would remain confidential. Additionally, ethical clearance to conduct this research was applied for from the University of KwaZulu-Natal. In the application, I outlined the type of research to be conducted, the research methods, and the data collection instruments to be used. Further, I obtained permission from the Private Distance Higher Education Provider where the study was situated. The research process only started once ethical clearance was obtained. Students and lecturers were informed that they were not obliged to participate in the study. All participants were issued with a consent form prior to participating in this study (see Appendix E).

4.8 Conclusion

This chapter has discussed choices related to the methodology of the study and the research paradigm; Details about sampling, methods of data generation, data analysis, ethical issues, and reliability and validity have also been provided. The next chapter discusses the quantitative analysis of the data collected through the questionnaires.

CHAPTER FIVE: QUANTITATIVE ANALYSIS (LECTURER AND STUDENT)

5.1 Introduction

This chapter deals with the quantitative analysis of data collected from the questionnaire for both students and lecturers; as well as a discussion of results. The Private Higher Education Institution that participated in this study provided the researcher with a sample population of 38 lecturers and a sample population of 1444 students. Unfortunately only 23 lecturers responded to the questionnaire and 118 students. Thus, 60.53% of the lecturers responded to the questionnaire, only 8.17% of the students responded while the majority 91.83% of the students did not respond to the questionnaire after numerous follow ups. With these limitations, descriptive analysis was chosen as the appropriate means for analysing the data from the questionnaire. This chapter presents descriptive statistics for lecturer and student demographic data. Further, it provides descriptive statistics. These include the mean, the Cronbach's alpha and the standard deviation for each construct contained in the questionnaire.

5.2 Overview of the questionnaire

Two questionnaires were constructed, one for lecturers and one for students. These questionnaires were distributed among lecturers involved with, and students registered for, the MBA programme across the various regions at the Private Higher Education Provider that participated in this study. (See Appendix A and B for the lecturer and student questionnaire, respectively.) The questionnaires were administered online due to COVID-19 via the Google Forms platform. The cover page of the questionnaire contained information pertaining to the purpose of the study, ethical considerations, and contact information for the research team. The lecturer questionnaire contained demographic questions, questions aligned to the constructs of UTAUT-3 and TPACK with a five-point Likert scale for each response, and a section with open-ended questions. The student questionnaire also contained demographic questions, and questions aligned to the constructs of UTAUT-3 with a five-point Likert scale for each response, and a section with open-ended questions.

5.3 Data preparation

The questions from the questionnaire (online survey), and responses received, were grouped according to the construct they dealt with, e.g., Performance Expectancy, Social Influence, etc. The data was entered into a spreadsheet and then imported into SPSS Version 28 for analyses using the Statistical Package for Social Sciences (SPSS). The analysis by SPSS produced descriptive statistics for the lecturer and student quantitative data.

5.4 Section A: Social demographics (students)

The graphs below illustrate response categories for each demographic question in the student questionnaire.

5.4.1 The year the students were registered for

The respondents were asked about the year they were registered for. Figure 5.1 gives the results.

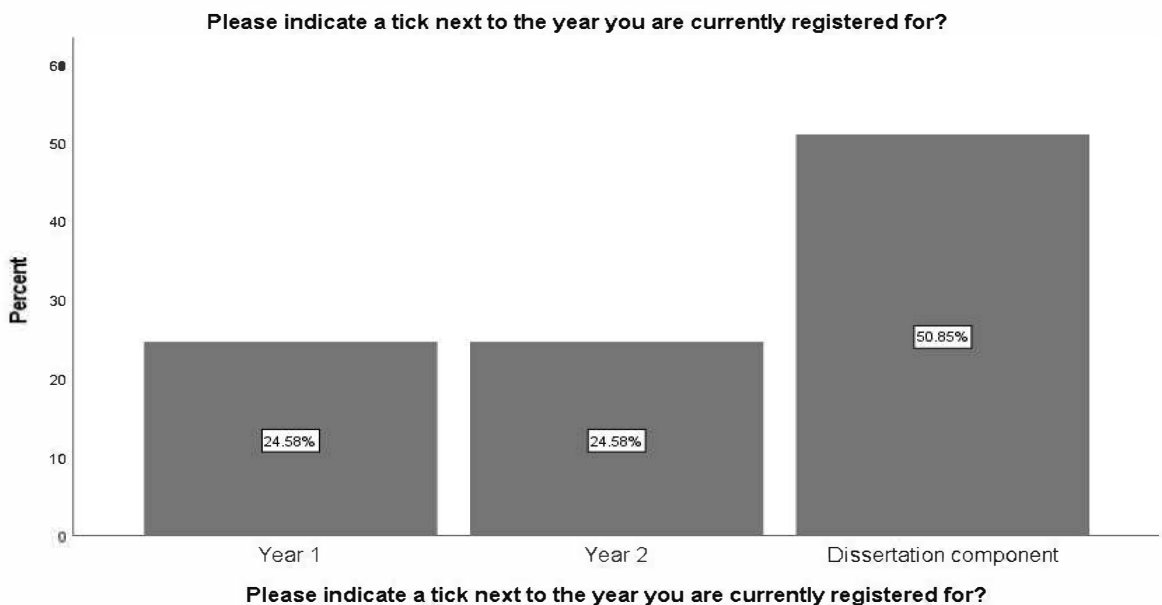


Figure 5.1: The year students were registered for

The graph in Figure 5.1 shows that most of the students (60 or **50.8%**) were registered for the dissertation component of their studies, followed by those who were registered for year 1 and year 2 (29 or **24.58%** for each year).

The students who participated in this study were registered for the MBA programme. The MBA modules were placed on Moodle prior to COVID-19. Hence, the students who participated in this study were using Moodle as a tool for e-learning prior to the pandemic. The pandemic, however, accelerated their use of Moodle as examinations were then also facilitated via Moodle. Most of the students were completing their dissertations, which indicates that they would have used Moodle in year 1 and year 2 of their studies, and would have had adequate experience with Moodle as an e-learning tool.

5.4.2 Gender demographics for students

The respondents were asked about their gender. Figure 5.2 displays the results.

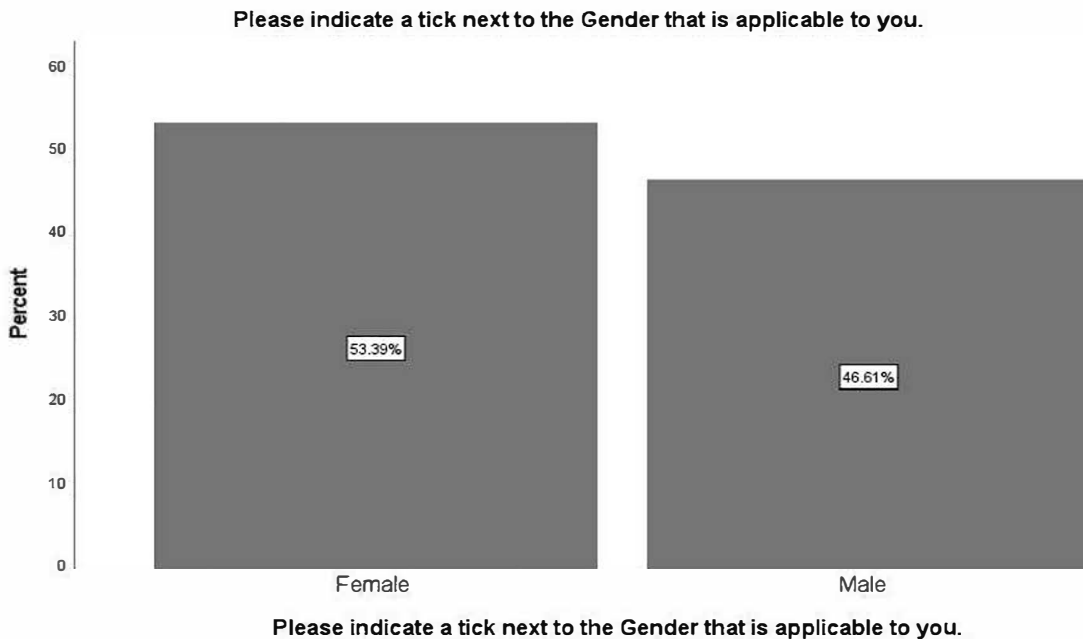


Figure 5.2: Student gender demographics

The results show that there were more females (63 or **53.4%**) than males (55 or **46.6%**). According to the statistics produced at the institution's graduation, the institution also had more female students as compared to male students overall.

5.4.3 The age groups of the students

The students were asked to indicate their age group. Figure 5.3 displays the results.

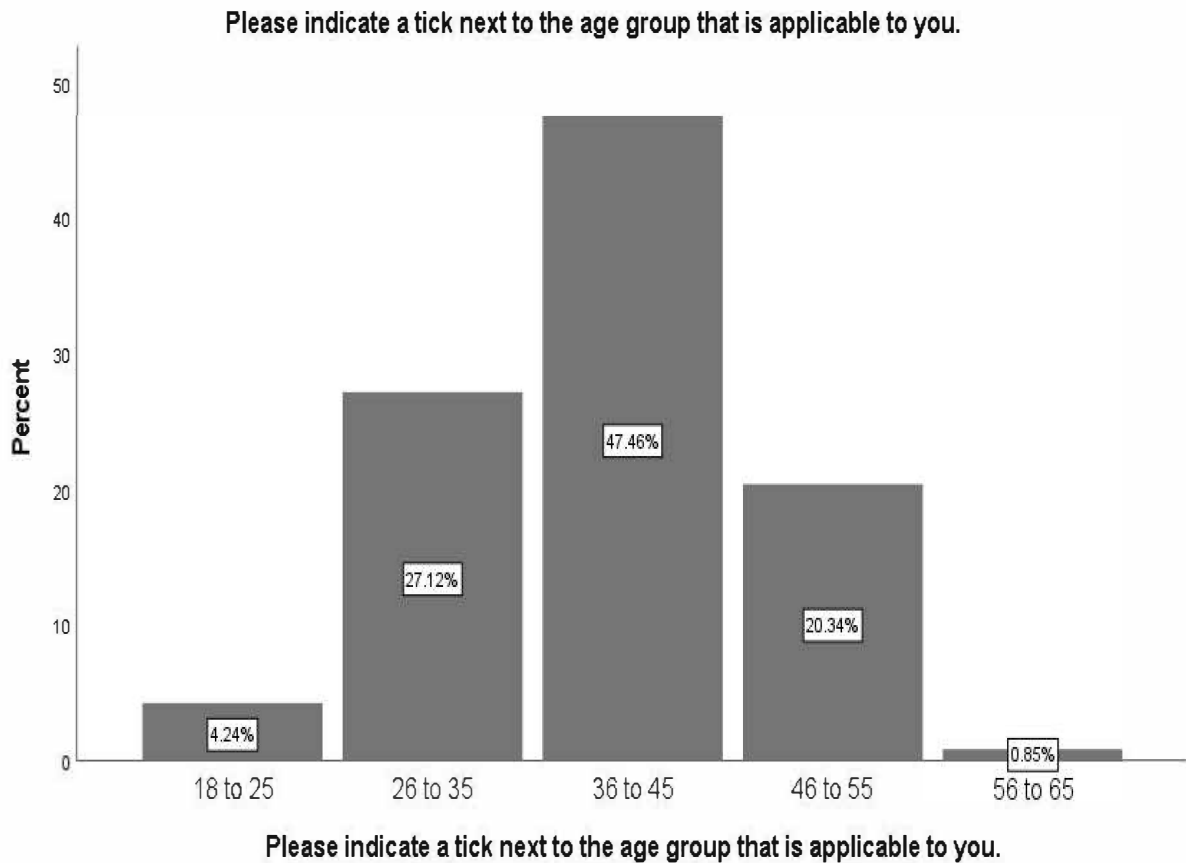


Figure 5.3: Student age groups

The results revealed that most of the student participants (56 or **47.5%**) were between the ages of 36 and 45. The remaining age categories were as follows: Thirty-two students (**27.1%**) were between the ages of 26 and 35; twenty-four students (**20.3%**) were between the ages of 46 and 55; five students (**4.2%**) were between the ages of 18 and 25; and one student (**0.8%**) was in the 56 to 65 age group.

As mentioned, the students who participated in this study were registered for an MBA. The minimum requirement to register for an MBA is an honours degree or postgraduate diploma, a minimum age of 23 years, and managerial experience. Due to these minimum criteria, it was unsurprising that most of the registered students were between the ages of 36 and 45.

5.5 Length of time and frequency with which students used Moodle

The graphs below indicate responses to questions regarding length of time and frequency of use of Moodle.

5.5.1 The length of time students had been using Moodle

The students were asked about the length of time they had been using Moodle. Figure 5.4 displays the results.

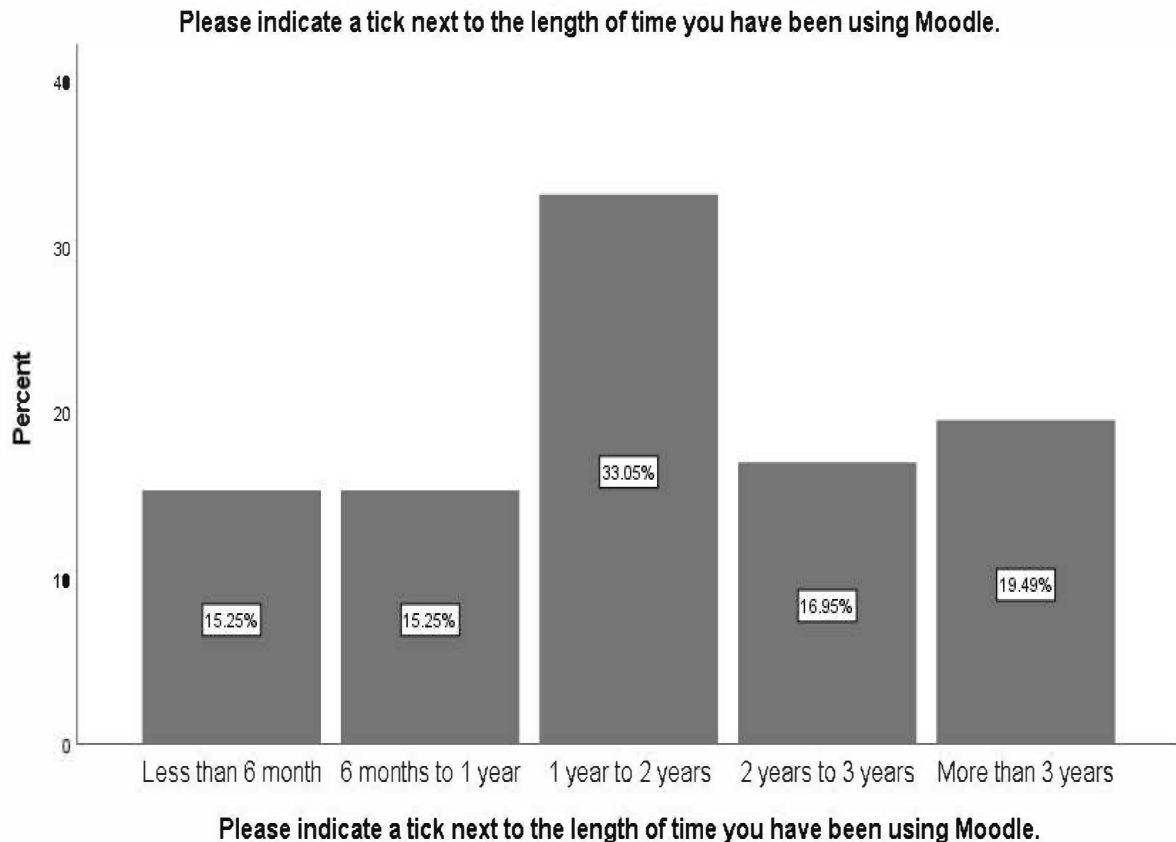


Figure 5.4: The length of time students had been using Moodle

The results reveals that there were more students (39 or **33.1%**) who had been using Moodle for 1 to 2 years; followed by 23 (**19.5%**) for more than 3 years; followed by 20 (**16.9%**) for 2 to 3 years; and 18 (**15.3%**) for both 6 months to 1 year, and for less than 6 months.

A student can only register for their dissertation once they have successfully completed 18 months of course work, which includes the submission of assignments and completion of examination for each module. Most of the students indicated that they had been using Moodle for 1 to 2 years, which agrees with the results in section 5.4.1, since most of the students were completing their dissertation. Thus, these students were adequately experienced in using Moodle, and were familiar with the system, as they had been using Moodle since the start of their MBA programme at the institution.

5.5.2 The frequency with which students used Moodle

The students were asked to indicate how frequently they used Moodle. Figure 5.5 displays the results.

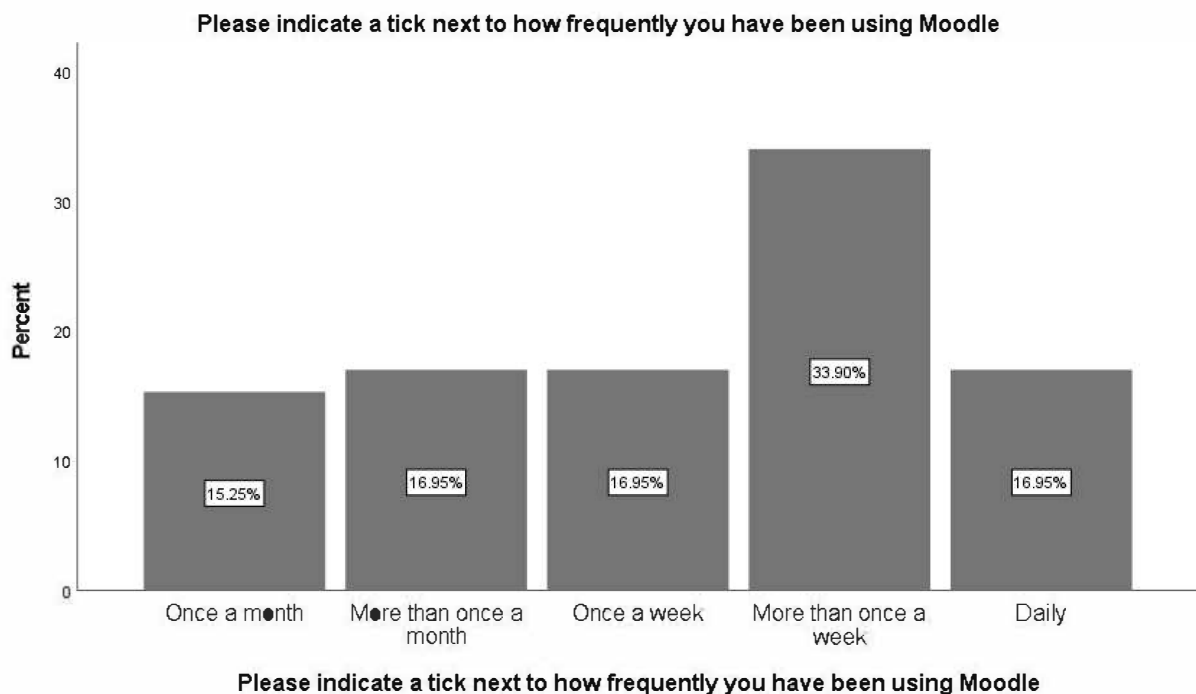


Figure 5.5: How frequently the students used Moodle

The results show that most of the students (40 or **33.9%**) frequently used Moodle more than once a week; followed by 20 (**16.9%**) more than once a month; 20 (**16.9%**) once a week; 20 (**16.9%**) daily; and 18 (**15.3%**) once a month.

These results show sufficient use of Moodle among students. Students used Moodle for submission of assignments; taking examination; research using the library/journal functionality; watching recorded lectures; accessing past exam papers; accessing study material and additional resources; and accessing results. Based on these results, it is evident that students log onto the platform frequently. It should also be noted that, due to the COVID-19 pandemic, the use of e-learning platforms such as Moodle accelerated as online education was the only means of completing the programmes that students were registered for.

It was however noted that most students did log into Moodle more than once a week. According to Kadoić and Oreški (2018) just because students did not log in frequently does not indicate that they were not active. Students may perform some activities offline from content they downloaded previously (Kadoić & Oreški, 2018), this is relevant to this study as several students indicated that they downloaded information and worked offline as they needed a backup especially during loadshedding. Kadoić and Oreški (2018) indicated that students with high grades engage in course activity and login to the LMS prior to their lecturers and tests. Kadoić and Oreški (2018) indicated that students were more active on the platform before tests, this is similar to this study as students indicated that they log into the system more frequently before examinations and assignments. Zhang, Ghandour and Shestak (2020) however believes that students who log in more frequently have higher grades.

5.6 Section A: Social demographics (lecturers)

The graphs below illustrate lecturer responses to the demographic questions.

5.6.1 Gender demographics for lecturers

The lecturers were asked about their gender. Figure 5.6 displays the results.

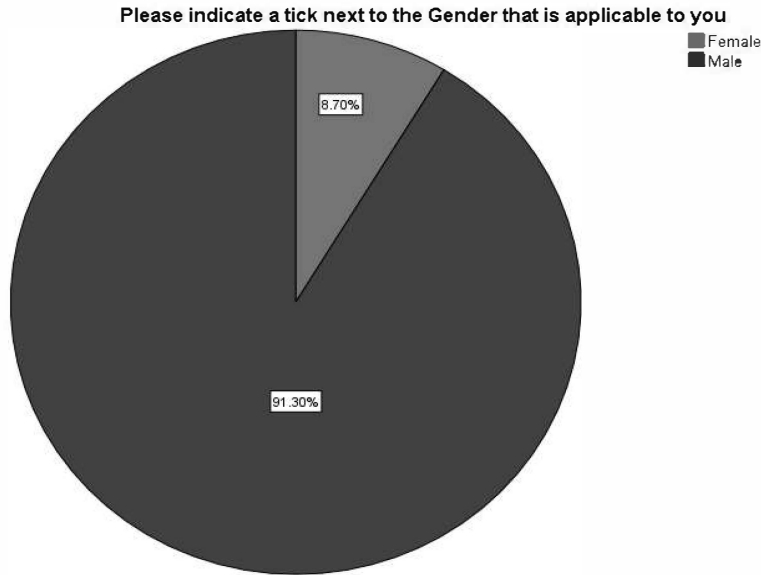


Figure 5.6: Gender demographics for lecturers

The results indicate that most of the lecturers participating in this research were male (21 or **91.3%**) with only two female lecturers (**8.7%**). The institution does have a larger intake of male lecturers as opposed to female lecturers overall.

5.6.2 The age group of the lecturers using Moodle

The lecturers were asked to indicate their age group. Figure 5.7 displays the results.

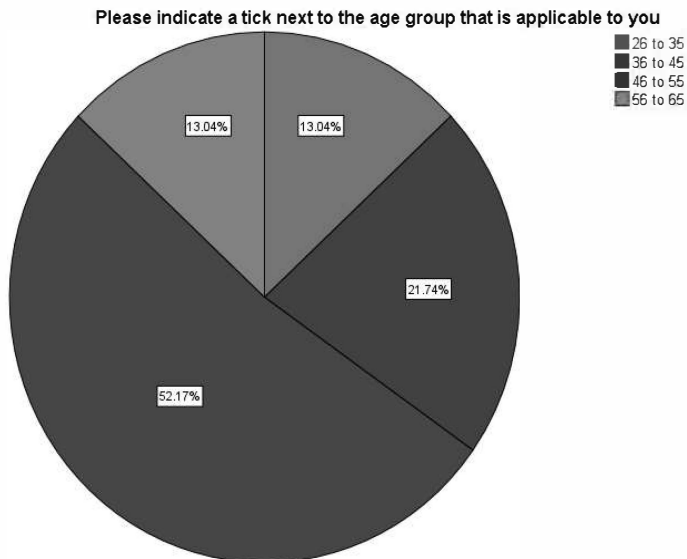


Figure 5.7: Age group of lecturers using Moodle

The results reveal that most of the lecturers (12 or **52.2%**) were between the ages of 46 and 55; followed by five (**21.7%**) between ages 36 and 45; three (**13%**) between 56 and 65; and three (**13%**) between 26 and 35.

The institution employs lecturers within various age groups. Most are, however, between 46 and 55. According to Pew Research Centre (2022), older students tend to face more hurdles when adopting new technologies. Their unique challenges often require additional assistance. However, the results of the current study do not support the findings of the Pew Research Centre, which is probably because these participants had been using e-learning technology for some time prior to the cessation of face-to-face classes.

5.7 Length of time and frequency with which lecturers used Moodle

The graphs below indicate the results of the analysis of lecturer responses to questions about the length of time and frequency with which lecturers used Moodle.

5.7.1 The length of time lecturers had been using Moodle

The lecturers were asked about the length of time they had been using Moodle. The results are given in Figure 5.8.

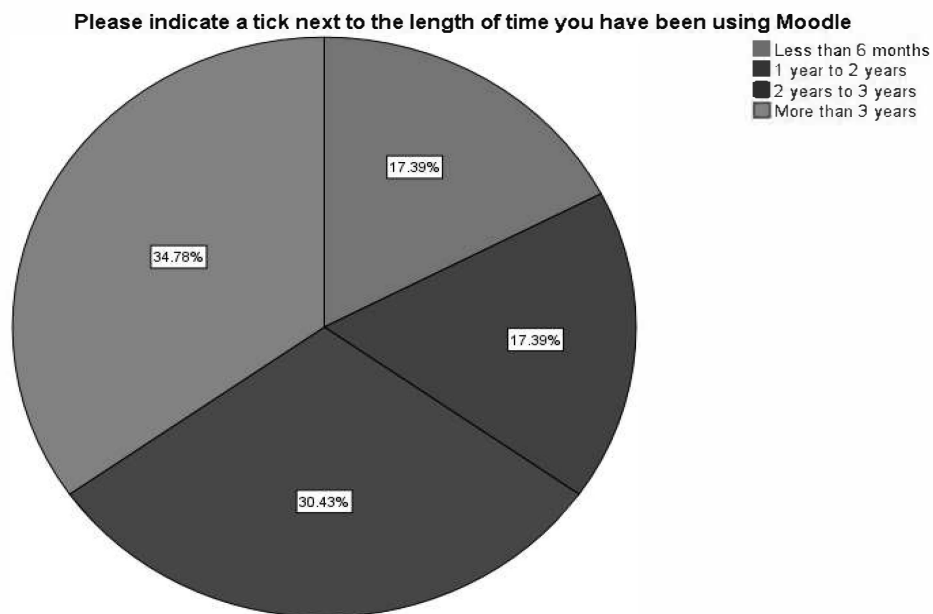


Figure 5.8: The length of time lecturers had been using Moodle

The results show that eight lecturers (34.8%) had been using Moodle for more than 3 years; followed by seven (30.4%) for 2 to 3 years; and then four lecturers (17.4%) for 1 to 2 years, with another four (17.4%) for less than 6 months.

As mentioned, most of the lecturers who participated in this study were using Moodle prior to the COVID-19 pandemic. Hence, lecturers were familiar with the system and had adequate experience with the system. While lecturers did reveal that they experienced some adaptation challenges, these challenges are inevitable when introducing a new platform or system. Based on the length of time lecturers had been using Moodle, it is evident that most of the adaptation challenges were dealt with prior to the pandemic, and lecturers were equipped to use the platform for their e-learning journey.

5.7.2 The frequency with which lecturers used Moodle

The lecturers were asked to indicate how frequently they had been using Moodle. Figure 5.9 displays their responses.

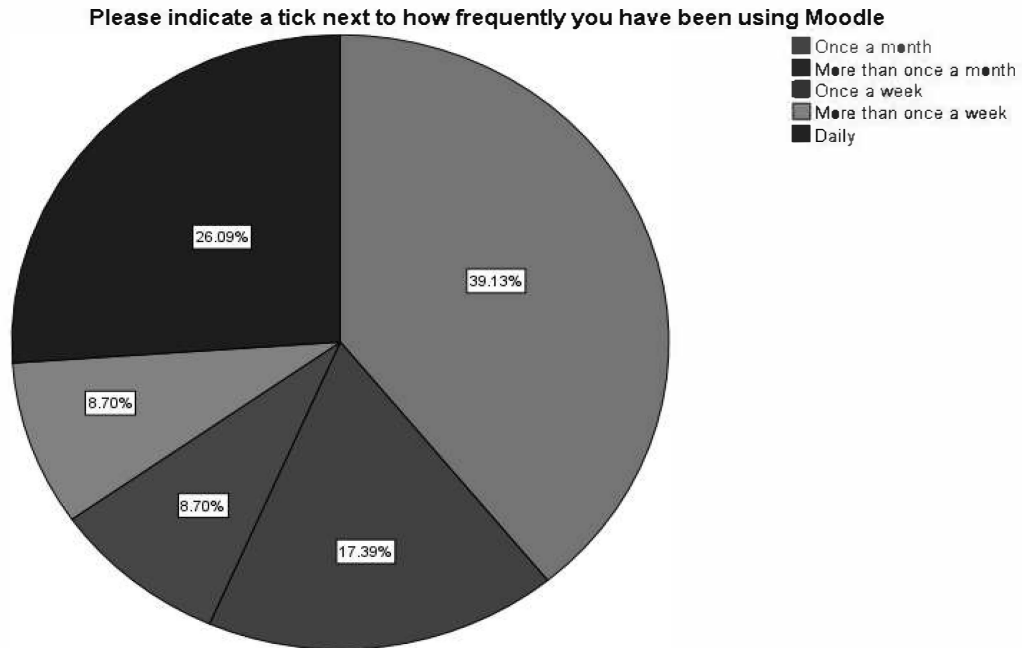


Figure 5.9: Frequency with which lecturers used Moodle

Figure 5.9 shows that most of lecturers (9 or **39.1%**) used Moodle once a month, followed by those (6 or **26.1%**) who used Moodle daily. Four lecturers (**17.4%**) used Moodle more than once a month, and another four (**8.7%**) once a week or more than once a week.

Most lecturers did not log into Moodle frequently, because of the administration support provided by the institution. Recorded lectures, study material, and additional support material were loaded onto the system by an administrator. Hence, this limited the number of times a lecturer had to log into the platform. Lecturers would only need to access Moodle to mark scripts and access past-year papers. Even though a blog facility was available on Moodle, it was shown in the qualitative analysis that lecturers used WhatsApp and emails to communicate with students.

Hence, the blog facility was used very little, which further limited the need for lecturers to access the platform. Both the quantitative and qualitative results indicate that lecturers only accessed the system as and when scripts were allocated to them for online marking. It was further noted that students did not receive any response to the questions they posted on the Moodle chat facilities and, if the lecturer provided a response, it was received relatively late. This was possibly due to the fact the lecturers did not log in frequently. Hence lecturers are not available as students require assistance which may pose as a challenge for students.

5.7.3 The length of time working at the institution

The lecturers were asked to indicate the length of time they had been working at the institution. The results are displayed in Figure 5.10.

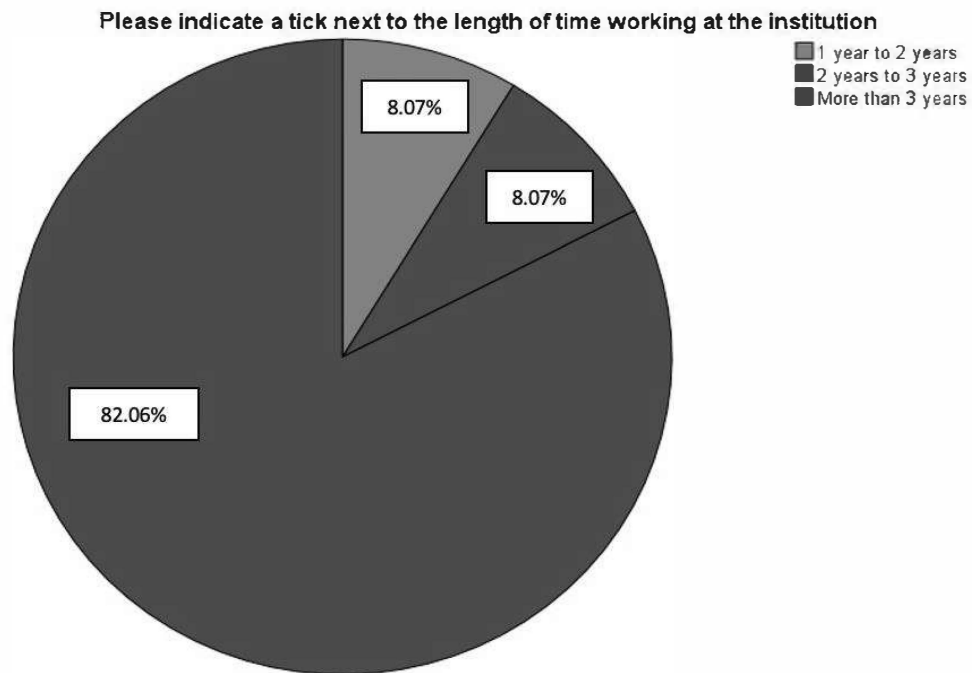


Figure 5.10: Length of time lecturers had been working at the institution

The results show that most of the lecturers (19 or **82.6%**) had been with the institution for quite some time; followed by two lecturers (**8.7%**) for 2 to 3 years; and another two (**8.7%**) for 1 to 2 years.

Most lecturers had been employed by the institution for more than 3 years, this means that these lecturers were present during the inception stages of introducing Moodle as an e-learning tool at the institution. This also indicates that these lecturers were using Moodle prior to COVID-19 and experienced any adaptation problems prior to the pandemic, this means that these lecturers were more comfortable using Moodle during the pandemic as they were already familiar with the platform.

5.8 Student statistics

The questionnaire contained questions for each construct of UTAUT-3 and questions pertaining to the COVID-19 pandemic (see Appendix D). The responses were provided via a Likert scale and were used to generate statistics.

Statements that had a negative connotation were reverse coded prior to generating the statistics. The mean and standard deviation were generated. Table 5.3 provides statistics for each construct of UTAUT-3 as well as for COVID-19.

Table 5.1: Statistics for students

S/N	I T E M S	STUDENTS	
		Mean(x)	SD
1.	Performance Expectancy	3.54	1.64
2.	Effort Expectancy	1.05	1.02
3.	Social Influence	2.17	1.13
4.	Facilitating Conditions	3.05	1.32
5.	Hedonic Motivation	3.25	1.42
6.	Habit	2.61	1.47
7.	Price Value	2.11	1.09
8.	Personal Innovativeness in the domain of IT	3.11	1.46
9.	Behavioural Intention	3.63	1.61
10.	COVID-19	3.81	1.68
11.	Security and trust	1.23	1.04

Cronbach's alpha was also calculated for the student data (see Table 5.2). Cronbach's alpha provides a means of measuring if a score is reliable or not.

Table 5.2: Cronbach's Alpha for students

No of items	I T E M S	STUDENTS
		Alpha (α)
8	Performance Expectancy	0.876
11	Effort Expectancy	0.698
5	Social Influence	0.664
4	Facilitating Conditions	0.729
4	Hedonic Motivation	0.815
10	Habit	0.788
5	Price Value	0.676
4	Personal Innovativeness in the domain of IT	0.881
2	Behavioural Intention	0.885
6	COVID-19	0.825
3	Security and trust	0.734

Cronbach's alpha is based on the assumption that there are multiple items measuring the same underlying construct, as was the case in the questionnaire. The Cronbach's score of 0.70 and above is considered to be good; a 0.80 score and above is considered better, while 0.90 and above is best. Based on the table above, the Cronbach's alpha indicates that the results are reliable.

5.9 Lecturer statistics

The questionnaire contained questions for each construct of UTAUT-3 , TPACK and questions pertaining to the COVID-19 pandemic (see Appendix C). The responses were provided via a Likert scale and were used to generate statistics. Statements that had a negative connotation were reverse coded prior to generating the statistics. The statistics generated were mean and standard deviation. Table 5.3 indicates the statistics for each construct of UTAUT-3 and TPACK as well as COVID-19.

Table 5.3: Statistics for lecturers

S/N	I T E M S	LECTURERS	
		Mean(<i>x</i>)	SD
1.	Performance Expectancy	3.49	0.61
2.	Effort Expectancy	3.39	0.59
3.	Social Influence	2.89	0.80
4.	Facilitating Conditions	3.19	0.81
5.	Hedonic Motivation	3.19	1.02
6.	Habit	3.55	0.85
7.	Price Value	3.16	0.71
8.	Personal Innovativeness in the domain of IT	3.34	0.82
9.	Behavioural Intention	3.88	0.67
10.	COVID-19	3.84	0.44
11.	Security and trust	3.63	0.83
12.	Content Knowledge	4.30	0.40
13.	Pedagogical Knowledge	4.38	0.47
14.	Technological Knowledge	3.63	0.63
15.	Pedagogical Content Knowledge	3.89	0.43
16.	Technological Content Knowledge	3.52	0.83
17.	Technological Pedagogical Knowledge	3.69	0.84
18.	Technological Pedagogical Content Knowledge	4.04	1.12

Cronbach's alpha was also calculated for the lecturer data. The table below display the results.

Table 5.4: Cronbach's alpha for lecturers

No of items	I T E M S	LECTURERS
		Alpha (α)
5	Performance Expectancy	0.728
10	Effort Expectancy	0.606
4	Social Influence	0.787
5	Hedonic Motivation	0.676
6	Habit	0.813
5	Price Value	0.723
5	Personal Innovativeness in the domain of IT	0.839
2	Behavioural Intention	0.775
9	COVID-19	0.644
6	Content Knowledge	0.794
4	Pedagogical Knowledge	0.842
7	Technological Knowledge	0.769
7	Pedagogical Content Knowledge	0.719
3	Technological Content Knowledge	0.707
3	TPK	0.750
2	TPCK	0.930

The Cronbach's Alpha for Security and trust and Facilitating conditions was relatively low therefore no predictions or inferential statistics were conducted on the data and the researcher choose to concentrate on only descriptive statistics

5.10 Discussion of statistical results

In terms of research question 1 (understanding the experiences of lecturers and students using Moodle), the statistics were similar for both students and lecturers in terms of Performance Expectancy. The mean for student data was 3.54, and 3.49 for lecturer data.

For both students and lecturers, the mean is between neutral and agree, indicating that Moodle performed as expected, which suggests a pleasurable experience.

Research question 2 (exploring the functionalities of Moodle) could not be answered by the statistics and was instead answered in the qualitative analysis as this was an open-ended question explored in the interviews.

Research question 3 sought to determine why lecturers and students used Moodle in certain ways. There were multiple reasons. In terms of Performance Expectancy, the mean was 3.54 and 3.49 for students and lecturers, respectively. These means lean towards 'agree', indicating that the system performed to the satisfaction of both students and lecturers. With regards to Effort Expectancy, the mean was 1.05 and 3.39 for students and lecturers respectively. According to these results, lecturers would have used Moodle the way they did because they found the platform easy to use and user friendly. The students' mean of 1.05 was derived from only 118 of the 1444 students who responded to the questionnaire. Of the 118 respondents only 15 participants opted to be interviewed. It appears that students who availed themselves for the interviews were more comfortable however there were not aware of the training that was provided which could be the reason students responded negatively in the questionnaire. The qualitative analysis, however, revealed that students also used Moodle the way they did because it was user friendly and easy to use.

With regards to Hedonic Motivation the means were 3.25 and 3.19 for students and lecturers, respectively, indicating that the participants used Moodle the way they did because they enjoyed using technology. Another reason participants used Moodle the way they did, can be described by the construct Behavioural Intention. The mean score for BI were 3.63 and 3.88 for students and lecturers, respectively, indicating that they had a behavioural intention to use Moodle frequently because they enjoyed using technology, accepted Moodle as the new norm and because of COVID-19 (with means of 3.81 and 3.84 for students and lecturers, respectively). These means lean towards 'agree', i.e., that participants used the system because they felt it to be safe, convenient and ensured continuity in their studies during very unprecedented times.

Research question 4 (to explore how using Moodle transformed distance learning), was answered in the qualitative analysis of responses to open-ended questions asked in the interviews. Demographic data contributed to the final synthesis and will be discussed in chapter 8.

5.11 Conclusion

This chapter has presented and discussed an overview of the questionnaire and the data preparation. Additionally, descriptive statistics are given for the demographics of students and lecturers; as well as statistics in the form of mean and standard deviation based on the constructs of UTAUT-3 for the student and the constructs of UTAUT-3 and TPACK for the lecturers; and questions about COVID-19.

CHAPTER SIX – QUALITATIVE ANALYSIS AND DISCUSSION (LECTURERS)

6.1 Introduction

This chapter discusses the findings generated from the analysis of qualitative data obtained from the lecturers who participated in this study. Only lecturer data is considered in this chapter, and the research questions and objectives have been adapted accordingly.

- What are the experiences of lecturers when using Moodle for e-learning in a learning journey?
- What functionalities of Moodle do lecturers use when using Moodle for e-learning in a learning journey?
- Why do the lecturers use Moodle for e-learning in a learning journey the way they do?
- How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?

The experiences of the lecturers included the use of MS Teams as a tool to enhance teaching and learning on Moodle. The lecturers unanimously asserted that there were connectivity issues, which are discussed in this chapter. Lecturers highlighted that they experienced adaptation challenges using Moodle. Some technical issues were experienced and, as South African lecturers, challenges were experienced due to load shedding. Lecturers also advised that insufficient training was provided and, further, that they were unable to attend training sessions. Even although these lecturers work in Distance Higher Education, they were still accustomed to face-to-face lecturing; hence their assertion that the lack of face-to-face contact posed a challenge for teaching and learning. Having identified consistent patterns during the data analysis, themes were generated. The themes generated were as follows: Advantages; Disadvantages; Functionalities; Reasons why lecturers use Moodle the way they do; and Transformation in Higher Education.

6.2 What are the experiences of lecturers when using Moodle for e-learning in a learning journey?

Objective 1

To understand the experiences of lecturers using Moodle for e-learning in a learning journey at a Private Distance Higher Education Institution in a COVID-19 environment.

The aim of this research question was to understand the experiences of the lecturers while using Moodle for e-learning at a Private Distance Higher Education Provider in a COVID-19 environment. As mentioned, this chapter only explores the experiences of the lecturers. Based on the analysis some advantages and disadvantages were identified, these are discussed below:

6.2.1 Advantages

6.2.1.1 Cost of e-learning

Most of the lecturers already had uncapped WIFI at home, hence they did not incur any additional data costs while working remotely during the lockdown. However, it was noted that working from home meant additional cost in terms of electricity and household expenses as opposed to working from the office. Many lecturers believed that they had saved costs as they no longer had to travel to a lecturing venue. Further, they noted that they were more relaxed prior to conducting a lecture as they had not spent extended periods in commuter traffic. It was also noted that the institution covered data costs and equipment costs for full-time staff; but that part-time staff were expected to cover these costs themselves. While the cost of data is considered to be relatively high in South Africa, all lecturers (both full-time and part-time) agreed that online lecturing resulted in an overall saving due to not having to travel to the institution or lecture venue. It was further noted that lecturers who were able to afford backups, installed fibre lines and purchased LTE backups for times when the internet was unstable.

Lecturers were asked if they either saved costs by using e-learning tools such as Moodle; or if cost were incurred, some of their responses are given below:

Participant 1: "I think in terms of cost savings, it is certainly there. There is no fuel expense."

Participant 7: "There was a decrease in the cost because of reduced travel expenditure."

Participant 5: "It is a big benefit. A cost saving. It's a huge thing. Moodle also contains library resources such as textbooks and you don't have actually to visit a library to read a textbook."

Participant 6: "My fuel bill for the month decreased by about R6000. So that is a massive saving."

Although some studies have revealed that e-learning was seen as a financial burden due to the cost of purchasing data bundles (Ghounane, 2020); participants in the current study found Moodle affordable and easy to use, as found by other authors (e.g., Maatuk et al., 2022).

6.2.1.2 Examination

Lecturers understood why it was important to conduct assessments and examinations online during the pandemic. Failure to move examinations online would have resulted in students being unable to complete their qualifications and graduate. It is, however, evident that conducting examinations online poses ethical issues purely because you cannot be certain that the student registered on the programme is the student who is completing the examination. Another ethical issue is plagiarism, because students can copy and paste resources or have resources accessible while completing the examination. Lecturers were asked about online examinations (also known as online summative assessment at the institution in this study).

Participant 1: "Online examination was imperative for continuity however there may be issues around academic honesty and plagiarism, which poses a major risk however It makes sense to have these examinations online."

Participant 7: “I was eager to know that there was a method available for students to complete their examinations online.”

Participant 9: “I know various institution used various techniques for hosting online examinations, some even have Artificial intelligence capabilities. Some institutions required cameras to be switched on laptops, I am however I'm a bit apprehensive with regards to academic integrity.”

Participant 13: “I understand why online examinations were necessary however There's very little control and student can access information when writing the exam.”

Many researchers have similar concerns, according to Kakepoto, Talpur, Memon, Halepoto and Jalbani (2021), LMS systems can be used to administer online test and examinations and allow lecturers to grade test, assignments, and examinations. However, they have cautioned that online assessment can be faulty as the quality of the scripts submitted is often compromised. Maatuk et al. (2022) have also expressed concern about assessment that is limited to posing objective questions. In such cases, technology may be misused, and that the submission of unreliable scripts is common. Additionally, one of the biggest risks associated with online assessments and examinations is plagiarism (Sahu, 2020). While e-learning certainly has its benefits, some of the limitations include maintaining academic integrity (Mukhtar, Javed, Arooj & Sethi, 2020).

6.2.2 Disadvantages

6.2.2.1 Internet speed/network connectivity

During COVID-19 there was an influx of online users as most workers operated from home and students transitioned to online classes. Due to the influx of users, connectivity issues were inevitable. Connectivity issues were more prominent in third-world countries due to infrastructure inequality. It is important to note that adequate infrastructure is required to support good internet connection. The Private Higher Education Provider in this study provided equipment and data to full-time lecturers, but part-time lecturers were required to cover the cost of their data and the cost of any additional equipment and infrastructure.

Lecturers were asked if they experienced any challenges using Moodle as an e-learning tool in a COVID-19 environment and some of their responses were as follows:

Participant 8: "Sometimes the connection is unstable."

Participant 10: "You know what was causing the issues for me was basically bandwidth of data compatibility, it was posing a problem for myself and the majority of my students."

Participant 11: "Some of the issues were connectivity issues."

Participant 5: "It's not always 100% that it works, so you may actually experience some delays or some failure of connection of some sort."

Several other researchers have raised these issues. According to Mwila, Mudenda, Kampamba, Mufwambi, Lufungulo and Phiri (2021), all educational institutions globally embraced e-learning during the pandemic and there were several factors that had to be considered when they transitioned to e-learning, including, internet quality, internet speed, and accessibility of online resources.

Muliyah et al. (2020), have highlighted that e-learning requires a good network connection. It is common for educational institutions in developing countries to struggle with transforming their traditional classrooms to online classrooms purely because of the lack of access to a reliable internet connection for both students and lecturers (Neuwirth, Jović & Mukherji, 2021).

In a study conducted by Ghounane (2020), all respondents described internet connectivity as unstable. One student reported having to ride a bicycle 65 km to reach a venue that had only slightly better internet connectivity. Most of the students in the study reported missing online lectures due to challenges with the internet (Ghounane, 2020). A study conducted in South Africa also reported that students in rural areas were faced with poor internet connectivity during online learning during the COVID-19 pandemic (Ghounane, 2020).

As emphasised in the literature, a good internet connection is pivotal to the success of online teaching and learning. Challenges with internet connectivity have been highlighted as the leading factor that affected online learning during COVID-19 (Dawadi, Giri & Simkhada, 2020). According to Mamun & Griffiths (2020) unreliable internet has been reported to be the main reason for non-participation in online learning. Since developing countries struggle with poor internet connectivity, these countries are likely to experience the greatest challenges (Maatuk et al., 2022).

6.2.2.2 Technical Issues

Lecturers were asked if they experienced technical difficulties whilst using Moodle and if support was readily available. The response below reflects the opinions of most of the participating lecturers:

Participant 3: "Yes, we experienced many problems, however, support was provided."

Not all lecturers experienced technical problems. However, those that did, reported that the problems were related to resetting their passwords. Lecturers added that technical support was good on weekdays, but not over the weekend. It is not appropriate that weekend support was poor, since the majority of the institution's distance students attended online lectures over the weekend, and this was when support was most needed. It is essential for support staff to be on standby during these times.

This same problem has been reported in the literature (e.g., O'Keefe, Rafferty, Gunder & Vignare, 2020). These authors noted that technical issues occur during online learning, but that lecturers and students do not always have technical support readily available.

Some lecturers took the initiative to resolve their own technical difficulties, often calling their peers to ask for assistance. The quotes below are from lecturers who attempted to resolve technical difficulties on their own, but who felt that their skills were too elementary to resolve advanced technical problems on their own:

Participant 2: “We fiddle around and if we don't come right then you pick up the phone and phone someone. Sometimes a colleague, sometimes someone on the help desk.”

Participant 6: “There are instances where I've been able to sort out a few minor issues.”

6.2.2.3 Lack of face-to-face contact

Lecturers certainly agreed that using Moodle as a tool for e-learning was extremely beneficial. However, a key concern was that personal interactions are compromised in an online classroom set-up. Lecturers added that it is possible that students may not have been comfortable interacting in an online class, or that they may have been busy completing other tasks while the lecture is on. It does appear that even the lecturers were uncomfortable and still getting accustomed to the online environment. Lecturers constantly mentioned that they were unable to observe students' body language, which proved to be a disadvantage and may have contributed to the engagement issues noted in the online classroom.

Lecturers unanimously agreed that one of the biggest disadvantages was the lack of face-to-face contact. The response below exemplifies their views:

Participant 2: “The biggest disadvantages are that you cannot see the body language of students, so you cannot try to determine which people are not doing well, which ones are not interested ... find the ones that are battling and trying to assist them so we can always try and finish a course early and let them remain behind and go through things with them.”

Several lecturers made comments about the level of engagement during online lectures, which they believed was limited in comparison to traditional face-to-face sessions. Some of the responses were as follows:

Participant 2: “Engagement It is not as rich as before, because exactly as you and I were saying you cannot read the body language of the students.”

Participant 7: "I think the main thing is the interaction or to get some interaction from your group. That's quite a challenge too."

Participant 10: "A post COVID-19 is in virtual environments. I can't see students, so I can't draw on that, and I have to find myself repeating myself more frequently to drive home concepts. So that's the challenge that we faced with post-COVID-19 classrooms. Earlier I could look at you and say John doesn't seem very comfortable, his body language says that he is frowning, and assistance can be provided."

Several researchers support this theme, i.e., that one of the disadvantages of e-learning is that personal interaction is absent between lecturers and their student, as well as between students and fellow students (Maatuk et al., 2022). Additionally, "digital activities may lead to students being distracted by other online content, which may inhibit their engagement in the class lesson or activity" (Bailey & Lee, 2020, p. 179). Furthermore, using a single approach to teaching and learning in a variety of contexts can prove problematic (Gillett-Swan, 2017).

6.2.2.4 Loadshedding

Similar to countries like Pakistan, South Africa also experiences loadshedding. Due to the unreliable power supply in South Africa, electricity is limited at various times across the country. Hence, it is inevitable that internet connectivity is poor during loadshedding or unscheduled power outages and e-learning is interrupted. Some lecturer responses regarding loadshedding are given below:

Participant 4: "One significant South African challenge is the dependency on electricity supply connectivity or internet connectivity, then a constant interruption becomes an issue and it's not interruption only in the space of the facilitator."

Participant 8: "Like many a time once or twice, there is a power cut."

E-learning becomes very challenging when a country is subjected to loadshedding – Since internet connectivity is affected and electronic devices cannot be charged (Sana & Mariam, 2013). Again, an example can be taken from Pakistani literature, where it

is reported that electricity is sometimes limited to 12 hours per day. Similar situations are common in developing countries and have serious consequences for e-learning (Tahir, Haoyong, Larik & Adnan, 2018).

6.2.2.5 Training academic staff

Sometimes there is reluctance to use something if the people do not understand the benefits, and hence the adoption time is longer. This is the reason why training is important as it can serve as an information session and provide much-needed support, especially when introducing a new system. Based on the comments from the participants, it appears that some training was offered, but that most lecturers did not attend the sessions. The participants also believed that the training provided was insufficient, which could be the reason why lecturers experienced adaptation issues.

The lecturers were asked if sufficient training was provided. Below are some of the responses:

Participant 1: "There was training. I couldn't attend all the training. My perspective, I pretty much figured most of it out by myself and used the documentation that we shared."

Participant 2: "They may have been training, but you've not had the opportunity to attend it."

Participant 3: "Well, yes, there were some scheduled times in training. Yes, I attended some of them."

Participant 8: "I must admit that there were one or two sessions, probably one session, but I don't think there was sufficient training."

Ghounane (2020) emphasises the importance of training, saying that educational institutions need to provide training to both lecturers and students on how to use ICTs for teaching and learning. All faculty members should be included depending on their roles (Mukhtar, Javed, Arooj & Sethi, 2020). Ghounane (2020) suggests webinars on how to use platforms such as Moodle, Zoom and Google Classrooms.

6.2.2.6 Adoption/Adapting

Lecturers were asked if they experienced any difficulties using Moodle for e-learning. Some of their responses are given below:

Participant 1: "At the beginning there was challenges, but I managed to navigate around that eventually."

Participant 9: "There were some teething problems, just as any new platforms it happens."

Participant 10: "Based on that there were initial teething problems. But as we got familiar with the system, it became easier."

Participant 12: "... but initially, at the beginning, I had some challenges because it was like the first time."

It is inevitable that, when an individual uses a system for the first time, they will not be familiar with it, and will likely experience problems adapting to the new system or the new pedagogy. This was evident from the responses of Participant 1, 9,10 and 12. Many users refer to these problems as 'teething' problems as these challenges are only experienced at the beginning, while using the system becomes easier over time.

Several researchers support this theme. According to Sari and Oktaviani (2021) it is challenging to adapt to a new online learning platform for both the student and the lecturer. Changing educational systems during the pandemic also came with adaptation challenges for students and lecturers as they were required to shift from a traditional classroom to an online classroom (Mandasari & Wahyudin, 2021).

Baticulon, Alberto, Mabulay, Rizada and Reyes (2021) conducted a study of barriers to online learning in the time of COVID-19. The findings of the study indicated that students experienced difficulties adjusting as they were not sufficiently prepared for online delivery (Mseleku, 2020). Academics facilitate online lectures at Higher Education Institutions and, hence, play a critical role in the online learning journey.

However, academics were also required to suddenly adjust to new online teaching platforms due to the COVID-19 pandemic (Mseleku, 2020). Because of this sudden shift, many academics did not have sufficient time for their own adjustment, which impacted their ability to assist students (Burgess & Sievertsen, 2020).

Most lecturers in this study, however, believed that they readily adjusted:

Participant 3: "I adapt because I'm curious to really understand what it's all about and what are the benefits."

Participant 6: "Generally I do adapt to new technology fairly quickly."

It must be noted that the Private Higher Education Provider in this study adopted Moodle as a e-learning tool prior to COVID-19. Thus, all lecturers were already familiar with the use of Moodle prior to the pandemic. Some experienced adaptation challenges at the onset, but the transition occurred more smoothly as the adaptation challenges had been dealt with when the LMS was introduced. Despite being a Distance Education Provider, the institution was using a blended mode of delivery pre-COVID-19 with face-to-face lectures combined with the submission of assessments and marking via Moodle.

6.3 What functionalities of Moodle do lecturers use when using Moodle for e-learning in a learning journey?

Objective 2

To explore the functionalities of Moodle using Moodle for e-learning in a learning journey at a Private Distance Higher Education Institution in a COVID-19 environment.

The aim of this research question was to understand the functionalities of Moodle used by lecturers using Moodle for e-learning at a Private Distance Higher Education Provider in a COVID-19 environment. The key functionalities used were the grading function for the marking of scripts, and the online archives to access content to prepare

for lectures. This chapter further notes that there are some functionalities on Moodle that were not being used, and which may have been beneficial for the improvement of student engagement. These themes are discussed below.

6.3.1 Functionality

Many lecturers merely used Moodle for downloading study material for use in the classroom. They also used the marking functionality as required by the institution. Lecturers found the available functionalities relatively easy to use as shown in the following quotes:

Participant 5: "It's, I would say, effortless."

Participant 10: "No problems encountering the user interface."

Participant 11: "It was quick and easy, let me say user friendly. I mean the system is actually user friendly."

I do, however, believe that Moodle has several important functionalities that were not being used, for example, the chat facility for communication between students and lecturers, thus allowing the lecturers to provide the much-needed academic support required of a Distant Education Provider.

According to Zharova, Trapitsin, Timchenko and Skurihina (2020) Moodle caters for interaction between lecturers and students, lecturers and administrators, students and technical specialists, and lecturers and technical specialists. Moodle has the following functionalities (Zharova et al., 2020):

- File-sharing
- Discussion forums and chat functions
- Commenting function and exchange of personal messages
- Assessing assignments on time and with detailed feedback
- Sending out notifications about upcoming events and submission deadlines
- Checking attendance.

Basilaia, Dgebuadze, Kantaria and Chokhonelidze (2020) add that lecturers can easily access and grade assignments submitted by students. Study material can be uploaded on Moodle for students to access, and this material can be kept on Moodle indefinitely (Allen & Seaman, 2011). Students can also use Moodle for examination purposes (Kanwal, Rehman, Bashir & Qureshi, 2017). Lecturers were asked what functionalities they used on Moodle; the following example represents the unanimous view of lecturers:

Participant 1: “So, the functions that are used mainly was downloading of the study material ... and the marking function. The only challenge with the downloading drive found was using the correct filters ... because obviously you need to identify either something that was marked or not marked.”

6.4 Why do the lecturers use Moodle for e-learning in a learning journey the way they do?

Objective 3

To determine why the lecturers use Moodle for e-learning in a learning journey the way they do at a Private Distance Higher Education Institution in a COVID-19 environment.

The aim of this research question was to understand why lecturers use Moodle for e-learning in the e-learning journey the way they do at a Private Distance Higher Education Provider in a COVID-19 environment. Convenience and cost saving, accessibility, and safety were the key reasons lecturers used Moodle, as discussed below.

6.4.1 Convenience and cost saving

Moodle was certainly considered a convenient option by the lecturers. The platform is accessible regardless of where a lecturer may be. Further, the platform can be accessed on both laptops and cell phones, hence it is only natural for this to be considered the convenient choice. While using Moodle was a requirement of the institution, and lecturers were obliged to use the LMS for their job function, lecturers

still appeared to be very comfortable with the system, describing the system as user friendly and easy to use.

Additionally, many lecturers spend thousands of rands on travel costs. But with Moodle, examinations, lectures, and the library can be accessed and lecturers no longer needed to travel to a lecture venue, examination venue, or the library. Due to this, travel costs were significantly reduced.

When lecturers were asked why they use Moodle for e-learning in a learning journey the way they do, some responded as follows:

Participant 1: "Because of convenience and from a Fourth Industrial Revolution perspective, if we do not use technology we will fall behind."

Participant 3: "Using Moodle is an institutional requirement hence the content you used as a lecturer is on Moodle, marking is allocated on Moodle, Moodle is the centralized system that needs to be used."

Participant 6: "I use Moodle because it creates a safer environment and my students don't have to travel to me."

Participant 7: "I think I mostly use it as information and all the support readily available. I can just go online and I can get what I need for my preparations and so on. And then it's convenient to actually work."

Participant 9: "The main reason is because I want to stay relevant."

Participant 10: "Yeah, I think it gives everybody the opportunity to be equally liberated in the process. It gives everybody an equal opportunity to grasp whatever they need to be grasp."

Participant 11: "It's basically the way of the future and there is no other way."

6.4.2 Accessibility

All lecturers concurred that Moodle was very accessible, which was certainly an advantage to using the system. Some of the lecturers commented regarding accessibility as below:

Participant 4: “Advantage is definitely access. Its reachability – you are not restricted to time or geographic area.”

Participant 5: “In terms of the advantages, it is definitely going to be the accessibility. Wherever you are you can access the system.”

Participant 9: “Look for the advantage is accessibility. I've always believed that education should be as accessible as possible.”

Participant 10: “In terms of advantages, we spoke about accessibility. The fact that wherever you are, even if you're driving and you want to place this lecture as a podcast, you can listen in the background.”

Other studies support this theme, with some of the advantages of remote learning being comfort and accessibility (Churiyah, Sholikhah, Filiant & Sakdiyyah, 2020; Mukhtar, Javed, Arooj & Sethi, 2020). According to Mulyah et al. (2020), most students want to enrol for programmes at universities in other countries around the world. Today this is possible as students can study and graduate online without going anywhere (Mulyah et al., 2020).

Students can easily access lectures and study material regardless of where they are (Gautam, 2020). Some reported that e-learning is beneficial as it offers students flexible learning experiences (Albrahim, 2020), for example, “opening channels for synchronous and asynchronous communication and interaction, allowing for more collaboration and interaction with peers, providing access to learning resources in various formats, and promoting authentic and situated learning” (Albrahim, 2020, p. 3).

6.4.3 Safety

Many institutions had already adopted the use of Moodle in everyday operations prior to COVID-19. However, the use of Moodle accelerated post COVID-19 as failure to adopt Moodle would have resulted in students being unable to access education. Further, this would have resulted in lecturers being unable to earn a salary due to the closure of educational institutions. Lecturers were appreciative that traditional classes moved online as they feared the risk of contracting the virus during face-to-face sessions, and feared spreading the virus to their family and friends. These safety considerations certainly encouraged lecturers to use the system more intensively and extensively during COVID-19 than prior to COVID-19.

Lecturers were asked if they were eager to use Moodle more during COVID-19 and the following responses were noted:

Participant 5: "With the pandemic and because of the safety concern, yes, I think it was more important that I would use Moodle."

Participant 11: "It was really very important for us to minimise contact classes, so as such, I mean I would prefer using Moodle so that you don't have to have physical contact with students in order to prevent the spread ..."

Educational institutions all over the world closed their doors due to the emergence of COVID-19. Authorities in various countries suggested that alternative teaching-and-learning methods needed to be adopted as traditional classes were too much of a risk. Educational institutions adopted e-learning methods to ensure students did not have to sacrifice education for safety (Saxena, Baber & Kumar, 2021). Since maintaining social distancing was a preventative measure to avoid contracting the virus, online learning became critical during this global crisis (Saxena, Baber & Kumar, 2021). Thus, until a vaccine was developed, social distancing remained imperative and had to be prioritised to prevent the community spread of COVID-19 (Koo et al., 2020). Adopting e-learning was the best option to ensure that COVID-19 did not spread. Hence traditional learning was replaced by e-learning (Saxena, Baber & Kumar, 2021).

6.5 How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?

Objective 4

To explore how using Moodle for e-learning in a learning journey has transformed distance learning at a Private Distance Higher Education Institution in a COVID-19 environment.

The aim of this research question was to understand how Moodle as an e-learning tool has transformed distance learning on a learning journey for online courses at a Private Distance Higher Education Provider in a COVID-19 environment. The themes generated from lecturer responses are discussed below:

6.5.1 Microsoft Teams as a tool

Whilst the Private Distance Higher Education Institution in this study did adopt Moodle as their official LMS prior to COVID-19, the institution still relied on WhatsApp as a communication tool, while MS Teams and Zoom were used to enhance teaching and learning on Moodle.

Recorded lectures from MS teams were made available on Moodle to enable access by students, especially students who worked full time and could not access their lectures in real time. It was further noted that, while the institution initially conducted lectures via Zoom, they later switched to MS Teams as the preferred choice by all stakeholders.

Lecturers were asked how they facilitated lectures during COVID-19 and some of their responses are given below:

Participant 4: "I've done a significant amount of lectures via Zoom."

Participant 5: “Moving from Zoom to Microsoft Teams and all of that. It was a bit challenging learning how to use the different facilities.”

Participant 9: “So they would normally do a session via Zoom or via Teams and then that would be recorded and placed on Moodle.”

Globally, institutions adopted social networking sites (SNSs), such as Facebook and WhatsApp, as well as digital communication platforms, such as Microsoft (MS) Teams and Zoom, during the COVID-19 pandemic (Sobaih, Salem, Hasanein & Elnasr, 2021). Post COVID-19, Higher Education Providers were obligated to use online mediums to communicate; and policy makers at institutions had to ensure that learning during COVID-19 continued and did not stagnate (Sobaih et al., 2021). Additionally, decision makers at institutions in developing countries, such as in Egypt, had to explore other tools and platforms to ensure learning continued during the pandemic. Hence MHESR in Egypt partnered with the Microsoft Corporation to use MS Teams for the purpose of teaching and learning (Sobaih et al., 2021).

According to Microsoft (2020, p.1) “Microsoft Teams is the ultimate messaging app for your organisation, a workspace for real-time collaboration and communication, meetings, file and app sharing, and even the occasional emoji! All in one place, all in the open, all accessible to everyone”.

MS Teams is considered a super application because it is able to integrate several applications, such as, online meetings, video chat, chats, and assessments in one program (Sobaih et al., 2021).

A variety of online tools had to be employed to support education during COVID-19, hence the use of web-based tools became imperative for online learning. LMSs were used to ensure learning material was accessible to both students and lecturers. LMSs also allowed institutions to monitor student involvement while providing support and while using the LMS as a communication tool (Kanetaki, Stergiou, Bekas, Troussas & Sgouropoulou, 2021).

MS Teams and Zoom were used during the pandemic to build virtual classrooms which were introduced as a virtual study room for student engagement (Ma, Azemi & Buechler, 2021). MS Teams was found to be user friendly for both students and lecturers and were used alongside Moodle and e-classes to share learning material. Both platforms are currently being used for supporting online university models (Kanetaki et al., 2021).

6.5.2 Pedagogies

With lectures no longer being hosted face to face, it became essential for lecturers to change their pedagogy as they moved online. Online pedagogies differ fundamentally and training is needed to facilitate this pedagogical change. Many lecturers simply transposed their face-to-face pedagogy to the online environment because they did not know what or how to change. In face-to-face lectures, lecturers can observe a student's body language and facial expressions; making it easier to gauge if they understood or not. However, lecturers are now heavily reliant on the chat facility and on student questions to assess understanding.

Lecturers were asked if they changed their pedagogical methods when they started to teach online. Some of their responses are given below:

Participant 1: "My method remained the same and, to be honest with you, nothing changed because I used the exact same slide decks. I used the exact same approach that I would have in class. It is just about that shift onto online."

Participant 6: "My teaching methods they remained fairly the same."

Participant 12: "I will say it still remained the same. The difference is just that we were no longer face to face."

In modern day schooling, online pedagogy is not only relevant but imperative. However, lecturers need to understand the nature of online pedagogy and acquire the necessary skills for the online teaching-and-learning environment (Ferri, Grifoni & Guzzo, 2020).

These authors argue that due to the shift toward online learning, there are new expectations for lecturers. Lecturers are now required to possess skills to combine content knowledge and pedagogical strategies for student engagement, while using the affordances of technology (Ferri, et al., 2020).

The principles of an online pedagogy are rooted in learner-centeredness, constructivism, and situated learning. These include:

- Building relationships and communities
- Using active learning
- Engaging learner agency
- Using Mastery learning
- Personalising the learning process.

(Ferri, et al., 2020).

New pedagogies, learning skills, and assessment methods have resulted from these changes (Brown, 2015). Staff in Higher Education, especially lecturers, should be ready to champion these new innovations in Higher Education (Siemens & Matheos, 2010). This includes getting to know the students and what they need to learn; as well as how to teach them and the skills that instructors need to achieve this (Palloff & Pratt, 2013; Scobey, 2012).

Lecturers were asked if they used teaching approaches that could guide student learning and thinking in the learning journey. Some of their responses are given below:

Participant 1: "So the process that I use is very much based on a self-study. And group discussions and class discussions. And I think that students learn faster and they learn better in group discussions and in classroom discussions. And I limit the number of slides that I present [sometimes] I don't even present slides. I present questions only, and we discuss the questions in class."

Participant 3: "I think for me I use that chat more under Teams. I always think that students are more active on Teams and that's why I provide more guidance."

Participant 9: "My approach is to connect with the student at an emotional level first."

Participant 10: "Create a cognitive mindset in terms of individuals that you create abstract scenarios for thinking ability."

Lecturers appear to have very limited knowledge of what methods to use to promote online learning and engagement. Some lecturers tried to adopt a method that they found useful, while others made little attempt to improve engagement. This is probably the reason why students preferred attending some lectures more than others.

Lecturers were further asked if there was sufficient online interaction and engagement with their students on Moodle. Some responded as follows:

Participant 2: "So I think a lot of students have still battled with it."

Participant 3: "I don't think it's sufficient ... personally, really, I don't think I've engaged really with students on Moodle the way I do on Teams."

Participant 8: "Yes, there is in the lecture, so I feel that there is sufficient engagement, but in the chat facility obviously."

From the interviews, the following was evident: Interaction on Moodle was limited and the chat facilities were rarely used. WhatsApp groups were created instead and chats occurred on WhatsApp for some students. Microsoft Teams was used to host lectures and the recordings were uploaded to Moodle. However, students did not always engage in the online lectures or participate in the chat facility on Teams. Some lecturers believed that there was no guarantee that the student was paying attention purely because they could be engaged in other tasks while being in the lecture, such as cooking, cleaning, taking care of kids, or any other household chore. Engagement was lesser in the Teams lectures as compared to face-to-face lectures as students were still familiarising themselves with the online lectures.

6.5.3 The Transformation of learning in Higher Education

Moodle as an e-learning tool has transformed learning in Distance Higher Education, especially during COVID-19. With the hard lockdown during the pandemic, lectures were heavily reliant on the use of Moodle as an online tool. Due to Moodle, the academic years during COVID-19 were salvaged. During COVID-19, the movement of people was restricted and hence access to education was a key concern, which Moodle assisted in addressing regardless of where the lecturer or student was located. Examinations could still be facilitated and lecturers could conveniently mark scripts. Moodle has become the convenient choice as well as the most cost-effective choice as the need to travel to exam venues, lectures, or libraries was alleviated – everything was accessible via Moodle.

Lecturers were also asked if Moodle was used more frequently to facilitate the teaching of content due to COVID-19 and how had COVID-19 transformed the way they taught and used Moodle. Some of their responses follow:

Participant 1: “It is being used a lot more, as a result of lockdown rules. We are forced to use it and that is one of the major impacts on Higher Education ... but then, either way, we would have gotten there in the next two to three years. However, the pandemic accelerated the process of adopting Moodle.”

Participant 3: “Yes, there was no other method. COVID-19 forced us to go out of our comfort zone and to understand that this is another method of teaching and it is here to stay and I don't think we will stop using it post COVID-19 as the pandemic forced us to be ready for the digital future.”

Participant 4: “I think it's used more now because of COVID and, yes, it has transformed because people know that they don't have to depend on the lecturer for assistance and the student has become more self-disciplined.”

Lecturers were also asked if they were able to mark assessments efficiently on Moodle. Some of their responses were as follows:

Participant 1: “Firstly, it was a challenge to adapt to a new way of marking and to start using the tool itself.”

Participant 6: “Marking is fairly ... It's much easier, actually. Of course it was a learning curve initially, but it's much more efficient and you don't have to touch scripts.”

Participant 8: “Like in economics, we say when the experience curve starts ... when you first start marking scripts it will take an hour. The second time it will take 45 minutes and eventually it will take 30 minutes. So, you reached the experience curve effect.”

Participant 13: “It is quite convenient. Again, you know, once you start with a new system, there is some teething problems, but you get used to it.”

Teething problems are inevitable at the inception of adopting new technology. I also believe that there was some resistance at the beginning from lecturers. Currently, lecturers agree that online marking is the most efficient method. It should also be noted that lecturers would have been hesitant to touch scripts out of fear of contracting the virus. From my observations, however, I can recommend that the marking functionality should include a comments function; and that lecturers should be encouraged to use this functionality to provide feedback to students.

The literature agrees that the digital transformation of education was accelerated by the COVID-19 pandemic, as 4IR tools had to be adopted by several institutions during the lockdown (Mhlanga & Moloji, 2020). Because e-learning had to be adopted, LMSs, such as Moodle, had to be used to ensure learning continued (Ajani, 2021).

Traditional face-to-face learning is now being replaced by other types of learning, including, e-learning, virtual or cyber learning, hybrid learning, and online learning (Muniasamy, Ejalani & Anandhavalli, 2014). Education has transformed so much that students walk into the classroom holding devices that are already connected to the internet (Palloff & Pratt, 2013); and the lecturers can use e-books, YouTube videos, and even social media for teaching and learning (Fulton, 2012).

Accordingly, Higher Education policies have been transformed, which is inevitable as education is impacted by surrounding influences (Siemens & Matheos, 2010). Education has transformed for several reasons, including, financial issues and cost (Zusman, 2015). Education now includes using LMS systems – the student syllabus is uploaded to the LMS and the system is further used to host tests and grade scripts (Palloff & Pratt, 2013).

Moodle is known to be a critical tool for teaching and learning globally as traditional methods of teaching, even prior to COVID-19, were being replaced by Moodle due to convenience and cost factors (Ajani, 2021). Moodle was used as a tool to salvage education during the COVID-19 pandemic by delivering the curriculum to students for Higher Education Providers, including those in South Africa (Ajani, 2021).

According to Heyde and Siebrits (2019) several universities within South Africa made efforts to use LMS as a tool to, not only transform, but promote education as well. The adoption of LMSs, especially Moodle for curriculum delivery among academic staff in South Africa, has the potential to enhance teaching-and-learning activities (Ajani, 2021). “Thus, the present pandemic era calls for the full adoption of Moodle by academics to deliver learning materials for learning-and teaching activities, this explains why academics should be encouraged, supported and trained to adopt Moodle for curriculum delivery in the system” (Ajani, 2021, p.715).

Kasim and Khalid (2016) believe that Moodle is also significant as it provides a more convenient means for students to access learning activities. Using Moodle for curriculum delivery presents academics with new learning-and-teaching environments via the internet and intranet to promote approaches that allow student engagements, and the sharing of instructional materials and information (Zaharias & Mehlenbacher, 2012). Govender and Mkhize (2015) concur that Moodle provides students with several opportunities, including opportunities to participate, engage, and interact. Essentially using Moodle as a tool for e-learning is beneficial and enhances teaching and learning (Ajani, 2021).

Lecturers in the current study were asked if Moodle transformed teaching and learning in Higher Education:

Participant 3: “Yes, definitely. In my view. Firstly technologies are being introduced more at institutions than before. Secondly, I think that also there is investment in supporting student now to really familiarise themselves to use technology such as Moodle and we are trying to eliminate manual paperwork that we used before and we're reducing our carbon footprint.”

Participant 4: “I think definitely it's transformed education and made people more dedicated to study and have become more self-reliant. The reason I say this is that there is heavy dependency in the classroom on what the facilitator is saying, so you know there is this significant dependency on the face-to-face engagement and one is expecting all information to be transferred from the person in front of you with Moodle.”

Participant 5: “It has transformed the teaching and learning in Higher Education in a big way, even if the student misses the class they can still go back and find the exact information which was delivered in a lecture as it is readily available, It is convenient.”

Participant 9: “Well, yes, definitely it has, and it has transformed in its ability to provide access wherever you are. You can be anywhere for that matter, so accessibility was the key transformation.”

6.5.4 Communication

Communication is a key component in the teaching-and-learning environment; especially during and since COVID-19 when classrooms became virtual environments. The findings of this study suggest that both students and lecturers prefer using WhatsApp as a tool to communicate. Many lecturers have created WhatsApp groups to communicate with their students. Lecturers do not appear to communicate on Moodle often and do not encourage discussion on Moodle even though Moodle does have a chat facility. Not all lecturers created WhatsApp groups for student interaction; hence it is highly likely that some students did not have a

convenient means of communication. It was further noted that some students placed questions on the chat facility and the lecturer took a relatively long time to provide a response, while in some instances no response was provided at all.

Lecturers were asked if Moodle was used for communication and the following response represents the unanimous feedback from the lecturers:

Participant 2: “The chat facility you use as and when required, but not to a great degree.”

According to Zharova, Trapitsin, Timchenko and Skurihina (2020) “Moodle combines diverse means of communication that other electronic communication channels may provide and it allows not only to perform many functions, but also to integrate them into one platform”. Zharova et al. (2020) acknowledge this advantage of Moodle and add that students and lecturers prefer to use the same communication channels or platforms for work as well as social interaction (such as, email and WhatsApp). According the study conducted by Zharova et al. (2020), the respondents indicated that Moodle was not the preferred means for ongoing communication and students rarely used Moodle as a communication tool.

6.6 Conclusion

It is evident that technology such as Moodle was already available prior to COVID-19. However, there was accelerated use of Moodle during the pandemic as the LMS provided accessibility whereby students could access lectures, content, examinations and even online libraries via Moodle. It is acknowledged that the technological acceleration and intervention by institutions was a very necessary response to COVID-19. The participants in this study were already using Moodle prior to COVID-19 as the institution had already adopted Moodle as a tool for Higher Education prior to the pandemic. Lecturers were already familiar with Moodle prior to the pandemic and, even although they initially experienced adaptation issues with the system, they were working at a comfortable space when the pandemic arose. Hence making use of the system was systematic and efficient.

Moodle had both advantages and disadvantages for the participating lecturers, which were highlighted in this chapter. The advantages included factors such as cost saving and access to examinations; while disadvantages included connectivity issues due to load shedding. Despite this, lecturers still believed that the use of Moodle for teaching and learning has become the norm for e-learning in Higher Education; and believe Moodle as an e-learning tool has indeed transformed Higher Education since COVID-19.

CHAPTER SEVEN – QUALITATIVE ANALYSIS AND DISCUSSION (STUDENTS)

7.1 Introduction

This chapter discusses the findings of the qualitative analysis of the student data. The analysis and discussion focus on addressing the following research questions which were adapted for the student data.:

- What are the experiences of students when using Moodle for e-learning in a learning journey?
- What functionalities of Moodle do students use when using Moodle for e-learning in a learning journey?
- Why do the students use Moodle for e-learning in a learning journey the way they do?
- How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?

The experiences of the students included using MS Teams for attending lectures and using Moodle to access and download study material, take examinations, download recorded lectures; and even submit assignments and access results . Students further unanimously asserted that there were connectivity issues, which will also be discussed in this chapter. Students highlighted that they experienced adaptation challenges using Moodle. Some technical issues were experienced and, as South African students , challenges were experienced due to loadshedding. The findings from the analysis of students' experiences are discussed in this chapter.

Having identified consistent patterns during the data analysis, themes were generated from the interview transcripts. The themes generated were as follows: Advantages; Disadvantages; Functionalities; Reasons why students use Moodle the way they do; and Transformation in Higher Education. These themes are grouped below under the research questions that they address; and the accompanying objectives. Only student data is considered in this chapter, and the research questions and objectives have been adapted accordingly.

7.2 RQ2: What functionalities of Moodle do students use when using Moodle for e-learning in a learning journey?

Objective 2

To explore the functionalities of Moodle using Moodle for e-learning in a learning journey at a Private Distance Higher Education Institution in a COVID-19 environment.

The aim of this research question was to understand the functionalities of Moodle used by students for e-learning at a Private Distance Higher Education Provider in a COVID-19 environment.

The various functionalities as used by students are discussed below. The key functionalities used were the grading function for the marking of scripts and the online archives to access content to prepare for lectures. It was further noted that there are some functionalities on Moodle that were not being used and that may be beneficial to improve student engagement.

7.2.1 Functionalities of Moodle

7.2.1.1 Communication tools and other functionalities of Moodle

Moodle possesses several functionalities that are useful for students. The functionalities include: archived study material and past-year exam papers; online chat forums; access to assignments and online examinations; access to student results; and many more.

Students were asked what some of the functionalities made available by the institution on Moodle were, and if they were difficult to use. Some of their responses were as follows:

Participant 4: “There was a library, you could upload your assignments. You could check your marks. You could write your exams, your online summative download content and past year papers.”

Participant 8: "You could do your exam online. You could upload your assignments. The live webinars were pre-recorded and accessible on Moodle."

Participant 12: "I enjoyed using the functionalities they made everything easier for me."

Participant 13: "I could download past papers, access my module guide and access webinars if you missed the session, I could also get my exam results and assignment results. There was chat facilities as well."

Ismatovna (2021) has argued for the importance of students being able to access their study material on Moodle, as and when required, regardless of where they are. Moodle also has discussion forums for student-to-student communication and student-to-lecturer communication (Ismatovna, 2021). The student can also receive feedback from lecturers on assessments and examinations. Additional tools can be plugged into Moodle, such as, journals and online libraries for the students' convenience (Ismatovna, 2021).

Participants were further asked if Moodle makes it more convenient to communicate with their lecturers and fellow students. Some of their responses were as follows:

Participant 1: "I have used the facility, but not that much. I normally write emails, so that I have a record of what I've said. And sometimes I phone because calls are recorded."

Participant 4: "I used to ask the lecturer. But I did find that there were a couple of instances where the lecturers would respond way to late, you know, so they would take a good couple of days and sometimes I needed an answer urgently, hence it didn't help. The other problem would be that new messages did not pop up, hence I had to physically go in and look for a message, hence that was a bit of a struggle."

Participant 9: "I remember this, but I did not use that much because I could communicate over emails and some of them over WhatsApp, and their classmates we would communicate more probably via the groups formed in class."

Moodle hosts a series of functions. However, one of the functions that was not used was the communication tool, which is a chat facility available to students and lecturers. The Private Higher Education Institution in this study branded this tool as 'Ask the lecturer'. The feedback as received above was not very positive as most students did not fully use the functionality even though it was available. With reference to the response from participant number 4, lecturer responses were not received timeously. It is for this reason that I believe students were reluctant to use this tool. Additionally, participant 4 indicated that notifications were not received when new messages were posted on Moodle. Hence, they were unsure if messages were available until they logged into Moodle.

One of the reasons students did not use Moodle as a communication tool was because students, as well as lecturers, created WhatsApp groups that provided a more convenient method of communication as the response time was faster.

7.3 RQ1: What are the experiences of students when using Moodle for e-learning in a learning journey?

Objective 1

To understand the experiences of students using Moodle for e-learning in a learning journey at a Private Distance Higher Education Institution in a COVID-19 environment.

The aim of this research question was to understand the experiences of the students while using Moodle for e-learning at a Private Distance Higher Education Provider in a COVID-19 environment. Based on the analysis some advantages and disadvantages were uncovered, these are documented below:

7.3.1 Advantages

7.3.1.1 Self-discipline and time management /Self-regulated learning

Self-discipline is essential to enable a student to complete their learning journey. However, self-discipline is even more important for remote learning as the student is

required to self-direct their own studies, especially since lecturer presence is limited as compared to traditional face-to-face sessions. The students in this study were MBA students. Thus, these students had already completed two qualifications prior to the MBA, and were adult learners. Consequently, their self-discipline can be assumed to be greater than younger students completing a degree for the first time.

Students were asked what were their expectations were of completing their MBA online. Their responses were as follows:

Participant 4: "The nice thing was that online lectures were recorded. I could easily go back and listen to something 10 times if I needed to as opposed to a face-to-face lecture."

Participant 5: "Without a doubt. Definitely. Because I knew that you needed to come into this with self-discipline. I'm working and I need to actually manage my time. Managing your own time requires a high level of discipline."

Gelles, Lord, Hoople, Chen and Mejia (2020) argue that, in this online era, students tend to take responsibility for their own leaning. Additionally, the faculty should help students to adapt to the online learning environment. With online learning, it is essential for students to set boundaries, remove any distraction and practise time management (Gelles et al., 2020). In essence this means that students are required to be self-disciplined (Gelles et al., 2020). Students agreed that time management was an integral characteristic of being self-disciplined, which was crucial for successful remote learning (Gelles et al., 2020).

Li, Luo, Lei, Xu and Chen (2022) support this argument, i.e., that self-regulated learning (SRL) requires a student to have proactive control over their own learning process. SRL is necessary for remote learning, which promotes greater student autonomy and lesser lecturer presence (Li et al., 2022). As defined by Zimmerman and Schunk (2011, p. 9) "SRL is a dynamic process where learners continuously adjust their learning to attain personal goals".

7.3.1.2 User-friendly/easy to use/convenience

Using Moodle was certainly considered to be a convenient option for students. Students described the system as user-friendly as well as easy to use. Students were able to study at their own pace, as and when they required; since several students had jobs and many also had family commitments. Lectures were recorded and placed on Moodle for students to access at their convenience; and students could listen to the recordings several times if they were struggling with certain concepts.

Students were asked if they had to put more effort into learning because they were using Moodle, and their responses were as follows:

Participant 1: "I think the system it is user friendly. It's very good to use."

Participant 12: "I feel that I generally do like technology and I try to make an effort to learn new things and find new ways of doing things. For me, it was very easy and absolutely seamless."

Participant 13: "I don't think there was a lot of effort needed for the system. I think it's a fairly basic system. I think the simplicity example. It was very easy to navigate for me."

According to research by Paudel (2021), students agreed that they considered the conveniences of online learning to be an advantage; and online learning was especially beneficial during COVID-19. Moodle is convenient for students as they can adapt their pace of studying according to their lifestyle and expectations, as activities and lessons can be repeated on Moodle as many times as the student requires (Paudel, 2021).

7.3.1.3 Online examination

Online examinations were a key component for students as these allowed them to complete their work. Additionally, because lectures were recorded and could be watched at any time, students were able to revise for their examinations at their convenience. Students were very pleased that examinations occurred online as they

believed that it was convenient, and safer especially during COVID-19 as they did not need to go into public examination venues where they ran a greater risk of contracting the virus. Online examinations also eliminated the time needed for students to travel from their homes to the examination venue; hence students were calmer prior to writing their examinations and had more time to study.

When students were asked what the favourite part of the learning journey was, some of their responses were as follows:

Participant 3: “My favourite part was the flexibility during examination. Flexibility to access information and the amount of time given to complete the exams. The possibility to take exams from home was very enjoyable and it was nice.”

Participant 13: “I was actually happy that we went online with exams.”

Elzainy, Sadik and Al Abdulmonem (2020) have noted that online examinations were common during COVID-19, and institutions introduced formative testing as well as summative examinations online. Additionally, an online examination (also known as an e-exam) can contain an assortment of questions, such as multiple-choice questions, true-and-false questions, matching questions, and essay-style questions (Elzainy, Sadik & Al Abdulmonem, 2020).

Some institutions prepared questions and question–answer banks, which were inputted into the system and programmed to provide immediate results to a student upon completion of the examination (Elzainy, Sadik & Al Abdulmonem, 2020). However, the Private Higher Education Provider in this study did not provide examination results immediately upon completion of the examination, as the examinations needed to be allocated to lecturers for marking before the institution could post results on Moodle, since the examination questions were open-ended (e.g., evaluation, discussion, practical application and case study questions) and thus needed to be reviewed and marked by an academic.

In a study conducted by Zeshan (2021) on *Business Students Experiences about Online Learning During Covid 19: Problems and Opportunities*, some students commented as follows:

“Bundles of assignments and projects given by teachers, and also they give quizzes and mostly assignments and project are analytical based because teachers give the assignments and projects out of book or out of syllabus.”

“It was good experience. Some MCQs were technical and difficult to solve in one minute, but long questions were attempted easily. But if someone whose typing speed is slow, can't attempt long question in time.”

Students were further asked if they were eager to use Moodle for Online Summative Assessment (OSA), also known as examinations due to COVID-19. Some responses were as follows:

Participant 7: “Absolutely. I felt safe and secure. I wasn't going to get infected by anybody.”

Participant 12: “Yes, definitely, because the first exams we're in June 2020 and at that point, yes, we had very few cases, but everybody was afraid to meet anybody.”

As noted above, students were especially keen on using Moodle for examinations due to COVID-19, as they were not comfortable going into crowded examination venues and coming face-to-face with volumes of people even when social distancing was maintained. Students were most likely eager to use the online examination because of safety reasons.

7.3.2 Disadvantages

7.3.2.1 Internet connectivity/loadshedding/technical difficulties

Several third-world countries have significant challenges with electricity supply and internet connectivity. The lack of electricity supply is known as loadshedding and results in power outages for several parts of the day. Unfortunately, power outages

further affect the already unstable connectivity. The data cost in many countries are also considered to be prohibitively expensive. Similarly, this is the case in South Africa.

Students were asked if they experienced difficulties using Moodle due to connectivity issues. Some responses were as follows:

Participant 2: "We experience power outages and sometimes it goes on for hours, not even and if you don't have a fibre line it will affect the continuity of your studies for studying. You had to buy tools, either generators or something' just to make sure that you continue working. So for me, I bought the external source to my router so that I could continue to work for 3–4 hours even if I didn't have electricity, as long as I had my laptop is charged."

Participant 4: "I never had issues fortunately because I had backups for every single thing. I had a backup for my internet. I had an update on my phone so I could stream. I mean, I could hotspot. When the power went down, I had a UPS. I was fortunate enough. I know that not everybody is."

Participant 5: "Sometimes the network can be very, very slow."

Participant 7: "A lot of my colleagues had connectivity issues and I think it was mainly due to loadshedding. Sometimes people had issues with their service providers. But I actually didn't have any issue at all. I must be thankful for that."

The following research supports the above findings:

According to Hamid, SENTRYO and HASAN (2020), who claim that lecturers and students do not have proper internet connection in Nepal, the success of online learning is supported by stable internet access as well as a stable electricity supply.

According to Henaku (2020) students were hampered by 'network problems' which caused connectivity problems and poor mobile networks. The students in their study admitted that they sometimes miss lectures due to the issues experienced with internet

access (Henaku, 2020). Additionally, students were concerned by internet/data bundles being very expensive to purchase as online learning consumes a lot of data. Some students missed lectures as they did not have the funds to purchase internet/data bundles (Henaku, 2020).

Mahmud and Gope (2009) also noted that students in Bangladesh struggle with network connectivity and bandwidth issues. They further noted that internet usage in Bangladesh is one of the lowest in the world with parts of Bangladesh experiencing loadshedding every day.

Students in the current study were asked if they experienced any challenges using Moodle. Some of their responses were as follows:

Participant 5: “Many adaptation challenges sometimes when using something for the first time, it may be new to you and then after hour it becomes easier, the next time it becomes easier.”

Participant 9: “Signal problems, a signal, hence you struggle to download content when the next work is bad.”

Participant 13: “I was trying to upload an assignment and I think the portal went down and then I had to email for support, so there is a one difficulty.”

Students were also asked if support was readily available when they experienced technical difficulties while using Moodle. Their responses were as follows:

Participant 2: “For me personally I had no problem with any technical issues. Throughout my exam I didn't experience issues, but I mean on the group I can tell you what some people went through. I think midway their exam paper disappeared; they were panicking. I think they try to even get hold of the WhatsApp group.”

The response from participant 2 is deeply concerning, and must be investigated by the institution to ensure that it does not re-occur. Much anxiety was caused for students

who experienced their examination paper disappearing. This issue emerged during informal discussions with students. However, the institution was aware of this problem and were prioritising its resolution.

7.4 RQ3: Why do the students use Moodle for e-learning in a learning journey the way they do?

Objective 3

To determine why the students use Moodle for e-learning in a learning journey the way they do at a Private Distance Higher Education Institution in a COVID-19 environment.

The aim of this research question was to understand why students use Moodle for e-learning in a learning journey the way they do at a Private Distance Higher Education Provider in a COVID-19 environment.

7.4.1 Reasons students use Moodle the way they do

7.4.1.1 Training

From the quantitative results (see chapter 5 Table 5.1: Statistics for students) we saw that the frequency of using Moodle by students were not as one would expect. Training could be a reason for the limited use of Moodle by students. Most of the students claimed that there was no training provided. The institution certainly provided introduction videos on how to use the system, how to upload assignments, how to complete examinations, and how to navigate through the system. It is, however, uncertain if these were sufficiently communicated to the students. Many students had previous experience working with LMS systems. Hence were able to navigate through the system with ease. However, training would certainly have been beneficial.

Students were asked if sufficient training and support was provided when they started using Moodle. One participant responded:

Participant 2: "So initially they did the videos. It was quite interactive. They showed you ways to get your assessment uploaded."

While the above feedback was extremely positive the majority of the students responded as follows:

Participant 2: "I think there needs to be a little bit more communication from the institution to make this student feel like support is available to make sure that the student feels heard during this difficult journey. I don't find that there was quite enough support."

Participant 4: "I must admit I don't remember any videos. Maybe there was, maybe I missed them, but I basically kind of just played around, navigated, got lost here and there, but it was simple enough. No training support was provided, but it was basically your previous knowledge from previously doing it online and just playing around with the system."

Participant 6: "No training, but it was self-explanatory when you went into the home page you were able to navigate successfully."

Participant 11: "No, there was no training that was given to me."

Participant 12: "Insufficient training and support."

According to Shawaqfeh, Al Bekairy, Al-Azayzih, Alkatheri, Qandil, Obaidat and Muflih (2020) training is extremely important for both the lecturer and the student. The study by Shawaqfeh et al. (2020) revealed that lecturer and student training needs are associated with barriers to success in online teaching and learning. Training is beneficial for effective delivery of online courses (Shawaqfeh et al., 2020). According to Leo, Alsharari, Abbas and Alshurideh (2021), who concur, it is critical to conduct intensive training when introducing technological education to avoid calamitous situations.

7.4.1.2 Intrinsic motivation

Motivation is a critical factor determining success, especially when you are using or doing something new. If students are not motivated to join an online learning journey, then Moodle will not be used. From the results of this study, it was evident that students enjoyed using the technology and were, additionally, motivated to use Moodle due to safety concerns during the pandemic.

Students were asked if they were motivated to use Moodle for e-learning. Some of their responses were as follows:

Participant 2: "For me, the motivation was I needed to progress and study, for me motivation was my end goal."

Participant 6: "Yes definitely motivated for e-learning. I enjoyed learning from it."

Participant 8: "Yes, definitely. Like I said, for me again, you know it just comes back to the learning journeys that I found very, very useful for. So that was one of my key motivators."

Students were further asked if they enjoyed using technology, in particular Moodle. Some of their responses were as follows:

Participant 2: "Yes, definitely. I keep a priesthood technology. I mean, even at work you need technology that there's no escaping. Technology can really enhance anything that you are doing, especially even within this. With this online platform everything was accessible online and it worked out perfectly for me."

Participant 10: "It was convenient and I normally enjoy technology in general."

Participant 13: "Most of my life revolves around a system. My job requires technology. I like being able to just sit at my desk and have everything at my fingertips, so I like that. I like online and technology."

Participant 15: "Yes, I enjoy using technology. I have an engineering background so I'm interested to see new things and to try them and so on. So yes, I am interested to use new technology. Especially now with the 4th Industrial Revolution. So we need to actually adapt to use technology. Otherwise we are going to be left behind when everybody is moving forward."

As indicated by the responses above, the majority of students used technology in their everyday lives. They appeared to understand the importance of technology and acknowledged that it grants them accessibility, and that it is the way forward for the future. Additionally, the responses indicate that students enjoyed using technology. Consequently, when an individual enjoys using a platform, they are motivated to use it more frequently and for the purpose it was intended.

Students additionally asked if their institution made the use of Moodle compulsory due to COVID-19 and why they thought this was the case. Some of their responses were as follows:

Participant 1: "I think it was because of adhering to COVID-19 regulations, so that it can be easier for students to be able to learn while they are at home."

Participant 2: "I understood because of strict lockdowns regulations. If you wanted to succeed in your studies, we needed to understand everything changed."

Participant 6: "It was definitely necessary with COVID-19 because we needed learning to continue."

Participant 8: "I wouldn't want to say they made it compulsory, but in order to survive, I'd say they had no other choice. That's my stance on it, you know. I mean, everybody is literally resorted to some form of virtual learning, some formal virtualisation in the workplace. To continue, you know, moving forward I mean remote learning is everything."

There were multiple reasons why the institution made the use of Moodle compulsory, the most important reason being that the institution did not want their students' studies to come to a standstill. Another reason was because the institution knew that face-to-face interaction was not only restricted, but too dangerous and could compromise the students' safety due to the pandemic. However, it must be noted that students were using Moodle prior to COVID-19, and that the institution had already introduced the LMS into their teaching-and-learning strategy. The institution and the students became more dependent on Moodle, and were more reliant on this LMS, due to COVID-19 restrictions. For personal safety and for continuity of their studies, this was inevitably the only way forward. Thus, students were motivated to use the system.

Motivation is a factor that drives a person to something because of a perceived need (Lisnani & Putri, 2020). According to Li et al. (2022), intrinsic motivation is concerned with the activity itself – a learning activity that motivates is one that is enjoyable and optimally challenging, thus allowing learners to develop their own learning behaviours and reflect on their own values and interests. Hence, online learning requires students to have self-discipline and to be more intrinsically motivated (Li et al., 2022).

Students were asked if they enjoyed lectures that were delivered via the online medium. Some of the responses were as follows:

Participant 2: "Definitely it was enjoyable and was useful especially the interactive ones."

Participant 6: "Yeah. I did, you know, the ones that was energetic and I could engage with. I watched all of them, however some lecturers were just reading straight out of the slides hence for these lectures I attended only when I could."

Participant 6: "Some of the teachers I enjoyed. Some of it. I would have preferred that this individual was conducting this face-to-face lecture as opposed to online. The lecturer needs to present to make things exciting, interesting, or interactive. Other than that I would go through the recording and where they were reading and I understood the principle, I would just skip and move to the next part."

The above responses are a bit concerning. It appears that some students enjoyed certain lectures mostly because the lecturer's teaching methodology was exciting and energetic. Most students enjoyed accounting lectures. All students attended the live webinars. However, if they had other commitments, they were grateful that the recordings were available to listen to at their convenience. The concerning aspect is that students unanimously mentioned that some lecturers merely read from their slide decks with limited interaction. It is important that a student is motivated to attend lectures. If the lecturer is reading from the slides and not engaging with the students, they tend to feel that they could have simply read the content on their own, and may become discouraged from attending these lectures.

7.4.1.3 Cost of e-learning

The cost of data in South Africa is relatively high. Hence, students will probably have had to incur substantial data costs due to increased data expenditure when their learning journeys moved online. However, based on the feedback received from students, they had already invested in uncapped WIFI packages or fibre lines prior to the shift to online learning; hence they did not incur any additional costs.

From the responses received by the students it appears that, instead of incurring costs, there was a cost saving as students no longer needed to travel to examination and lecture venues, nor to travel to libraries or purchase textbooks as Moodle has an online library.

Students were asked if they incurred any additional costs using Moodle. Some of their responses were as follows:

Participant 1: "No, because already has a router at home."

Participant 2: "I already had a fibre line, so I didn't really feel the impact."

Participant 4: "The institution had given us all the links and the passwords for the different libraries, so there was no cost there."

Participant 10: “Not necessarily as an additional cost because I already had data and connection at home.”

Participant 12: “So that helped that I had internet at home and at the office, so I didn't have to incur any additional expenses.”

Students were further asked if they incurred cost savings when using Moodle for OSA, which constituted their examinations, as they no longer needed to travel. The responses were unanimous. Some samples follow:

Participant 1: “Yes, of course there's a cost saving it.”

Participant 7: “Agree with you that there was definitely a cost saving. I didn't even have to go shop for books, as they were already available on Moodle and there was no traveling to the lecturing venues.”

Other authors agree that e-learning is cost effective for students as they no longer needed to commute to lecture and examination venues (Leo et al., 2021).

With e-learning, travel expenses can be significantly reduced as compared to traditional learning (Maatuk et al., 2022).

7.5 RQ4: How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?

Objective 4

To explore how using Moodle for e-learning in a learning journey has transformed distance learning at a Private Distance Higher Education Institution in a COVID-19 environment.

The aim of this research question was to understand how Moodle, as an e-learning tool, transformed distance learning on a learning journey for online courses at a Private

Distance Higher Education Provider in a COVID-19 environment. The transformation that occurred during COVID-19 in education is discussed below:

7.5.1 Transformation in Education

7.5.1.1 Accessibility and flexibility

During the years 2020 and 2021, a number of countries, including South Africa, implemented a national lockdown in an attempt to slow down the spread of COVID-19. Once lockdown was relaxed, a number of restrictions remained in place with regards to face-to-face contact. For example, only a few people could be in a classroom at any one time due to social distancing protocols. People were not comfortable to risk their health, and possibly their lives (including risks to their families), and preferred to work and study online. Studies would have stagnated and students would not have progressed without online intervention. Even graduation was hosted online. Private institutions, reliant on profit, would probably not have survived if they were unable to register students and continue to offer lectures, examination, and support to students. Moodle and online tools made all of the above accessible to students.

Students were asked if they use Moodle more now due to COVID-19, and some of the most common responses were as follows:

Participant 1: "Yes, we had to use it. We didn't have any option."

Participant 2: "Yes, definitely, especially the exams. Even attending webinars asked the lecturer because sometimes that's your only interaction with the institution. I think definitely we used it more; it was the only means to actually get to progress in your studies."

Participant 6: "Yes, definitely, definitely using it more."

Several students felt that online learning afforded them flexibility with their studies, which was not available using a traditional method of learning (Buheji & Buheji, 2020).

Casey and Wilson (2005) have described flexible learning as flexible in the context of education means flexible start times and end times; studies can take place from any location; students can choose the times that works best for them; essentially learning can occur at anytime from anywhere that suits the student.

7.5.1.2 Study habits during COVID-19

Study habits certainly did not remain the same. Study habits of an online student compared to a student who attends face-to-face lectures are vastly different. Online students must be less dependent on their lecturers and, hence, must be self-disciplined and must manage their own learning. It must also be considered that students in Distance Education are likely to have jobs and family responsibilities. Hence, it is inevitable that their study habits will differ as they will be required to manage their time between work commitments, family commitments, and their studies. Additionally, online students are more reliant on the abundance of online resources, such as, journals, websites, and online textbooks. Examinations are conducted online and assignments are also submitted online. Hence study habits had to change.

Students were asked if using Moodle required them to change their study habits. Some of the responses were:

Participant 3: “Yes, it was. It was different because we had less flexibility in terms of assignments and exams. For example, before, as you know, the exams we had where everyone was in the exam room. I'm still outside with my books and trying to look at things and relying on my memory for that three-hour exam. I don't have this kind of stress because during the exams I can access my material and use logic and general knowledge, this was the transition for me.”

Participant 13: “I think we just had to be very aware and active on the site because if there was an update from that student blog that the lecturer responded. So I think you just need it to be very proactive with this system in order to make sure that you were getting the correct information.”

Participant 14: “It has altered the way I study.”

According to Hwang, Rabheru, Peisah, Reichman and Ikeda (2020) online education allows students to interact independently and to achieve their study goals. Student-coordinated learning has become more prominent because of online learning, and students now need to adapt their study habits to achieve their learning objectives (Hwang et al., 2020).

Students also need to be very active in online lectures as they need to pose questions to lectures. Additionally, they are required to access additional resources and references (Angkarini, 2021). Time management is now more critical as it is crucial for student preparation (Angkarini, 2021). Kumi-Yeboah and Smith (2016) note that students now have flexibility and convenience, but that there is a lack of support, hence students require more self-confidence. Not everyone has been inducted into this new reality of learning. Many rural communities and regions still practise face-to-face learning where the lecturer is present explaining the content of the lesson (Angkarini, 2021).

According to Angkarini (2021), every student is different and will therefore not have the same study habits. Some study well in crowded places while others prefer studying in a more private environment. To develop good study habits, it is essential for a student to have the desire to learn and to have self-discipline (Çapan, 2010). Some students have poor study habits, which suggests that they lack time-management skills, concentration, and discipline (Çapan, 2010). Ahiatrogah, Deku and Dramanu (2008) note that not all online students are young students. Some are adults with jobs and family responsibilities. It is inevitable, therefore, that their study habits will differ.

Angkarini (2021) further notes that distance students do not have as much time for self-study due to work and family responsibilities. Angkarini (2021) adds that if students are working it is evident that they will have to divide their time between work and studies. Consequently, students who have family responsibilities and work commitments will have their studies impacted (Ahiatrogah, Deku & Dramanu, 2008).

Angkarini (2021) recommends that online students be guided by their lecturers on how to manage their time for their studies. Lectures should educate students on how to prepare for examinations and lecturers should assist with the preparation process.

Additionally, lecturers should encourage students to adopt good study habits such as note taking, reading prior to the lecture, and planning and preparation.

7.5.1.3 Moodle transforming e-learning

Moodle has certainly transformed learning in Higher Education during the COVID-19 period. Students were able to access their content via Moodle, access lectures via Moodle, download past-year papers and content, upload examination, take examinations, engage in chats with peers and lecturers, and even gain access to their results. Moodle has been around for years, but the use of Moodle accelerated during COVID-19 as students began to use Moodle as a one-stop shop for learning.

Prior to Moodle, several procedures were paper based, assignments were submitted manually, examinations taken at lecture venues, paper-base scripts used, results printed and placed in an envelope, and students had to physically go onto campus to get their results.

If students missed their lectures, they would have to borrow notes from their peers. Students had to carry multiple textbooks to class as all resources were in the form of hardcopies. Learning has certainly been transformed and students and institutions are now heavily reliant on the convenience and accessibility Moodle has to offer. Students were asked how learning occurred prior to using Moodle. Some of the most common responses are given below:

Participant 9: “Very different, because if you miss class, you missed everything, You only had your textbook for studies. Now you can watch the recorded lecture on Moodle even if you miss the live session, as the recorded lectures are accessible on Moodle. Prior notes were printed and handed in class, now notes can be downloaded from Moodle. Previously I had to carry five different textbooks into lectures, now all textbooks are online and all I need is either my tablet or my laptop.”

According to Ajani (2021) Moodle was used as a tool to salvage education during the COVID-19 pandemic. Moodle was used to deliver curriculum to students by Higher Education Providers. Higher Education Providers in South Africa used Moodle for

teaching and learning during the pandemic with the aim of salvaging the academic year (Ajani, 2021).

Moodle is known to be a critical tool for learning and teaching globally as traditional methods of teaching, even prior to COVID-19, were being replaced by Moodle due to convenience (Ajani, 2021). The pandemic has, however, speeded up the adoption of Moodle among South African universities and other HEIs, which is proving to have enhanced teaching and learning (Ajani, 2021). Due to COVID-19 many institutions had to speed up the roll of a LMS, hence it does appear that COVID-19 had a positive impact on teaching and learning and in many cases, Moodle proved to be very popular.

Students were further asked if they accepted Moodle as the norm for e-learning and some responses were as follows:

Participant "Yes definitely I think E learning is the way to go I think Moodle and e-learning is going to be the new normal."

Participant 2: "It's the future. Normally I would have to spend the entire weekend in lectures, now I can go grocery shopping, I can spend some time with my assignments and I can attend a Webinar session. I can now do so much in the same space of time."

Participant 7: "It makes learning easier, more accessible at all. I believe that more students can be trained online than in a lecture venue to the capacity of the venue. This is definitely the way forward."

Participant 11: "I think it is the way forward. However, I still feel a bit sad that students might not get the full experience of being in a university and having a lecturer in the front of him and being in an actual class. And you know the actual experience and atmosphere of studying, and just in the life of a student, I think we would miss that. I think it's something that just changes the way you are and changes you as a student as well. But it is the new norm to go online and then it is the more convenient way, it's the better option."

Participant 15: “Yes, I think COVID-19 has brought a lot of changes in our lives, so I think this is the new norm going forward. I don't think we will revert back. Even if we do revert back, it won't be like the way it was before. Due to COVID-19 we have already adapted to the new life.”

Based on the responses above, students accept Moodle as the norm for learning moving forward. They see this tool as the tool of the future and do not believe that they can revert to how things were before. Moodle has provided convenience to students and they believe that learning has become accessible and easier. Students now consider Moodle to be the new normal.

7.6 Conclusion

It is evident that technology such as Moodle was already available prior to COVID-19. However, there was accelerated use of Moodle during the pandemic as the LMS provided students with access to lectures, content, examinations, and even online libraries via Moodle. It was widely acknowledged that the technological acceleration and intervention by institutions was very necessary due to COVID-19. The participants in this study were already using Moodle prior to COVID-19 as the institution had already adopted Moodle as a tool for Higher Education prior to the pandemic. Lecturers were already familiar with Moodle prior to the pandemic and, although they initially experienced adaptation issues with the system, they were working at a comfortable space when the pandemic arose. Hence, making use of Moodle was systematic and efficient.

The system has both advantages and disadvantages and these were highlighted in this chapter, with the advantages being accessibility, efficiency, and cost saving; and the disadvantages being connectivity issues and loadshedding. Despite these, students still accepted Moodle as the new norm for e-learning in Higher Education and believe that Moodle for e-learning has indeed transformed Higher Education (most especially during COVID-19). The next chapter interprets the results of the quantitative and qualitative data analyses according to the theoretical and conceptual frameworks.

CHAPTER EIGHT: SYNTHESIS AND DISCUSSION

8.1 Introduction

This chapter synthesises the results of both the qualitative and quantitative student and lecturer data analyses. This synthesis or triangulation of results is interpreted using the constructs of UTAUT-3 and TPACK as the organising principles for the discussion. These interpretations are then used to address the research questions and to contribute to theory. Conclusions are drawn and recommendations made for further research.

8.2 Interpreting findings from the analyses of lecturer data

The theoretical and conceptual framework used for interpreting the findings from the analyses of lecturer data is a combination of constructs from the UTAUT-3 and TPACK. The discussion that follows is organised according to these constructs.

UTAUT-3 CONSTRUCTS

8.2.1 Performance Expectancy

Performance Expectancy is the degree to which an individual believes that using the system will help him/her attain gains in job performance (Venkatesh et al., 2003). The findings from the qualitative analysis indicate that participants agreed that Moodle performed as they expected. Essentially, lecturers used Moodle because of the performance of the system. This finding is consistent with that of the quantitative analysis. As seen in Table 5.3: Statistics for lecturers the overall mean for Performance Expectancy was 3.49, which leans towards agree. These findings are consistent with other research findings that show a link between Performance Expectancy and Behavioural Intention to use e-learning technology (Almuraqab & Jasimuddin, 2017; Venkatesh & Davis, 2000).

Overall lecturers found that Moodle promoted accessibility and performed as expected. It was noted that the lecturers did not use all facilities available on Moodle. For example, the chat facility was not used, which is unfortunate as Performance Expectancy on intention of continued use is stronger with increasing internet experience, but decreases with decreasing internet experience (Bellaaj, Zekri &

Albugami, 2015). Additionally, the lecturers who participated in this study believed that using Moodle for e-learning was beneficial, which would have influenced the ready adoption of the system since PE is the extent to which technology adoption and usage delivers benefits to users (Venkatesh, Thong & Xu, 2012). The findings of this study, therefore, supports that of other empirical studies that Performance Expectancy positively influences the use of e-learning technologies (Yakubu & Dasuki, 2019; Abdou & Jasimuddin, 2020).

Several lecturers appeared to have adaptation challenges using Moodle, but thereafter the system performed as expected. Several researchers support this finding. According to Sari and Oktaviani (2021) it is challenging to adapt to a new online learning platform. Changing online educational systems during the pandemic also came with adaptation challenges as lecturers were required to shift from a traditional classroom to an online classroom (Mandasari & Wahyudin, 2021). Baticulon, Alberto, Mabulay, Rizada and Reyes (2021) concur, from the results of their study on challenges to online learning during COVID-19, that many academics were not sufficiently prepared for online delivery (Mseleku, 2020; Burgess & Sievertsen, 2020).

Loadshedding and poor connectivity additionally hampered the use of Moodle in this study. Challenges with internet connectivity have also been highlighted by other researchers as leading factors affecting online learning during COVID-19 (Dawadi, Giri & Simkhada, 2020; Mamun & Griffiths, 2020), which was particularly dire in developing countries during COVID-19 (Maatuk et al., 2022; Tahir, Haoyong, Larik & Ullah Adnan, 2018). According Bellaaj, Zekri and Albugami (2015), a moderating factor that influences Performance Expectancy on intention of continued use is stronger with increasing internet experience. However, Performance Expectancy decreases when internet experience is poor.

8.2.2 Effort Expectancy

Effort Expectancy is the degree of ease associated with the use of the system (Venkatesh et al., 2003). According to the participants selected for the qualitative data, Moodle was considered user friendly. The system was used for uploading content, downloading content, and for marking assignments and examination scripts. Most

lecturers believed that the facilities on Moodle were easy to use and required little effort. Lecturers agreed that marking scripts via Moodle became efficient once they adapted to the system. As seen in Table 5.3: Statistics for lecturers, the overall mean for Effort Expectancy was at 3.39, which leans towards agree.

The results of this study for EE confirm previous findings that Effort Expectancy has a significant impact on the adoption of e-learning technologies (Abdou & Jasimuddin, 2020); and that the effort required to learn or use an e-learning platform will affect acceptance of the system by the user (Venkatesh et al., 2012). Consequently, user-friendly systems that can deliver maximum benefit in terms of achieving goals and targets are the most likely to be adopted (Osei, Kwateng & Boateng, 2022; Venkatesh et al., 2012; Godoe & Johansen, 2012).

8.2.3 Social Influence

Social Influence is the degree to which an individual perceives that significant others believe he/she should use the new system (Venkatesh et al., 2003). Several authors suggest that Social Influence is an important determinant of Behavioural Intention to use e-learning technologies (Yakubu & Dasuki, 2019; Pavlou & Fygenson, 2006)

According to the participants selected for the qualitative data, using Moodle was compulsory for the lecturer as the institution's senior management had implemented the use of Moodle prior to COVID-19. Despite senior management enforcing the use of Moodle, lecturers believed that it was beneficial and indicated that they would have wanted to use the Moodle platform even without intervention from the institution's management. This view is supported by the quantitative analysis as shown in Table 5.3: Statistics for lecturers. The overall mean for Social Influence was 2.89, which is between disagree and neutral, suggesting that lecturers were motivated to use the system irrespective of management and collegial influence. Some other studies have also suggested that – in certain contexts – the effect of Social Influence on Behavioural Intention is not significant (Bellaaj, Zekri & Albugami, 2015). Likewise, lecturers in this study – rather than being influenced by colleagues wanted to use the platform due to their own personal interest as well as the need to stay relevant and advance their

careers. They enjoyed using new technology and felt that digital platforms for e-learning were the new norm and the future for education.

8.2.4 Facilitating Conditions

Facilitating Conditions are the degree to which an individual believes that an organisational and technical infrastructure exists to support the use of the system (Venkatesh et al., 2003). According to the participants selected for the qualitative data, all lecturers had the technical infrastructure to use Moodle. The institution ensured that all technical infrastructure was available to full-time lecturers, while part-time lecturers were required to provide their own. Thus, both part-time and full-time lecturers had their infrastructure in place and were equipped to use Moodle.

Additionally, the institution did attempt to provide support to the lecturers by conducting training sessions. Unfortunately the lecturers did not always have the time to attend all of the training sessions. Some lecturers reported experiencing technical difficulties and noted that technical support from the institution's technical staff was not always readily available during weekend classes. These reported challenges explain the quantitative results as seen in Table 5.3: Statistics for lecturers where the overall mean for Facilitating Conditions was 3.19, which ranges between neutral and agree. Additionally, this result emphasises the affordances of Facilitating Conditions for the acceptance of technology (Venkateshetal, Morris, Davis & Davis, 2003; AlAwandhi & Morris, 2009; Osei et al., 2022).

8.2.5 Hedonic Motivation

Hedonic Motivation is defined as the fun or pleasure derived from using a particular technology; and it has been shown to directly influence technology adoption (Venkatesh et al., 2012). According to the participants selected for the qualitative data, they enjoyed using technology in general and did enjoy using Moodle as a tool for e-learning. As seen in Table 5.3: Statistics for lecturers, the overall mean for Hedonic Motivation was 3.19, which is between neutral and agree. These results are consistent with those reported in the literature (e.g., Venkatesh et al., 2012). Other studies have also tested the positive influence of perceived enjoyment or HM on Behavioural

Intention, and have shown a clear indication of this relationship (e.g., Kim, Chan & Gupta, 2007).

8.2.6 Habit

Habit is the degree to which an individual behaves unconsciously or automatically based on prior experience (Venkatesh et al., 2012). According to the lecturers selected for the qualitative data, they adapted to new technology easily since they had used Moodle prior to COVID-19; hence, using Moodle was habitual due to previous experience using the platform. Lecturers did reveal that there had been a certain degree of adaptation challenges. However, once they had adapted to using Moodle, they found it very beneficial to the performance of their duties. It was also noted that lecturers did not use the platform regularly, and seldom logged onto the system, as the institutions administration team assisted them with the uploading of content and recorded lectures. Most of the lecturers did not make use of the chat facility that was available on the platform and chose to use WhatsApp instead. Table 5.3: Statistics for lecturers, the overall mean for Habit was 3.55, which is between neutral and agree.

Other researchers concur that Habit is associated with frequent use of technology, since past experiences influence people to perform actions automatically (Chopdar, Korfiatis, Sivakumar & Lytras, 2018). If past experiences had positive outcomes, then people are more inclined to adopt new technologies (Venkatesh & Zhang, 2010; Venkatesh et al., 2012). Osei et al. (2022) adds that habitual behaviour with positive outcomes motivates people to repeat similar behaviour, such as e-learning. It further enhances their desire to improve their competence, which was observed in this study among lecturers, but only to a limited degree as seen by their hesitance to explore the chat facility – they chose to work with WhatsApp instead, also the result of previous habituated behaviour.

8.2.7 Price Value

Price Value refers to an individual's cognitive trade-off between the perceived benefits of using a technology and the amount spent on using it (Gunasinghe et al., 2019). According to the participants selected for the qualitative data, the cost of data in South Africa is relatively expensive. Fortunately, full-time lecturers were provided with data

from the institution while the part-time lecturers all indicated that they already had uncapped WIFI/data packages prior to using Moodle; and, thus, did not incur additional costs. All lecturers believed that using Moodle was indeed beneficial for their job. Additionally, many lecturers indicated that they experienced a cost saving as they were no longer required to travel to the lecturing venue to facilitate lectures, which is supported in the literature (Maatuk, Elberkawi, Aljawarneh, Rashaideh & Alharbi, 2022). One lecturer, however, mentioned that the cost of electricity increased due to him working from home and not from the office, but he admitted that household expenses in general had increased as they were working from home as opposed to the office/campus.

As seen in Table 5.3: Statistics for lecturers , the overall mean for price value was 3.16, which is between neutral and agree. The findings for this construct suggest, therefore, that there was a perceived value in the cognitive trade-offs between the perceived benefit and cost of using various applications (Venkatesh et al., 2012; Gunasinghe, Hamid, Khatibi & Azam, 2019). The costs included data charges and/or device costs as well as travelling expenses. As found by Chopdar et al. (2018), this study also showed that Price Value positively affected participants' behaviour because the perceived benefits gained from using the technology superseded the cost. In turn, this positively influenced the users' perceived autonomy, perceived relatedness, and perceived competence – as noted in the literature (e.g., Osei et al., 2022).

8.2.8 Personal Innovativeness in the domain of IT

Personal Innovativeness refers to individuals' desire to try out new technology. Personal Innovativeness influences both user intention and technology use behaviour (Farooq, Salam, Jaafar, Fayolle, Ayupp, Radovic-Markovic & Sajid, 2017). According to the participants selected for the qualitative data, they were keen on learning how to use new technology as they enjoyed using technology in general. Hence, lecturers were eager to make increased use of Moodle during COVID-19, not only because of the safety factor, but because they enjoyed using technology. This result confirms previous findings that Personal Innovativeness in IT influences desire to try out new technology (Farooq et al., 2017). As seen in Table 5.3: Statistics for lecturers, the

overall mean for Personal Innovativeness was 3.34, which is between neutral and agree. This is aligned to the qualitative results as discussed above.

8.2.9 Behavioural Intention

Behavioural Intention is defined as the degree to which a user is motivated or intends to accept and use the system, which is the goal when introducing new technology (Davis & Cosenza, 1993). Additionally, we can assume that BI will have a significant positive influence on technology usage (Venkatesh et al., 2003; Osei et al., 2022; Khechine, Lakhal & Ndjambou, 2016).

According to the participants selected for the qualitative study, they were already using Moodle prior to COVID-19. Considering that most lecturers enjoyed using technology, they were motivated to use Moodle as a platform to support e-learning, especially during COVID-19. Most lecturers indicated that they adapted easily to technology and found it beneficial to use Moodle for their job function. They further indicated that they accepted Moodle as the norm for e-learning.

As seen in Table 5.3: [Statistics for lecturers](#), the overall mean for Behavioural Intention was 3.88, which is between neutral and agree. This result is aligned to the qualitative result as lecturers did advise that they were motivated to use technology. The qualitative result further suggests that they had increased motivation to use Moodle as a platform during COVID-19 as they felt secure and safe working from the comfort of their homes with limited exposure to the virus during the pandemic

TPACK CONSTRUCTS

8.2.10 Content Knowledge

Content Knowledge refers to subject matter expertise that a teacher may possess, including knowledge of theories and knowledge of concepts (Mishra & Kohler, 2006). Koehler and Mishra (2009) add that Content Knowledge is the lecturers' knowledge about the subject that needs to be learned by or taught to the student. These authors note that this content is very context specific, e.g., that taught at high school versus college; or that taught for history versus physics.

Shulman (1986) refers to Content Knowledge as the concepts, theories, and ideas needed to develop this knowledge. Should a lecturer not have adequate Content Knowledge, this may result in students attaining incorrect information, which may further lead to students developing misconceptions about the topic area (Pfundt & Duit, 2000).

According to the participants selected for the qualitative study, they were subject-matter experts, but that they did not develop the content used in the lectures. The institution develops module guides and most lecturers develop PowerPoint presentations for their online classes based on the content in the module guides, which they download from Moodle. When classes moved online, lecturers continued to use the same content and presentations as they felt that further adaptation was not necessary.

As seen in Table 5.3: Statistics for lecturers, the overall mean for Content Knowledge was 4.3 which is between agree and strongly agree. This is aligned to the qualitative result as lecturers did believe that they had sufficient Content Knowledge and expertise to lecture the modules allocated to them.

8.2.11 Pedagogical Knowledge

Pedagogical Knowledge refers to the methods a teacher uses for teaching and learning (Mishra & Kohler, 2006). Pedagogical Knowledge is the lecturers understanding and deep knowledge of teaching and learning, which includes overall understanding of the educational purpose, values and aims. In this study, Pedagogical Knowledge was taken to involve an understanding of how learning occurs; as well as how to plan lessons for this learning to occur and conduct meaningful assessment. General classroom management skills are included here (Koehler & Mishra, 2009). It also included understanding of the techniques and methods used for teaching and learning in the classroom; and strategies used to evaluate student understanding (Koehler & Mishra, 2009).

According to the participants selected for the qualitative study, all face-to-face classes moved online due to COVID-19. It must be noted that, while the institution in this study

was a Distance Private Higher Education Provider, lectures did occur over weekends. Despite classes moving online, most of the lecturers in this study indicated that their teaching methods remained the same. Lecturers further noted that engagement during online sessions was limited.

While all lecturers agreed that using Moodle transformed teaching and learning, none of them adopted new pedagogies in the classroom for online and blended learning. As seen in Table 5.3: Statistics for lecturers, the overall mean for Pedagogical Knowledge was 4.38, which is between agree and strongly agree, which supports the qualitative results as lecturers believed that they had the appropriate Pedagogical Knowledge to lecture the modules allocated to them. However, it is critical that lecturers use pedagogies aligned to online learning as they differ from those suitable for face-to-face. It was, thus, inevitable that engagement in the online classroom declined since the teaching methodology was not appropriate for the online environment.

8.2.12 Technological Knowledge

Technological Knowledge refers to the teacher's ability and knowledge to use technological resources. Technological Knowledge hence requires understanding of EdTech (Mishra & Kohler, 2006). According to the participants selected for the qualitative data, they had a firm understanding of technology and enjoyed using technology. They added that using technology in the classroom is beneficial to teaching and learning. Several lectures aimed to resolve their own technical problems prior to seeking technical assistance. It was, however, noted that lecturers did not make use of all functionalities available on Moodle such as blog/chat facilities. Beyond the technological options provided by the institution, the lecturers did not take the initiative to explore additional technological resources. Hence, while the lecturers enjoyed using technology, it does not mean that the lecturers had sufficient knowledge to integrate additional technological initiatives on their own.

As seen in Table 5.3: Statistics for lecturers, the overall mean for Technological Knowledge was 3.63, which is between neutral and agree, which supports the qualitative result as lecturers believed that they not only enjoyed using technology for teaching and learning, but were also capable of using it.

These findings are consistent with several other studies. According to Koh, Chai, Benjamin and Hong (2015) lecturers often have knowledge of technology, but this does not guarantee that lecturers are able to implement technologies in their everyday teaching practice. According to Vasodavan, DeWitt and Alia (2019), it is important to note that appropriate technology integration promotes effective teaching and learning. For example, lecturers should have insight into the potential of collaborative learning, and understand how technological tools can assist collaborative learning. While lecturers certainly had Technological Knowledge, they did not always appear to apply the technology appropriately by integrating it into the lectures.

Lecturers should be required to upgrade their Technological Knowledge and to keep abreast of educational developments in collaborative learning and Computer Technology (Vasodavan et al., 2019). Additionally, lecturers need to be trained by their institutions to maximise the benefits of collaborative learning (Vasodavan et al., 2019). Thus, lectures need more opportunity to explore various technologies beyond general usage, and to integrate them into instruction that will promote student learning (Vasodavan et al., 2019). Moodle as a tool for e-learning has transformed education to a point where the pedagogies need to be modified to suit the online classroom (Di Blas, 2016).

These findings are applicable to this study as well, as lecturers understood how to use technology, but did not always integrate this knowledge into teaching and learning. More training and support provided by the institution should be considered.

8.2.13 Pedagogical Content Knowledge

Pedagogical Content Knowledge refers to a teachers' knowledge, including curriculum development, student assessment and reporting results, which are considered foundational areas of teaching and learning (Mishra & Kohler, 2006).

According to the participants selected for the qualitative data, they are subject-matter experts on the modules that they lecture. However, they are not involved in the development of the module. The modules are developed by the curriculum

development department at the institution in the form of module guides, and the lecturers use the module guides to develop PowerPoint presentations for their online lessons. Lecturers did not use content beyond that in the module guide. Additionally, although some lecturers taught more than one subject, they did not adapt their methodologies accordingly. Most concerning was that they did not appear to evaluate the impact of their approach.

As seen in Table 5.3: Statistics for lecturers, the overall mean for Pedagogical Content Knowledge was 3.89, which is between neutral and agree, which supports the qualitative result as lecturers believed that they had adequate Pedagogical Knowledge to lecture the modules allocated to them. Findings from this study suggest that more interactive pedagogies are needed for the online classroom, and lecturers should be accessing a wider range of resources, as well as using real-life examples. Additionally, their approaches should be adapted to the subject matter and the impact of these approaches more accurately evaluated.

8.2.14 Technological Content Knowledge

Technological Content Knowledge refers to the teachers understanding of how technology and content can influence each other (Mishra & Kohler, 2006). According to the participants selected for the qualitative data, they were quite familiar with technology as they used it daily. I do, however, believe that their knowledge of educational technology specifically was limited, as they did not make use of all functionalities available on Moodle. This may have been due to the institution not promoting the use of these functions. Moodle was merely used to download and mark scripts. Lecturers did not explore other means to deliver the content, except for the means provided by the institution. The institution needs to adopt various technological methods as the same technology may not be appropriate for delivering different modules/subjects. The lecturers need further training and tools to use technology more effectively to deliver content.

As seen in Table 5.3: Statistics for lecturers, the overall mean for Technological Content Knowledge was 3.52, which is between neutral and agree, which is aligned

to the qualitative result as lecturers do believe that they understand how to use technology for the content they are lecturing.

Other studies show that effective teaching is not simply about how well lecturers can teach with a technology, but also involves designing instructional strategies that will support students learning (Vasodavan, et al., 2019). Therefore, lecturers should be able to differentiate the learning outcome from the learning domain. Learning domains include verbal, intellectual, cognitive, attitude, and motor skills. Since no one strategy is appropriate for all instructional tasks (Vasodavan et al., 2019). Lecturers who participated in this study believed that they did understand the various technologies that could be used for teaching and learning. However, no evidence was provided regarding any additional technologies used except for Microsoft PowerPoint.

8.2.15 Technological Pedagogical Knowledge

Technological Pedagogical Knowledge is the teachers' understanding of how specific technologies can change both the teaching and learning experience by introducing new pedagogical affordances and constraints (Mishra & Kohler, 2006). According to the participants selected for the qualitative data, they certainly understood the benefit of using technology and appreciated that Moodle provided accessibility to students, especially during COVID-19. However, despite this, lecturers did not believe that there was sufficient interaction and engagement in the classroom. Again, I postulate that lecturers did not have sufficient understanding of how specific technologies can change both the teaching as well as the learning experience. The lecturers in this study still need to identify the best technologies to support their pedagogical approaches, and this can only be done with support and guidance from the institution.

As seen in Table 5.3: Statistics for lecturers, the overall mean for Technological Pedagogical Knowledge was 3.69, which is between neutral and agree. The qualitative results differ from the quantitative results as all lecturers advised that they did not change their pedagogy when lectures went online.

Literature reports that teaching and learning in the twenty-first century requires the lecturer to move from designing lessons with technology to restructuring learning

activities in order to achieve outcomes such as critical thinking and problem solving. The importance of knowledge construction in a social context must not be overlooked, and outcomes such as communication and collaboration are central to this (Koh et.al., 2015). Thus, lecturers need to be competent with regard to their technological and pedagogical knowledge; and be able to identify suitable tools for different content areas (Koh et.al., 2015).

This view has implications for lecturers and Higher Education Institution as it requires institutions to prepare their lecturers to incorporate new technologies that motivate, such as collaborative learning tools, to improve student learning and engagement. The success of any innovation requires appropriate preparation, which will make teaching in Higher Education more than the simple transmission of knowledge (Dewitt, Alias & Siraj, 2015). Additionally, HEIs need to provide training on technology usage that emphasises, not only theoretical and conceptual aspects, but also inquiry or reflection by instructors on their actual teaching approaches (Vasodavan et al., 2019).

As mentioned, lecturers advised that they did not change their pedagogy when lectures went online. Pedagogies essentially remained that same, which again may be the reason there was limited engagement in the classroom. More training needs to be provided by the institution as the lecturers may not have changed their pedagogies because they did not have sufficient knowledge and skill to accomplish this.

8.2.16 Technological Pedagogical Content Knowledge

Technological Pedagogical Content Knowledge refers to being able to use technology when teaching specific content (Mishra & Kohler, 2006). According to the participants selected for the qualitative data, they were able to use technology while teaching content. Due to their subject-matter expertise, the lecturers agreed that they were familiar with the content even although they did not develop the curriculum. The technology used by lecturers were Microsoft Teams to facilitate lectures, and Microsoft PowerPoint to share the content with students. As mentioned, the pedagogy used was, however, not adapted for online teaching and learning.

Lecturers admitted that there was a certain degree of adaptation challenges, but that they were now more comfortable. Lecturers believed that they were subject-matter experts and, hence, had the relevant Content Knowledge. Lecturers further confirmed that they enjoyed using technology. However, lecturers did not make use of all functionalities and technological features available, which may have been due to a lack of knowledge. As seen in Table 5.3: Statistics for lecturers, the overall mean for Technological Pedagogical Content Knowledge was 4.04, which is between agree and strongly agree, which does not align to the qualitative results as lecturers did not change their pedagogy when lectures went online. Pedagogies essential remained that same, which again may be the reason that there was limited engagement in the classroom. Again, more training needs to be provided by the institution.

The findings are comparable with other studies. According to Kim (2019) making best use of ICT for teaching and learning continues to be challenging for many lecturers. This is an area of concern because it is essential for lecturers to have the necessary knowledge and skills to use e-learning tools in a way that contributes to comprehensive learning (Qasem & Viswanathappa, 2016).

8.3 Interpreting findings from the analyses of student data

The theoretical framework used for the analysis of student data was UTAUT-3 . The discussion presented below is organised according to the constructs of the theoretical framework, which is used to interpret the findings.

8.3.1 Performance Expectancy

According to the participants selected for the qualitative data, using Moodle as a tool for e-learning had certainly met their expectations. The qualitative results revealed that students had certain expectations, which were met using Moodle. The quantitative results supported this result as seen in Table 5.1: Statistics for students The table shows an overall mean for Performance Expectancy of 3.54, which is between neutral and agree. This indicates that the quantitative and qualitative results support each other.

The findings indicate that students expected the following: learning to continue during COVID-19 from the safety of their homes; a user-friendly system that was efficient; flexibility and accessibility when writing exams; access to lectures and learning material as, and when, they required; and, most importantly, to continue with their studies during COVID-19. Based on the results of the quantitative and qualitative analysis Moodle fulfilled these expectations from a performance perspective, although connectivity issues and loadshedding were identified as challenges.

Since Performance Expectancy is the extent to which students believe that e-learning is relevant to them and to the achievement of their learning objectives. If PE is positively perceived, then the technology is more likely to be adopted (Osei et al., 2022). The challenges of reliable power supply and a stable internet connection are, unfortunately, widely reported developing world problems; as well as the prohibitive cost of data (Hamid, SENTRYO & HASAN, 2020; Henaku, 2020; Mahmud & Gope, 2009).

However, the findings in this study indicate that students were able to recognise these external barriers for what they were, and not related to the PE of Moodle. Such a positive view of the Performance Expectancy is critical to the acceptance of new technology (Macedo, 2017).

8.3.2 Effort Expectancy

According to the participants selected for the qualitative data, they found the Moodle platform user friendly, but they did have initial adaptation challenges. The students added that technical support was available – as well as training videos.

Some expressed a need for refresher training. Despite the system being user friendly, the challenge of unreliable connectivity was again raised.

As seen in Table 5.1: Statistics for students the overall mean for Effort Expectancy was 1.05 which is in between strongly disagree and disagree, this can be attributed to the fact that that 112 students answered the questionnaire while only 15 students were interviewed. This result is not aligned to the qualitative findings of this study as students indicated that they enjoyed using the system and it was relatively effortless.

Adaptation challenges are to be expected when introducing a new online learning system (Sari & Oktaviani, 2021). Changing to an entirely online educational system during a pandemic with insufficient time to prepare added to the challenge (Mseleku, 2020; Mandasari & Wahyudin, 2021; Baticulon, Alberto, Mabulay, Rizada & Reyes, 2021).

However, during COVID-19, students were more concerned with systems that would help them to achieve their goals; and when combined with other factors, Effort Expectancy is likely to increase their perceived competence to use e-learning systems (Osei et al., 2022). During COVID-19, students recognised the convenience of online learning to be especially beneficial (Paudel, 2021).

The views of the students who participated in this study agreed with the findings of Paudel's study; and with those of other studies that show that a positive Effort Expectancy is influenced by students' belief that they will readily manage to use the e-learning system (Venkatesh et al., 2012). He & Lu (2007) agree that if the e-learning platform is user friendly, then students will be more likely to use it. Additionally, students will be motivated if they believe that the system will help them to achieve their academic goals (Osei et al., 2022) if the system requires little effort. Moodle appeared to meet these criteria in the view of the students in this study. A central benefit of Moodle is that a student can adapt their pace of studying according to their lifestyle and expectations as activities and lessons can be readily repeated as many times as student required (Paudel, 2021).

8.3.3 Social Influence

According to the participants selected for the qualitative data, they had already begun using Moodle as a tool for e-learning prior to COVID-19, thus mitigating the adaptation issues by the time Moodle became a compulsory tool during COVID-19. Students indicated that they used the platform because they deemed it necessary and believed it to be beneficial. They maintained that the lecturers did not coerce them to use the system. Thus, students also maintained that they used the platform because they deemed it to be beneficial; and not because of peer pressure. As seen in Table 5.1: Statistics for students the overall mean for Social Influence was 2.17 which is in

between disagree and neutral. This is aligned to the qualitative finding as students used the system out of their own free will and not due to influence from others.

This finding is consistent with other studies. For example, according to Abdou and Jasimuddin (2020), many studies have found that the effect of Social Influence is not significant on Behavioural Intention to use a technology. Thus, students downplayed the influence of lecturers and peers, maintaining that they used the system mainly because of the outcomes it facilitated, i.e., to achieve their learning goals and because of the ease of use of the system.

8.3.4 Facilitating Conditions

Facilitating Conditions refers to the perception of students about the ability of an institution's resources and infrastructure to support their use of e-learning systems. Hence students who had sufficient infrastructure and sufficient support during the pandemic were more likely to make use of e-learning platforms (Osei et al., 2022; Venkateshetal, 2003).

According to the participants selected for the qualitative data, students did have the necessary infrastructure that equipped them to participate in the online journey efficiently. All students indicated that they had uncapped WIFI; hence studies were not interrupted due to the unavailability of data. Whilst some students do recall training being provided, most of the students indicated that training was not provided and the communication from the institution was limited.

Overall, however, students felt that their infrastructure, as well as the institutions infrastructure, was able to facilitate e-learning successfully. As seen in Table 5.1: Statistics for students the overall mean for Facilitating Conditions was 3.05, which is between neutral and agree. This is aligned to the qualitative results as students did have the appropriate infrastructure available for online learning. However, there was no evidence that sufficient training was provided to students.

8.3.5 Hedonic Motivation

According to the participants selected for the qualitative data, students found using Moodle pleasurable and beneficial. They reported that content, the online library, and recorded lectures were accessible as and when required. Further, students reported that they appreciated the flexibility and accessibility of examinations hosted online; and they appreciated being able to continue with their studies during lockdown. As seen in Table 5.1: Statistics for students the overall mean for Hedonic Motivation was 3.25, which is between neutral and agree. This result is consistent with the qualitative results. Students were motivated to use Moodle as a platform for e-learning. Students were particularly motivated to use Moodle during COVID-19 not just because of convenience, but because of the safety factor as well. Using Moodle as a platform meant that students could submit assignments from the safety of their homes, complete examinations, and even attend online lectures which limited the possibility of contracting the virus, while protecting their families as well.

The advantages of remote learning via systems such as Moodle are well documented and support the findings of this study. The advantages include comfort and accessibility (Mukhtar, Javed, Arooj & Sethi, 2020; Churiyah, Sholikhan, Filiant & Sakdiyyah, 2020); as well as being able to enrol for programmes at universities in other countries around the world – and to study and graduate online without going anywhere (Muliyah, et al., 2020).

Additionally, students can easily access lectures and study material regardless of where they are (Gautam, 2020), thus, providing flexible learning experiences (Albrahim, 2020). In summary, remote e-learning systems open channels for synchronous and asynchronous communication and interaction, allow for more collaboration with peers, and provide access to various learning resources – thus promoting authentic and situated learning (Fuller & Yu, 2014).

8.3.6 Habit

According to the participants selected for the qualitative data, students were already using Moodle prior to COVID-19. Hence using the system had already become habitual. However, many students noted that they were using Moodle more during

COVID-19 than to prior COVID-19 as the system provided accessibility that was critical since face-to-face contact was eliminated due to safety concerns. As seen in Table 5.1: Statistics for students the overall mean for Habit was 2.61, which is in between disagree and neutral, this can be attributed to the fact that 112 students answered the questionnaire while only 15 students were interviewed. Hence, for this reason the qualitative and quantitative result does not appear to be aligned. According to the qualitative result students did use the platform as frequently as possible.

The findings of this study are consistent with several other studies. According to Chopdar et al. (2018), Habit states that positive or successful past learning experiences will encourage people to engage in the same or similar tasks again. Thus, Habit reflects past experiences and their results (Venkatesh et al., 2012); and a student is likely to continue using an e-learning system if the system produced a satisfactory outcome when previously used (Osei et al., 2022).

According to Chopdar et al. (2018), Venkatesh et al. (2012) and Osei et al. (2022), habitual behaviour with positive outcomes will encourage that behaviour in future; and increase their desire to use e-learning. Positive experience through habitual use improves competence, which in turn leads to further use of the e-learning system (Osei et al., 2022).

8.3.7 Price Value

According to the participants selected for the qualitative data, students did not incur additional cost as they were already equipped for online learning. Additionally, they saved costs as they did not need to travel to lecture venues, the library or examination venues. The cost of petrol is relatively high and some students travelled several kilometres to reach these venues. Hence, there was certainly a cost saving. As seen in Table 5.1: Statistics for students the overall mean for Price Value was 2.11, which is between disagree and neutral. This result can be attributed to the fact that that 112 students answered the questionnaire while only 15 students were interviewed. Hence, the qualitative result of this study is not aligned to the quantitative result.

These findings are confirmed by other research, i.e., that e-learning is more cost effective for students as they no longer needed to commute to lecture venues (Leo et al., 2022); and travel expenses are thus significantly reduced as opposed to traditional learning (Maatuk et al., 2022). Consequently, Price Value will positively affect the self-determined behaviour of users if the benefits gained from usage are perceived to be greater than the cost (Osei et al., 2022). Students in this study believed that using Moodle as a platform for e-learning had cost advantages as travel cost was limited due to using Moodle.

8.3.8 Personal Innovativeness in the domain of IT

According to the participants selected for the qualitative data, students indicated that they enjoy using technology and adapt well to new technology. Hence they were eager to use Moodle to access lectures and examinations. Students further indicated that they are keen and eager to explore new technology. As seen in Table 5.1: Statistics for students the overall mean for Personal Innovativeness in the domain of IT was 3.11, which is between neutral and agree. Thus, qualitative and quantitative results support each other. Students indicated that they enjoyed using technology and were eager to use Moodle for e-learning.

Patil, Tamilmani, Rana and Raghavan (2020) explain personal innovation as the extent to which an individual is willing to try something new, which is an expression of how innovative or willing they are to seek out novelty experiences. Karjaluoto, Shaikh, Leppäniemi and Luomala (2019) add that although innovativeness has not been used in theoretical models of technology acceptance, it has been used as a predictor of new product adoption in other disciplines, which is apparent in the findings from the current study.

8.3.9 Behavioural Intention

According to the participants selected for the qualitative data, they accepted Moodle as the norm for e-learning. All students agreed that e-learning systems such as Moodle presented the most appropriate way for learning during lockdown. Students were further motivated to use Moodle as a tool for e-learning as it was efficient and accessible. As seen in Table 5.1: Statistics for students, the overall mean for

Behavioural Intention was 3.63, which is between neutral and agree. This result is aligned to the qualitative result as students had accepted Moodle as an e-learning platform in their learning journey and would continue using Moodle as they deemed the system to be beneficial to their studies.

This finding concurs with literature. For example, research conducted by Lin (2007) and Mohammadi (2015) confirmed that Behavioural Intention had a positive relationship with the students' actual use, as observed in the current study.

Osei et al., (2022) explain that BI involves a user's intention to use an e-learning system to complete a learning activity; and that intention to use leads to actual usage.

8.4 Revisiting the research questions

The Table below gives an overview of which research questions were addressed by the construct analyses. An in-depth discussion follows below.

RESEARCH QUESTIONS	CONSTRUCTS	CORE FINDINGS
Synthesis of results from the analyses of lecturer and student quantitative and qualitative data		
RQ1: What are the experiences of lecturers and students when using Moodle for E-Learning in a learning journey?	Performance Expectancy	Positive PE. Adaptation challenges. Loadshedding and connectivity issue acknowledged as external to the system.
RQ3: Why do the lectures and students use Moodle for E-Learning in a learning journey the way they do?	Effort Expectancy	Positive EE. System accepted by participants as user friendly.
	Behavioural Intention	Participants had positive BI towards the system. They believed it to be beneficial and the new norm. Has already been using Moodle prior to COVID-19.
RQ2: What Functionalities of Moodle do lecturers and students use when using Moodle for e-learning in a learning journey?	Facilitating conditions	Some of the important functionalities, such as CHAT, were not used.
	Habit	Habit led lecturers to use WhatsApp groups. Students wished to use CHAT, but received delayed responses.
RQ1: What are the experiences of lecturers and students when using	Facilitating Conditions	Technical infrastructure was available. Limited support over weekends and after hours. Training sessions were not adequately communicated.

Moodle for E-Learning in a learning journey?	Personal Innovativeness	Positive perceptions of PV from all participants.
RQ2: Why do the lectures and students use Moodle for E-Learning in a learning journey the way they do?	Social Influence	Beneficial and helps to achieve their goals. Social Influence not as significant as HM.
	Hedonistic Motivation	Participants enjoyed using technology, and Moodle in particular.
	Price Value	Positive PV perception from all participants.
RQ4: How has Moodle as an E-Learning tool transformed Distance-learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?	Habit	Lecturers and students have accepted Moodle as the norm for e-learning going forward as compared to traditional learning methods that were practiced prior to the pandemic.
Synthesis of results from the analyses of lecturer quantitative and qualitative results		
RQ4: How has Moodle as an E-Learning tool transformed Distance-learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?	TPACK constructs	Moodle has transformed e-learning, as recognised by all participants. However, despite positive perceptions on UTAUT-3 constructs, the TPACK analysis revealed that face-to-face methodologies persisted in the online environment; and teaching approaches were not adapted to content domains. Additionally, educational outcomes were not adequately evaluated. Recommendations are made.

8.4.1 What are the experiences of lecturers and students when using Moodle for e-learning in a learning journey?

In conclusion, lecturers indicated that they were motivated to use technology and, further, that they enjoyed using technology. Lecturers believed that using the Moodle platform for e-learning was beneficial to them as it allowed them to complete their job. Hence, there was a strong sense of motivation to use the platform. Lecturers further noted that using Moodle as a platform during COVID-19 limited face-to-face interaction, hence limiting the chances of contracting the virus. This served as further motivation for lecturers as they could get their jobs done from the comfort and safety of their homes.

Similarly, students also indicated that they were motivated to use technology and enjoyed using technology in general. Students noted that that using Moodle as an e-learning platform offered them continuity with their studies during the pandemic. Students also expressed feeling safer and more secure using the platform as it limited the need for face-to-face interaction and they could complete their studies from the comfort of their homes. Hence, they expressed increased motivation to make greater use of the platform during COVID-19.

Lecturers did not use the platform frequently as the institution has administrators who upload recorded lectures facilitated by the lecturers, past papers, and content. Lecturers were only required to download their resources from Moodle, mark scripts when marking was allocated to them, and respond and engage on the chat facility. Lecturers, however, did not appear to use the chat facility frequently and there was limited (or no) interaction on the chat facility. This finding is concerning as students have reported that their questions go unanswered on the chat facility. The institution should consider an intervention in this regard to ensure that there is more engagement on the platform.

The lecturers indicated that lecturing on Moodle was indeed convenient, but admitted that they experienced some inception challenges when marking on Moodle as it took too long to mark a script. This situation did, however, improve once the lecturers adapted to online marking. They were then able to mark swiftly without any challenges.

As opposed to the lecturers, students made frequent use of the Moodle platform for e-learning (see Figure 5.5 How frequently the students used Moodle). Students frequently logged onto the system to access study material, access the library functionality, download lectures and resources, access their results, and even access, write and upload examinations during examination season. Students believed that all their resources were available on Moodle, hence, it was necessary to log on frequently. Students did indicate that they were reluctant to use the chat facility on Moodle as there was limited interaction and responses were not readily available. Some students downloaded resources from Moodle and worked offline as they needed a backup, especially during loadshedding. Students indicated that using Moodle was challenging at first, but once they were familiar with the system they found it easy, convenient and user friendly. Students added that a mock examination session took place to allow them to familiarise themselves with the system prior to the start of the examinations.

On the issue of costs, lecturers indicated that they already had uncapped WIFI at home and, hence, did not incur additional costs while using the platform. Lecturers used the equipment and resources that were already available prior to COVID-19 and did not incur additional cost in terms of equipment and data. There is some evidence that the institution attempted to conduct training sessions for lecturers, but most lecturers either did not attend the training sessions or were not aware of them. There appeared to be a breakdown in communication between the lecturers and the institution regarding these training sessions. Most of the lecturers were employed on a part-time basis and were not at the institution to receive regular communication (as with the full-time lecturers). It is crucial that both part-time and full-time lecturers receive the same level of support to assist their students appropriately. Better and more frequent communication is required for the part-time lecturers to keep them informed about training sessions and other important information that allows them to complete their job effectively. One lecturer did mention that more support is available on weekdays as opposed to weekends. This is problematic as the institution is a Private Distance Higher Education Provider with many adult working students who attend after hours

and on weekends. It is, thus, crucial that sufficient technical support is available during these times.

Like the lecturers, students were equipped for online learning and had the necessary resources for online learning, which included equipment and uncapped WIFI. Some students did, however, mention that their studies were sometimes interrupted by poor network connectivity or loadshedding. Students believed that they had incurred a cost saving using Moodle as a platform for e-learning as it reduced their travel cost significantly since they no longer needed to travel to lectures, the library, and examination venues. Lecturers made this comment as well. Lecturers did not recall training sessions being available to them when they began using the platform, while some learners recollect some training videos being available on Moodle to provide support and assistance.

8.4.2 What Functionalities of Moodle do lecturers and students use when using Moodle for e-learning in a learning journey?

As noted above, the institution has administrators who upload recorded lectures facilitated by the lecturers, past papers, content such as module guides, PowerPoint presentations, and student results. The institution had made the following functionalities available to lecturers: downloading of content and past papers, and marking of allocated scripts and chat facilities. Lecturers advised that they do mark scripts online, and download past papers as well as module guides at the beginning of each module they are meant to lecture. However, lecturers admitted to limited interaction on the chat facility. Additionally, none of the lecturers mentioned using the library functionality.

The students had access to several functionalities on Moodle. These functionalities included: downloading of past papers, downloading of module guides, downloading of recorded lectures, access to results, access to the online library, downloading of PPT from lecturers, uploading of assignments, completing examinations online, and accessing the online chat functionality to interact with fellow students and lecturers. Students indicated that they made use of all these functionalities. Additionally, they frequently download recorded lectures to watch at a convenient time or for revision.

Students indicated that they download resources available, such as, module guides, past examinations, and PPT presentations from their lecturers. The students additionally accessed the library functionality as they deemed it to be beneficial, especially when writing their theses, as the online journals within the library functionality proved critical. Students accessed their results via Moodle and indicated that, when their results were due, they logged onto the system more frequently. Students also mentioned that they seldomly used the chat facility as there was very limited interaction on the facility and responses received were often delayed. All students used the Moodle platform to access, write, and upload their examination papers as this was the only means available to them during the pandemic.

8.4.3 Why do the lecturers and students use Moodle for e-learning in a learning journey the way they do?

Lecturers used Moodle the way they did because they found it user friendly and the platform aided them in completing critical job functions online. The lecturers experienced adaptation challenges initially, which is inevitable when using a new technology. Once the lecturers had overcome the adaptation challenges, they found the system easy and convenient to use, especially during COVID-19. Lecturers also used the platform because it was a requirement of the institution; and the only way to complete their job functions.

Students also found the Moodle platform user friendly and were, hence, keen on using the platform frequently. Students further advised that they enjoyed using technology in general and, while adaptation challenges were initially experienced, they were readily addressed. Students were obliged to use the platform during COVID-19 as there was no other means of completing their qualifications. Students were, however, using Moodle prior to the pandemic and were familiar with the system and well-disposed towards its use.

Lecturers were also previously exposed to using the platform. Most of the lecturers at the institution were employed on a part-time basis and worked at other institutions as well. Several stated that they began using the platform at other institutions prior to using it at the Private Higher Education Provider in this study. Lecturers also advised

that they were also exposed to other digital platforms, such as Blackboard, at other institutions. This indicates that lecturers were already familiar with using the platform prior to COVID-19. Hence, all adaptation challenges occurred prior to the pandemic.

More than being influenced by colleagues, lecturers appeared to want to use the platform due to their own personal curiosity as they enjoyed using new technology and felt that digital platforms for e-learning were the way of the future in education, and for their career growth. Similarly, students used the platform because they deemed it beneficial and were not influenced by their peers. Students also believed that Moodle would continue to be used in the future.

8.4.4 How has Moodle as an e-learning tool transformed distance learning on a learning journey for online courses at a South African Private Distance Higher Education Institution in a COVID-19 environment?

Moodle as an e-learning tool has transformed Distance Higher Education as pedagogies needed to be transformed to facilitate distance learning online. While all lecturers agreed that using Moodle transformed teaching and learning, none of them adopted new pedagogies in the classroom for online and blended learning. It is critical that lecturers use pedagogies aligned to online learning as they differ from those suitable for face-to-face situations. It was, thus, inevitable that the engagement in the online classroom declined since the teaching methodologies were not always appropriate for the online environment. Findings from this study suggest that more interactive pedagogies are needed for the online classroom, and lecturers should be accessing a wider range of resources, as well as using real-life examples. Additionally, their approaches should be adapted to the subject matter; and the impact of these approaches more accurately evaluated.

Moodle has also transformed education by providing a safe and secure online environment for lecturers, students, and support staff; as well as promoting accessibility and flexibility. The Private Higher Education Provider in this study had students who were geographically dispersed; as well as adult students with jobs and families. Several students indicated that they were able to put their children to bed and listen to their recorded lectures and access their content via Moodle after they have

taken care of their family, and at any other time they wished. Moodle as an e-learning tool also gave students the ability to download material and work offline during loadshedding and poor network connectivity.

Both students and lecturers agreed that Moodle as a tool for e-learning can now be considered as the 'new normal' in Distance Private Higher Education, and that this platform will continue to dominate in the future.

8.5 Limitations and Further Research

Further research should be conducted as follows:

8.5.1 Limited Pedagogical Knowledge for the online environment

As discussed, all face-to-face classes moved online due to COVID-19. Despite the classes moving online, most lecturers in this study indicated that their teaching methods remained the same. Lecturers further noted that engagement during online sessions was limited. It is critical that lecturers use online aligned pedagogies as the face-to-face teaching methods would not have been applicable for the online classroom; and may explain why engagement in the online classroom declined. Further investigation is recommended to establish the most appropriate teaching methodologies for the online environment in the context of this Private Higher Education Provider.

8.5.2 Insufficient Technological Knowledge

Most lecturers in this study had a firm understanding of technology and enjoyed using technology. It was, however, noted that lecturers did not make use of all functionalities available on Moodle, such as, the blog/chat facilities. Beyond the technological options provided by the institution, the lecturers did not take the initiative to explore other technological resources. Hence, while the lecturers enjoyed using technology, it does not mean that they had sufficient knowledge to integrate additional technological initiatives on their own. Further research into training interventions is recommended.

8.5.3 Insufficient Pedagogical Content Knowledge

Lecturers did not use content beyond that provided in the module guides. Lectures should not be limited by the resource they use, and should integrate additional resources, such as, textbooks, journals, and real-life examples in their teaching methodology. More interactive pedagogies should be adopted for the online classroom. All lecturers claimed that their approaches in the classroom guided student thinking and learning. However, none of the lecturers were very clear as to how this was achieved. Several lecturers taught more than one subject, but it was not clear if they changed their teaching methodology when lecturing different subjects, for example, if their methodology changed or remained the same when teaching the two subjects Strategic Management and Financial Management. Further research is needed to ascertain whether pedagogies changed for the various subjects taught and, if not, why, and how this challenge can be mitigated.

8.5.4 Additional training on appropriate technological methods

The institution needs to adopt various technological methods as the same technology may not be appropriate for the delivery of different modules/subjects. The lecturers need further training and tools to enable them use technology effectively to deliver content. The lecturers in this study still need to identify the best technologies to support their pedagogical approaches; and this can only be done with support and guidance from the institution as the lecturers appeared to require further development in this area.

8.5.5 Using the TPACK framework

Further research to address all limitations identified above would benefit if conducted using TPACK as a guiding framework. TPACK ensures that the ICT is not applied in isolation from the subject matter, and that the appropriate technology is used in conjunction with specific content and teaching-and-learning methodologies (Qasem & Viswanathappa, 2016).

There is a growing body of knowledge in educational technology that pedagogical approaches using technology are strongly influenced by the content being taught. For

example, the pedagogy needed to effectively integrate technology in science, as opposed to another subject, may vary significantly (Qasem & Viswanathappa, 2016).

The TPACK model is very useful as a guide for lecturers when navigating technological issues related to teaching and learning. Additionally, TPACK could be used to identify where deeper change is needed in education (Qasem & Viswanathappa, 2016).

Other research has suggested that lecturers found it difficult to apply TPACK in the classroom for teaching and learning (Bates & Maor, 2010). Additionally, lecturers did not differentiate between Technological and Pedagogical Knowledge, which was also found in this study. Hu and Fyfe (2010) have recommended that deeper and more sustained training is needed before technology integration is transferred into practice.

Since digital pedagogies refer to the new approaches to teaching and learning that use digital technologies (Maor, 2017), it is essential that digital pedagogies are reframed to be more palatable to students familiar with social media. Maor (2017) suggests that TPACK can provide the framework needed to achieve this.

8.6 Conclusion

This Chapter discussed the findings of the study as interpreted through the lens of the theoretical and conceptual frameworks chosen for this research. Findings from the analysis of lecturer data was interpreted using UTAUT-3 and TPACK; and discussed according to the constructs of these frameworks. Findings from the analysis of student data was interpreted and discussed according to the constructs of UTAUT-3 .

CHAPTER NINE – RECOMMENDATIONS AND CONCLUSIONS

9.1 Introduction

This chapter concludes this research report in the form of recommendations based on the findings of the data analyses of the study.

9.2 Recommendations

The recommendations discussed below have been grouped into three categories – recommendations for students, lecturers, and for the institution.

9.2.1 Students

9.2.1.1 Upgrade internet packages

Should a student be able to afford an internet upgrade then they should consider upgrading to a fibre line. Students can also upgrade their internet speed and obtain a backup router.

9.2.1.2 Backup power supply

Students who can afford a high-end uninterrupted power source (UPS), or an inverter, should purchase one. A UPS is an electrical device that provides an emergency power supply for limited periods during loadshedding. However, an inverter will provide power during longer outages. This will enable users to charge their electronic devices and access the internet during loadshedding; ensuring that their studies are not interrupted.

9.2.1.3 Prepare for loadshedding

Students can plan and prepare ahead of loadshedding to ensure uninterrupted study time. Study material and lectures can be downloaded to be accessed offline. Alternatively, students can temporarily move to an area that is not experiencing loadshedding such as a coffee shop with free WIFI; or a family member's house that is not experiencing loadshedding. Students should also ensure that all devices are fully charged in preparation for loadshedding.

9.2.2 Lecturers

9.2.2.1 Upgrade internet packages

Lecturers, as well as the institution, should ensure that the network provider they use comes highly recommended and provides good customer service. It is essential for lecturers who cover their own data cost to consider attaining uncapped data packages as the cost of data in South Africa is relatively high. A lecturer could also consider upgrading to a fibre package to attain a faster internet speed.

9.2.2.2 Backup power supply

Lecturers who can afford an uninterruptible power source (UPS) or an inverter should purchase one. Lecturers should also ensure that all devices are fully charged in preparation for loadshedding.

9.2.3 Institution

9.2.3.1 Communication

Training videos were available to students in this study. However, for some reason, students were not aware that they were available. The institution could have spent more time informing students that the videos were available and encouraging the students to watch the training videos. The lecturers could also have promoted students to watch the training videos. The video links could have been sent via email and a follow-up email could have been sent to students as a reminder. Training sessions could have also been arranged via Teams and the recordings could have been placed on Moodle for ease of access. Moving forward, more communication is certainly required on the part of the institution to ensure their students feel supported.

9.2.3.2 Academic representation

The institution needs to arrange for academic representatives to be present during online lectures to ensure that the lecturers are keeping the students engaged and the online sessions are interactive.

9.2.3.3 Moodle training

Training is one of the tools that can be used to overcome adoption problems. The institution could have employed more training initiatives prior to embracing online

learning and teaching to alleviate some of the start-up problems that were experienced. It should be noted that a well-trained lecturer would provide a valuable resource for a student who is using Moodle for the first time.

9.2.3.4 Technical support

The institution should ensure that technical support staff are available on standby to assist lecturers over the weekend. If a lecturer's technical issues cannot be resolved then they will not be able to assist the students. Should staff already be available, the institution should consider allocating more staff to work over the weekend, since most of the teaching and learning in Distance Education occurs after hours and over the weekends.

9.2.3.5 Compulsory training

The institution should make training sessions compulsory for lecturers as the students will only be as competent as the lecturer's ability to assist them. It is understandable that part-time lecturers may have full-time jobs and, due to other commitments, they may not be able to attend the training sessions. Hence the institution should host repeat sessions or record the sessions and make these accessible to the lecturer to watch at their convenience. Another training initiative could be to provide step-by-step video tutorials for lecturers on the use of Moodle.

9.2.3.6 Using Moodle frequently

The institution should encourage the lecturers to use Moodle more frequently. According to some of the lecturers' qualitative data responses, it appears that the system was not frequently used.

9.2.3.7 Use of functionalities

The institution should encourage a more comprehensive use of Moodle with all its functionalities by making online interaction via Moodle compulsory. This should improve student engagement and academic support.

It is a possibility that the lecturers are unaware of how to use these functionalities, and thus do not make best use of the system. Again, the institution should host ongoing

workshops/training sessions with their lecturers to improve online teaching and learning.

9.2.3.8 Communication on Moodle

The institution should make communication via the Moodle discussion forums compulsory. Lecturers need to take the initiative to use the facility and encourage discussion on the forum. At MBA level, discussion, analysis, and evaluation should be encouraged and these forums will assist lecturers to fulfil this purpose. The students and lecturers should be able to use Moodle as a mobile application whereby notifications from the chat facility are received on the cell phone every time a student or lecturer posts on the platform – the institution should consider implementing this.

9.2.3.9 Plagiarism checker

The institution does not have a plagiarism checker installed on Moodle; hence it is easy for students to submit work that is not their own. The institution must ensure that a plagiarism checker is plugged into Moodle and that all assessments and examinations undergo a plagiarism check prior to being graded to maintain academic integrity.

9.2.3.10 Online methodology training

Training needs to be conducted with lecturers to ensure they understand that online lectures differ from face-to-face lecture; and it is very easy to lose the students' attention. The lecturers' methodologies should be assessed and corrected to ensure students are motivated to attend lectures.

More training should must be provided to lecturers to help them understand the various methods they can employ in the online classroom According to Mukhtar, Javed, Arooj and Sethi (2020) It is essential that lecturers are developed to use online pedagogies with high interactivities, but lower cognitive demand. The institution should conduct training sessions on how lecturers can adopt online pedagogies to ensure there is more student engagement.

9.2.3.11 Student authentication

The institution has created an authentication application that requires the student to take a selfie before an examination to ensure that the correct person is writing the examination. While this is an excellent initiative, it must be considered that this may not necessarily mean that the student registered on the programme is, in fact, the individual who is completing the examination. The institution needs to consider other means to authenticate students more accurately.

9.3 Conclusion

This chapter has discussed recommendations that could be employed by the students, lecturers, and the Private Higher Education Provider in this study. These recommendations can be considered by the institution to improve online teaching and learning, and improve academic support.

It must be noted that most of the findings and recommendations relate best to Private Higher Education Institutions in developing countries. The researcher is confident that these findings and recommendations can add value to the field of knowledge on the use of LMSs, including all their functionalities, in Private HEIs in developing countries.

BIBLIOGRAPHY

Abdou, D., & Jasimuddin, S. M. (2020). The use of the UTAUT model in the adoption of e-learning technologies: An empirical study in France based banks. *Journal of Global Information Management (JGIM)*, 28(4), 38-51.

Abdullah, F., & Ward, R. (2016). Developing a General Extended Technology Acceptance Model for ELearning (GETAMEL) by analysing commonly used external factors. *Computers in Human Behavior*, 56, 238-256.

Aboagye, E., Yawson, J. A., & Appiah, K. N. (2020). COVID-19 and E-learning: The challenges of students in tertiary institutions. *Social Education Research*, 1-7.

Adams, D., Tan, M. H. J., & Sumintono, B. (2020). Students' readiness for blended learning in a leading Malaysian private higher education institution. *Interactive Technology and Smart Education*, 18(4), 515-534.

Adnan, M., & Anwar, K. (2020). Online Learning amid the COVID-19 Pandemic: Students' Perspectives. *Online Submission*, 2(1), 45-51.

Ahiatrogah, P. D., Deku, P., & Dramanu, B. Y. (2008). The relationship between study habits and academic performance: A case study of University of Cape Coast distance learners. *Journal of Educational Development and Practice*, 2, 40-53.

Ajani, O. A. (2021). Using Moodle for Curriculum Delivery in Higher Institutions during the Covid-19 Pandemic. *International Journal of Innovation, Creativity and Change*, 15(4), 708-724.

Albarrak, A. I., Aboalsamh, H. A., & Abouzahra, M. (2010, November). Evaluating learning management systems for university medical education. In *2010 International conference on education and management technology* (pp. 672-677). IEEE.

Allan, S. (2020). Migration and transformation: a sociomaterial analysis of practitioners' experiences with online exams. *Research in Learning Technology*, 28.

Al Meajel, T. M., & Sharadgah, T. A. (2018). Barriers to Using the Blackboard System in Teaching and Learning: Faculty Perceptions. *Technology, Knowledge and Learning*, 23(2), 351-366.

Almenara, J. C., Roig-Vila, R., & Mengual-Andres, S. (2017). Technological, Pedagogical, and Content Knowledge of Future Teachers according to the TPACK model. *Digital Education Review*, (32), 73-84.

AlAwadhi, S., & Morris, A. (2009). Factors influencing the adoption of e-government services. *J. Softw.*, 4(6), 584-590.

Albarrak, A. I., Aboalsamh, H. A., & Abouzahra, M. (2010, November). Evaluating LMS for University medical education. In *2010 International conference on education and management technology* (pp. 672-677). IEEE.

Albrahim, F. A. (2020). Online teaching skills and competencies. *Turkish Online Journal of Educational Technology-TOJET*, 19(1), 9-20.

Alenezi, A. (2018). Barriers to Participation in LMS in Saudi Arabian Universities. *Education Research International*, 2018.

Alexandrou, A. (2009). Development through partnership: how learning representatives are helping to meet the challenge of upskilling Scottish FE lecturers. *Research in Post-Compulsory Education*, 14(3), 233-249.

Ali, S., Uppal, M. A., & Gulliver, S. R. (2018). A conceptual framework highlighting e-learning implementation barriers. *Information Technology & People*, 31(1), 156-180.

Alkhateeb, F., AlMaghayreh, E., Aljawarneh, S., Muhsin, Z., & Nsour, A. (2010). ELearning tools and technologies in education: A perspective. *E-learning*.

Al-Kindi, S. S., & Al-Suqri, M. N. (2017). Mobilizing Learning: Using Moodle and Online Tools via Smartphones. *International Journal of Knowledge Content Development & Technology*, 7(3), 67.

Allen, I. E., & Seaman, J. (2011). *Going the distance: Online education in the United States, 2011*. Sloan Consortium. PO Box 1238, Newburyport, MA 01950.

Allen, I. E., & Seaman, J. (2015). *Grade Level: Tracking Online Education in the United States*. Babson Survey Research Group. Babson College, 231 Forest Street, Babson Park, MA 02457.

Almaiah, M. A., Al-Khasawneh, A., & Althunibat, A. (2020). Exploring the critical challenges and factors influencing the E-learning system usage during COVID-19 pandemic. *Education and Information Technologies*, 1.

Almenara, J. C., Roig-Vila, R., & Mengual-Andres, S. (2017). Technological, Pedagogical, and Content Knowledge of Future Teachers according to the TPACK model. *Digital Education Review*, (32), 73-84.

Almuraqab, N. A. S., & Jasimuddin, S. M. (2017). Factors that Influence End-Users' Adoption of Smart Government Services in the UAE: A Conceptual Framework. *Electronic Journal of Information Systems Evaluation*, 20(1), pp11-23.

Alshaher, A. A. F. (2013). The McKinsey 7S model framework for e-learning system readiness assessment. *International Journal of Advances in Engineering & Technology*, 6(5), 1948.

Angkarini, T. (2021). Study Habits of Undergraduate Students During Pandemic of Covid-19. *Journal of Learning and Instructional Materials*. Retrieved last April, 29, 2022.

Anthony, B., Kamaludin, A., & Romli, A. (2021). Predicting academic staff behaviour intention and actual use of blended learning in higher education: Model development and validation. *Technology, Knowledge and Learning*, 1-47.

Asiri, M. J. S., Bt Mahmud, R., Abu Bakar, K., Ayub, A. F. B. M., & Bakadam, E. S. (2015). Barriers of Using Jusur Learning Management System in Saudi Arabia Universities. *Journal of Research in Curriculum, Instruction and Educational Technology*, 41(2716), 1-10.

Aslam, M. (2018). Design of sampling plan for exponential distribution under neutrosophic statistical interval method. *IEEE Access*, 6, 64153-64158.

Aung, T. N., & Khaing, S. S. (2015, August). Challenges of implementing e-learning in developing countries: A review. In *International Conference on Genetic and Evolutionary Computing* (pp. 405-411). Springer, Cham.

Awang, N. B., & Darus, M. Y. B. (2012). Evaluation of an open source-learning management system: Claroline. *Procedia-Social and Behavioral Sciences*, 67, 416-426.

Bailey, D. R., & Lee, A. R. (2020). Learning from experience in the midst of COVID-19: Benefits, challenges, and strategies in online teaching. *Computer-Assisted Language Learning Electronic Journal*, 21(2), 178-198.

Basilaia, G., Dgebuadze, M., Kantaria, M., & Chokhanelidze, G. (2020). Replacing the classic learning form at universities as an immediate response to the COVID-19 virus infection in Georgia. *International Journal for Research in Applied Science and Engineering Technology*, 8(3), 101-108.

Bari, M., Djouab, R., & Hoa, C. P. (2018). Elearning current situation and emerging challenges. PEOPLE. *International Journal of Social Sciences*, 4(2), 97-109.

Bate, F. G., & Maor, D. (2010). TPACK and the real world: How useful is the framework?.

Baticulon, R. E., Sy, J. J., Alberto, N. R. I., Baron, M. B. C., Mabulay, R. E. C., Rizada, L. G. T., ... & Reyes, J. C. B. (2021). Barriers to online learning in the time of COVID-19: A national survey of medical students in the Philippines. *Medical science educator, 31*(2), 615-626.

Bell, J. (2014). *Doing Your Research Project: A guide for first-time researchers*. McGraw-Hill Education (UK).

Bellaaj, M., Zekri, I., & Albugami, M. (2015). The continued use of e-learning system: An empirical investigation using UTAUT model at the University of Tabuk. *Journal of Theoretical & Applied Information Technology, 72*(3).

Biesta, G. (2010). Pragmatism and the philosophical foundations of mixed methods research. *Sage handbook of mixed methods in social and behavioral research, 2*, 95-118.

Ben Romdhane, E. (2013). La question de l'acceptation des outils de e-learning par les apprenants : quels dimensions et déterminants en milieu universitaire tunisien? *Revue internationale des technologies en pédagogie universitaire/International Journal of Technologies in Higher Education, 10*(1), 46-57.

Blackburn, G. (2016). In My End Is My Beginning: eLearning at the Crossroads. *Turkish Online Journal of Educational Technology-TOJET, 15*(3), 87-97.

Bollapragada, V. R. (2019). *Methods for Deterministic and Stochastic Optimization* (Doctoral dissertation, Northwestern University).

Brown, T. H. (2015). Exploring New Learning Paradigms: A Reflection on Barber, Donnelly, and Rizvi (2013): "An Avalanche is Coming: Higher Education and the

Revolution Ahead.”. *International Review of Research in Open and Distributed Learning*, 16(4), 227-234.

Buheji, M., & Buheji, A. (2020). Planning competency in the new Normal—employability competency in post-COVID-19 pandemic. *International Journal of Human Resource Studies*, 10(2), 237-251.

Burgess, S., & Sievertsen, H. H. (2020). Schools, skills, and learning: The impact of COVID-19 on education. *VoxEu.org*, 1(2).

Çapan, B. E. (2010). Relationship among perfectionism, academic procrastination and life satisfaction of university students. *Procedia-Social and Behavioral Sciences*, 5, 1665-1671.

Casey, J., & Wilson, P. (2005). A practical guide to providing flexible learning in further and higher education. *Quality Assurance Agency for Higher Education*

Chambers, J. M. (2017). *Graphical methods for data analysis: 0*. Chapman and Hall/CRC.

Chaves, H. V., Maia Filho, O. N., & Melo, A. D. (2016). EDUCATION IN TIMES NET GENERATION: HOW DIGITAL IMMIGRANTS CAN TEACH DIGITAL NATIVES?. *HOLOS*, 2, 347-356.

Check, J., & Schutt, R. K. (2012). *Investigating the Educational World: The Process and Practice of Research*.

Cheung, G., Wan, K., & Chan, K. (2018). Efficient use of clickers: A mixed-method inquiry with university teachers. *Education Sciences*, 8(1), 31.

Chicioreanu, T. D., & Cosma, I. (2017). I AM A TEACHER IN THE DIGITAL ERA. WHAT TO CHOOSE: GOOGLE CLASSROOM OR MOODLE?. *eLearning & Software for Education*, 2.

Chopdar, P. K., Korfiatis, N., Sivakumar, V. J., & Lytras, M. D. (2018). Mobile shopping apps adoption and perceived risks: A cross-country perspective utilizing the Unified Theory of Acceptance and Use of Technology. *Computers in Human Behavior*, 86, 109-128.

Chua, J. H., & Jamil, H. (2014). The Effect of Field Specialization Variation on Technological Pedagogical Content Knowledge (TPACK) among Malaysian TVET Instructors. *Malaysian Online Journal of Educational Technology*, 2(1), 36-44.

Churiyah, M., Sholikhah, S., Filianti, F., & Sakdiyyah, D. A. (2020). Indonesia education readiness conducting distance learning in Covid-19 pandemic situation. *International Journal of Multicultural and Multireligious Understanding*, 7(6), 491-507.

Cohen, L., Manion, L., & Morrison, K. (2017). Research Methods in Education [8th edn] London: Routledge Falmer. *Teaching in Higher Education*, 41, 21.

Coll, S. D., Coll, R., & Treagust, D. (2018). Making the most of out-of-school visits: How does the teacher prepare? Part I: Development of the Learner Integrated Field Trip Inventory (LIFTI). *International Journal of Innovation in Science and Mathematics Education*, 26(4).

Collis, J., & Hussey, R. (2013). *Business research: A practical guide for undergraduate and postgraduate students*.

Connelly, L. M. (2016). Trustworthiness in qualitative research. *Medsurg Nursing*, 25(6), 435-437.

Costa, C., Alvelos, H., & Teixeira, L. (2012). The use of Moodle ELearning platform: a study in a Portuguese University. *Procedia Technology*, 5, 334-343.

Crawford, R., & Jenkins, L. E. (2018). Making pedagogy tangible: Developing skills and knowledge using a team teaching and blended learning approach. *Australian Journal of Teacher Education (Online)*, 43(1), 127-142.

Creswell, J. W., Hanson, W. E., Clark Plano, V. L., & Morales, A. (2007). Qualitative research designs: Selection and implementation. *The counseling psychologist*, 35(2), 236-264.

Davis, D., & Cosenza, R. M. (1993). Business research for decision making . Belmont, CA: Wadsworth Efficiency. *Information Research Journal*, 8(2), 12-27.

Dawadi, S., Giri, R. A., & Simkhada, P. (2020). Impact of COVID-19 on the Education Sector in Nepal: Challenges and Coping Strategies. *Online Submission*.

Dawson, C. (2019). *Introduction to research methods 5th edition: A practical guide for anyone undertaking a research project*. Robinson.

de Siqueira, L. P., Tedesco, A. M., Meli, P., Diederichsen, A., & Brancalion, P. H. (2021). Gender inclusion in ecological restoration. *Restoration Ecology*, 29(7), e13497.

De Vaus, D. (2012). Social trends and their impact on couple and family relationships. *The Wiley-Blackwell Handbook of Couples and Family Relationships*, 25-35.

De Vries, A., & De Vries, A. (2004). *Elsevier's dictionary of symbols and imagery*. Brill.

Dewitt, D., Alias, N., & Siraj, S. (2015). Collaborative learning: Interactive debates using Padlet in a higher education institution.

Di Blas, N. (2016). Distributed TPACK What kind of teachers does it work for?. *Journal of e-Learning and Knowledge Society*, 12(3).

Dougiamas, M., & Taylor, P. (2003). Moodle: Using learning communities to create an open source course management system. In *EdMedia+ Innovate-learning* (pp. 171-178). Association for the Advancement of Computing in Education (AACE).

Dumbrajs, S., de Jager, T., & Bergström-Nyberg, S. (2013). 9th Grade students looking at their chemistry studies. Comparison between Finland and South Africa. *Procedia-Social and Behavioral Sciences*, 89, 40-48.

Durak, G., & Çankaya, S. (2020). Emergency distance education process from the perspectives of academicians. *Asian Journal of Distance Education*, 15(2), 159-174.

Eccles, J. C. (2012). *How the self controls its brain*. Springer Science & Business Media.

El-Seoud, M. S. A., Ghenghesh, P., Seddiek, N., Nosseir, A., Taj-Eddin, I. A., & El-Khouly, M. M. (2013, September). ELearning and motivation effects on Egyptian higher education. In *2013 international conference on Interactive Collaborative-learning (ICL)* (pp. 689-695). IEEE.

El-Shtewi, H. F. (2004). *A novel approach to the communication and management of condition monitoring data*. The University of Manchester (United Kingdom).

Eltahir, M. E. (2019). E-learning in developing countries: Is it a panacea? A case study of Sudan. *IEEE Access*, 7, 97784-97792.

Elzainy, A., El Sadik, A., & Al Abdulmonem, W. (2020). Experience of e-learning and online assessment during the COVID-19 pandemic at the College of Medicine, Qassim University. *Journal of Taibah University Medical Sciences*, 15(6), 456-462.

European Institute of Gender Equity (2022) Gender Equality 2020 Digitisation and the future of work. Retrieved from <https://eige.europa.eu/publications/gender-equality-index-2020-report/gendered-patterns-use-new-technologies>

Farinella, J. A., Hobbs, B. K., & Weeks, H. S. (2000). Distance delivery: The faculty perspective. *Financial Practice & Education*, 10(1), 184-194.

Farooq, M. S., Salam, M., Jaafar, N., Fayolle, A., Ayupp, K., Radovic-Markovic, M., & Sajid, A. (2017). Acceptance and use of lecture capture system (LCS) in executive business studies. *Interactive Technology and Smart Education*.

Feldman, A. (2003). Validity and quality in self-study. *Educational researcher*, 32(3), 26-28.

Ferri, F., Grifoni, P., & Guzzo, T. (2020). Online learning and emergency remote teaching: Opportunities and challenges in emergency situations. *Societies*, 10(4), 86.

Fuller, P., & Yu, G. (2014). Lessons learned: online teaching adventures and misadventures. *Journal of Social Sciences*, 10(1), 33-38.

Fulton, K. (2012). Upside down and inside out: Flip your classroom to improve student learning. *Learning & Leading with Technology*, 39(8), 12-17.

Gaebel, M., Kupriyanova, V., Morais, R., & Colucci, E. (2014). ELearning in European Higher Education Institutions: Results of a Mapping Survey Conducted in October-December 2013. *European University Association*.

Gaskell, G., & Bauer, M. W. (2000). Towards public accountability: Beyond sampling, reliability and validity. *Qualitative researching with text, image and sound*, 336-350.

Gautam, S. (2020). COVID-19: air pollution remains low as people stay at home. *Air Quality, Atmosphere & Health*, 13(7), 853-857.

Gehlen-Baum, V., & Weinberger, A. (2012, September). Notebook or Facebook? How students actually use mobile devices in large lectures. In *European Conference on Technology Enhanced Learning* (pp. 103-112). Springer, Berlin, Heidelberg.

Gelles, L. A., Lord, S. M., Hoople, G. D., Chen, D. A., & Mejia, J. A. (2020). Compassionate flexibility and self-discipline: Student adaptation to emergency remote

teaching in an integrated engineering energy course during COVID-19. *Education Sciences*, 10(11), 304.

Ghounane, N. (2020). Moodle or social networks: What alternative refuge is appropriate to Algerian EFL students to learn during Covid-19 pandemic. *Arab World English Journal (AWEJ) Volume*, 11.

Gillett-Swan, J. (2017). The challenges of online learning: Supporting and engaging the isolated learner. *Journal of Learning Design*, 10(1), 20-30.

Godoe, P., & Johansen, T. (2012). Understanding adoption of new technologies: Technology readiness and technology acceptance as an integrated concept. *Journal of European psychology students*, 3(1).

Gómez, Á. I. P. (2015). *Educação na era digital: a escola educativa*. Penso Editora.

Gomez, J.F. (2015). Faculty use of a Learning Management (Doctor of Philosophy). California State University, Higher Education Faculty Use of Learning Management System in Face to Face Classes, Stanislaus.

Goswami, A., & Dutta, S. (2015). Gender differences in technology usage—A literature review. *Open Journal of Business and Management*, 4(1), 51-59.

Govender, I., & Mkhize, M. H. (2015). E-Learning in Place of Face-to-face Lectures: An Exploratory Study of Students' Perceptions. *Alternation Journal*, 22(1), 183-203.

Goyal, E., & Tambe, S. (2015). Effectiveness of Moodle-enabled blended learning in private Indian Business School teaching NICHE programs. *The online Journal of New horizons in Education*, 5(2), 14-22.

Graham, C. R., Woodfield, W., & Harrison, J. B. (2013). A framework for institutional adoption and implementation of blended learning in higher education. *The internet and higher education*, 18, 4-14.

Gumede, V., & Biyase, M. (2016). Educational reforms and curriculum transformation in post-apartheid South Africa. *Environmental Economics*, 7(2), 69.

Gunasinghe, A., Abd Hamid, J., Khatibi, A., & Azam, S. F. (2019). The adequacy of UTAUT-3 in interpreting academicians' adoption to e-Learning in higher education environments. *Interactive Technology and Smart Education*.

Hamid, R., SENTRYO, I., & HASAN, S. (2020). Online learning and its problems in the Covid-19 emergency period. *Jurnal Prima Edukasia*, 8(1), 86-95.

Han, I., & Shin, W. S. (2016). The use of a mobile-learning management system and academic achievement of online students. *Computers & Education*, 102, 79-89.

Hanson, B. (2008). Wither qualitative/quantitative?: Grounds for methodological convergence. *Quality & Quantity*, 42(1), 97-111.

He, D., & Lu, Y. (2007, September). Consumers perceptions and acceptances towards mobile advertising: an empirical study in China. In *2007 International Conference on Wireless Communications, Networking and Mobile Computing* (pp. 3775-3778). IEEE.

Heidi, Y. J. T., & Neo, M. (2015). Exploring the use of authentic learning strategies in designing blended learning environments: A Malaysian experience. *Journal of Science & Technology Policy Management*.

Henaku, E. A. (2020). COVID-19 online learning experience of college students: The case of Ghana. *International Journal of Multidisciplinary Sciences and Advanced Technology*, 1(2), 54-62.

Herrington, A., & Herrington, J. (2007). Authentic mobile-learning in higher education.

Herselman, M., & Britton, K. G. (2002). Analysing the role of ICT in bridging the digital divide amongst learners. *South African Journal of Education*, 22(4), 270-274.

Heyde, V. V. D., & Siebrits, A. (2019). Higher-order e-assessment for physics in the digital age using Sakai. *The Physics Teacher*, 57(1), 32-34.

Hong, J. W., Kang, S. W., Choi, B. S., Kim, D., Lee, S. B., & Han, S. W. (2012). Controlled synthesis of Pd–Pt alloy hollow nanostructures with enhanced catalytic activities for oxygen reduction. *ACS nano*, 6(3), 2410-2419.

Hoskins, B. J. (2010). The art of e-teaching. *The Journal of Continuing Higher Education*, 58(1), 53-56.

Hu, C., & Fyfe, V. (2010). Impact of a new curriculum on pre-service teachers' Technical, Pedagogical and Content Knowledge (TPACK). *Curriculum, technology & transformation for an unknown future. Proceedings ascilite Sydney*, 185-189.

Hwang, T. J., Rabheru, K., Peisah, C., Reichman, W., & Ikeda, M. (2020). Loneliness and social isolation during the COVID-19 pandemic. *International psychogeriatrics*, 32(10), 1217-1220.

Ishtaiwa, F. F. (2011). Faculty attitudes and use of Moodle course management system as a supplement to face-to-face Instruction: A Jordanian Case Study. *Journal of Educational & Psychological Sciences*, 12, 12-44.

Ismatovna, A. Y. (2021). Using the Moodle Platform in Extreme Cases. *Central asian journal of mathematical theory and computer sciences*, 2(6), 13-19.

Jacob, S. M., & Issac, B. (2014). Mobile learning culture and effects in higher education. *arXiv preprint arXiv:1410.4379*.

Jebari, K., Bousseadra, F., & Ettouhami, A. (2017). Teaching "Information Systems Management" with Moodle. *International Journal of Emerging Technologies in Learning (iJET)*, 12(04), 4-16.

Jones, A. C., Scanlon, E., & Clough, G. (2013). Mobile-learning: Two case studies of supporting inquiry learning in informal and semiformal settings. *Computers & Education, 61*, 21-32.

Kadoić, N., & Oreški, D. (2018, May). Analysis of student behavior and success based on logs in Moodle. In *2018 41st International Convention on Information and Communication Technology, Electronics and Microelectronics (MIPRO)* (pp. 0654-0659). IEEE.

Kekepotu, I., Talpur, Q., Memon, I., Halepotu, I., & Bux Jalbani, K. (2021). Pedagogical Shift: Faculty Insights about E-Teaching Barriers during COVID Pandemic. *International Journal of Innovation, Creativity and Change, 15*(6), 1147-1160.

Kanetaki, Z., Stergiou, C., Bekas, G., Troussas, C., & Sgouropoulou, C. (2021). The impact of different learning approaches based on MS Teams and Moodle on students' performance in an on-line mechanical CAD module. *Glob. J. Eng. Educ, 23*, 185-190.

Kanwal, F., & Rehman, M. (2017). Factors affecting e-learning adoption in developing countries—empirical evidence from Pakistan's higher education sector. *Ieee Access, 5*, 10968-10978.

Kanwal, F., Rehman, M., Bashir, K., & Qureshi, U. (2017). Critical factors of e-learning adoption and acceptance in Pakistan: a literature review. *Engineering, Technology & Applied Science Research, 7*(4), 1888-1893.

Karjaluoto, H., Shaikh, A. A., Leppäniemi, M., & Luomala, R. (2019). Examining consumers' usage intention of contactless payment systems. *International Journal of Bank Marketing.*

Kartal, B., & Çinar, C. (2018). Examining Pre-Service Mathematics Teachers' Beliefs of TPACK during a Method Course and Field Experience. *Malaysian Online Journal of Educational Technology, 6*(3), 11-37.

Kasim, N. N. M., & Khalid, F. (2016). Choosing the right learning management system (LMS) for the higher education institution context: A systematic review. *International Journal of Emerging Technologies in Learning*, 11(6).

Ke, F., & Kwak, D. (2013). Online learning across ethnicity and age: A study on learning interaction participation, perception, and learning satisfaction. *Computers & education*, 61, 43-51.

Keegan, D. (2013). *Foundations of distance education*. Routledge.

Kenan, T., Pislaru, C., Othman, A., & Elzawi, A. (2013). The social impact and cultural issues affecting the e-learning performance in Libyan higher education institutes. *International Journal of Information Technology & Computer Science*, 12(1), 50-56.

Kim, H. W., Chan, H. C., & Gupta, S. (2007). Value-based adoption of mobile internet: an empirical investigation. *Decision support systems*, 43(1), 111-126.

Kim, J. (2009). Review of nucleate pool boiling bubble heat transfer mechanisms. *International Journal of Multiphase Flow*, 35(12), 1067-1076.

Kim, T., & Lim, J. (2019). Designing an efficient cloud management architecture for sustainable online lifelong education. *Sustainability*, 11(6), 1523.

Kirkwood, A., & Price, L. (2013). Examining some assumptions and limitations of research on the effects of emerging technologies for teaching and learning in higher education. *British Journal of Educational Technology*, 44(4), 536-543.

Koehler, M., & Mishra, P. (2009). What is technological pedagogical content knowledge (TPACK)?. *Contemporary issues in technology and teacher education*, 9(1), 60-70.

Koh, J. H. L., Chai, C. S., Benjamin, W., & Hong, H. Y. (2015). Technological pedagogical content knowledge (TPACK) and design thinking: A framework to support ICT lesson design for 21st century learning. *The Asia-Pacific Education Researcher*, 24(3), 535-543.

Koo, J. H., Kim, J., Lee, Y. G., Park, S. S., Lee, S., Chong, H., ... & Lee, T. (2020). The implication of the air quality pattern in South Korea after the COVID-19 outbreak. *Scientific Reports*, 10(1), 1-11.

Kumar, V. D. (2017). Epistemics—The under-emphasized factor in self-directed learning. *Journal of Current Research in Scientific Medicine*, 3(2), 129.

Kumar, V., & Sharma, D. (2016). Creating collaborative and convenient learning environment using cloud-based moodle LMS: An instructor and administrator perspective. *International Journal of Web-Based Learning and Teaching Technologies (IJWLTT)*, 11(1), 35-50.

Kumi-Yeboah, A., & Smith, P. (2016). Critical multicultural citizenship education among black immigrant youth: Factors and challenges. *International Journal of Multicultural Education*, 18(1), 158-182.

Lather, P. (1986). Lather, Patti," Research as Praxis," *Harvard Educational Review*, 56 (August, 1986), 257-277.

Leo, S., Alsharari, N. M., Abbas, J., & Alshurideh, M. T. (2021). From offline to online learning: A qualitative study of challenges and opportunities as a response to the COVID-19 pandemic in the UAE higher education context. *The Effect of Coronavirus Disease (COVID-19) on Business Intelligence*, 203-217.

Li, G., Luo, H., Lei, J., Xu, S., & Chen, T. (2022). Effects of First-Time Experiences and Self-Regulation on College Students' Online Learning Motivation: Based on a National Survey during COVID-19. *Education Sciences*, 12(4), 245.

Liaw, S. S., Huang, H. M., & Chen, G. D. (2007). Surveying instructor and learner attitudes toward e-learning. *Computers & education*, 49(4), 1066-1080.

Lim, D. H., Morris, M. L., & Yoon, S. W. (2006). Combined effect of instructional and learner variables on course outcomes within an online learning environment. *Journal of Interactive Online Learning*, 5(3), 255-269.

Lin, H. F. (2007). Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. *Journal of information science*, 33(2), 135-149.

Lincoln, Y. S., & Guba, E. G. (2016). *The constructivist credo*. Routledge.

Lisnani, L., & Putri, R. I. I. (2020, October). Designing Moodle features as e-learning for learning mathematics in COVID-19 pandemic. In *Journal of Physics: Conference Series* (Vol. 1657, No. 1, p. 012024). IOP Publishing.

Lowenthal, J. N. (2010). Using mobile-learning: Determinates impacting behavioral intention. *The Amer. Jrnl. of Distance Education*, 24(4), 195-206.

Lu, O. H., Huang, A. Y., Huang, J. C., Lin, A. J., Ogata, H., & Yang, S. J. (2018). Applying learning analytics for the early prediction of Students' academic performance in blended learning. *Journal of Educational Technology & Society*, 21(2), 220-232.

Luna, J. M., Castro, C., & Romero, C. (2017). MDM tool: A data mining framework integrated into Moodle. *Computer Applications in Engineering Education*, 25(1), 90-102.

Ma, X., Azemi, A., & Buechler, D. (2021, October). Integrating Microsoft Teams to Promote Active Learning in Online Lecture and Lab Courses. In *2021 IEEE Frontiers in Education Conference (FIE)* (pp. 1-9). IEEE.

Maatuk, A. M., Elberkawi, E. K., Aljawarneh, S., Rashaideh, H., & Alharbi, H. (2022). The COVID-19 pandemic and E-learning: challenges and opportunities from the perspective of students and instructors. *Journal of Computing in Higher Education*, 34(1), 21-38.

Macedo, I. M. (2017). Predicting the acceptance and use of information and communication technology by older adults: An empirical examination of the revised UTAUT2. *Computers in Human Behavior*, 75, 935-948.

Mackenzie, N., & Knipe, S. (2006). Research dilemmas: Paradigms, methods and methodology. *Issues in educational research*, 16(2), 193-205.

Macmillan International Higher Education. Council on Higher Education (CHE). (2014). Distance Higher Education programmes in a digital era: Good practice guide.

Magubane, N. (2014). *An Evaluation of Change Communication in Ensuring the Sustainability of Change at Barclays Africa's First "green" Building* (Doctoral dissertation, Rhodes University).

Mahmud, K., & Gope, K. (2009, December). Challenges of implementing e-learning for higher education in least developed countries: a case study on Bangladesh. In *2009 international conference on information and multimedia technology* (pp. 155-159). IEEE.

Makokha, G. L., & Mutisya, D. N. (2016). Status of ELearning in public in Kenya. *The International Review of Research in Open and Distributed Learning*, 17(3).

Mamun, M. A., & Griffiths, M. D. (2020). First COVID-19 suicide case in Bangladesh due to fear of COVID-19 and xenophobia: Possible suicide prevention strategies. *Asian journal of psychiatry*, 51, 102073.

Mandasari, B., & Wahyudin, A. Y. (2021). Flipped Classroom Learning Model: Implementation and Its Impact on EFL Learners' Satisfaction on Grammar Class. *Ethical Lingua: Journal of Language Teaching and Literature*, 8(1), 150-158.

Maor, D. (2017). Using TPACK to develop digital pedagogues: a higher education experience. *Journal of Computers in Education*, 4(1), 71-86.

Martinez, M., & Jagannathan, S. (2012). Learning solution: Moodle: A low-cost solution for successful e-learning.

McNabb, D. E. (2015). *Research methods in public administration and nonprofit management*. Routledge.

Mhlanga, D., & Moloi, T. (2020). COVID-19 and the digital transformation of education: What are we learning on 4IR in South Africa?. *Education sciences*, 10(7), 180.

Microsoft (2020). Microsoft Teams. Retrieved from <https://support.microsoft.com/en-us/topic/what-is-microsoft-teams-3de4d369-0167-8def-b93b-0eb5286d7a29>

Millham, R., Thakur, S., & Malan, C. (2014, April). Does self-regulating ELearning assist in secondary school preparation for engineering education? In *Proceedings of the 2014 Zone 1 Conference of the American Society for Engineering Education* (pp. 1-5). IEEE.

Mishra, P., & Koehler, M. J. (2006). Technological pedagogical content knowledge: A framework for teacher knowledge. *Teachers' college record*, 108(6), 1017-1054.

Miya, M.J. (2015). *Student Perceptions* (Master's thesis). UKZN, Evaluating the MBA Students perceptions about UKZN ELearning support systems which are Moodle and Student Central Systems, South Africa.

Mlitwa, N., & Van Belle, J. P. (2011). Mediators for lecturer perspectives on learning management systems at universities in the Western Cape, South Africa.

Mohajan, H. K. (2017). Two criteria for good measurements in research: Validity and reliability. *Annals of Spiru Haret University. Economic Series*, 17(4), 59-82.

Mohammadi, H. (2015). Social and individual antecedents of m-learning adoption in Iran. *Computers in Human Behavior*, 49, 191-207.

Mohammad-Salehi, B., Vaez-Dalili, M., & Heidari Tabrizi, H. (2021). Investigating Factors That Influence EFL Teachers' Adoption of Web 2.0 Technologies: Evidence from Applying the UTAUT and TPACK. *TESL-EJ*, 25(1), n1.

Moll, I., Adam, F., Backhouse, J., & Mhlanga, E. (2007). Status report on ICTs and higher education in South Africa. *South African Institute for Distance Education*.

Moodle. (2018). *About Moodle*. Retrieved from [https://docs.moodle.org/37/en/About Moodle](https://docs.moodle.org/37/en/About_Moodle)

Morgan, D. L. (2007). Paradigms lost and pragmatism regained: Methodological implications of combining qualitative and quantitative methods. *Journal of mixed methods research*, 1(1), 48-76.

Mseleku, Z. (2020). A literature review of E-learning and E-teaching in the era of Covid-19 pandemic. *SAGE*, 57(52), 588-597.

Mudaly, Y. (2012). *Learning Management System* (Master's thesis). UKZN, An Investigation into the use of a Learning Management System to support teaching and learning in a Grade 10 Information Technology class, South Africa.

Mukhtar, K., Javed, K., Arooj, M., & Sethi, A. (2020). Advantages, Limitations and Recommendations for online learning during COVID-19 pandemic era. *Pakistan journal of medical sciences*, 36(COVID19-S4), S27.I.

Mulhanga, M. M., & Lima, S. R. (2017, December). Podcast as e-learning enabler for developing countries: Current initiatives, challenges and trends. In *Proceedings of the 2017 9th international conference on education technology and computers* (pp. 126-130).

Muliyah, P., Aminatun, D., Nasution, S. S., Hastomo, T., & Sitepu, S. S. W. (2020). Exploring Learner's autonomy in online Language-learning in Stai Sufyan Tsauri Majenang. *Getsempena English Education Journal*, 7(2), 382-394.

Muniasamy, V., Ejalani, I. M., & Anandhavalli, M. (2014). Predicting The Students Learning Outcome Based on Comparing the Assessment Methods in Diploma E-Commerce Course, Community College, King Khalid University, KSA. *Assessment*, 7(7.18), 1-595.

Mwila, K., Mudenda, S., Kampamba, M., Mufwambi, W., Lufungulo, E. S., & Phiri, M. (2021). Factors Affecting Access to E-Learning during the Coronavirus Disease 2019 Pandemic among Rural-Based Pharmacy Students in Zambia: A Qualitative Study. *Epidemiology*, 6, 20-29.

Neuwirth, L. S., Jović, S., & Mukherji, B. R. (2021). Reimagining higher education during and post-COVID-19: Challenges and opportunities. *Journal of Adult and Continuing Education*, 27(2), 141-156.

Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence-based nursing*, 18(2), 34-35.

Noval, J.J. (2016). Usage of a Learning Management (Doctor of Philosophy). Northcentral University, A Mixed Methods Study on the Usage of a Learning Management System by Allied Health Faculty, Prescott Valley, Arizona.

Nuere, S., & De Miguel, L. (2021). The digital/technological connection with Covid-19: An unprecedented challenge in university teaching. *Technology, Knowledge and Learning*, 26(4), 931-943.

O'Keefe, L., Rafferty, J., Gunder, A., & Vignare, K. (2020). Delivering High-Quality Instruction Online in Response to COVID-19: Faculty Playbook. *Online Learning Consortium*.

Onwuegbuzie, A. J., & Johnson, R. B. (2006). The validity issue in mixed research. *Research in the Schools*, 13(1), 48-63.

Osei, H. V., Kwateng, K. O., & Boateng, K. A. (2022). Integration of personality trait, motivation and UTAUT 2 to understand e-learning adoption in the era of COVID-19 pandemic. *Education and Information Technologies*, 1-26.

Palloff, R. M., & Pratt, K. (2013). *Lessons from the virtual classroom: The realities of online teaching*. John Wiley & Sons.

Patil, P., Tamilmani, K., Rana, N. P., & Raghavan, V. (2020). Understanding consumer adoption of mobile payment in India: Extending Meta-UTAUT model with personal innovativeness, anxiety, trust, and grievance redressal. *International Journal of Information Management*, 54, 102144.

Paudel, P. (2021). Online education: Benefits, challenges and strategies during and after COVID-19 in higher education. *International Journal on Studies in Education*, 3(2), 70-85.

Pavlou, P. A., & Fygenon, M. (2006). Understanding and predicting electronic commerce adoption: An extension of the theory of planned behavior. *MIS quarterly*, 115-143.

Pellas, N., & Kazanidis, I. (2015). On the value of Second Life for students' engagement in blended and online courses: A comparative study from the Higher Education in Greece. *Education and Information Technologies*, 20(3), 445-466.

Petrovici, A., & Ciobanu, E. P. (2016). THE LESSON, MOODLE TEACHING-LEARNING RESOURCE WITH INTERACTIVE CONTENT. *eLearning & Software for Education*, 3.

Pfundt, H., & Duit, R. (2000). Bibliography: Students' alternative frameworks and science. *Kiel, Germany*.

Poalses, J., & Bezuidenhout, A. (2018). Mental health in higher education: A comparative stress risk assessment at an open distance learning university in South Africa. *International Review of Research in Open and Distributed Learning*, 19(2).

Phahamane, P. M. (2011). *Experiences of Students in Using Blended Learning to Learn Educational Technology Modules: A Case Study* (Doctoral dissertation, University of KwaZulu-Natal).

Pituch, K. A., & Lee, Y. K. (2006). The influence of system characteristics on e-learning use. *Computers & Education*, 47(2), 222-244.

Prensky, M. (2001). Digital natives, digital immigrants part 1. *On the horizon*, 9(5), 1-6.

Qasem, A. A. A., & Viswanathappa, G. (2016). Blended learning approach to develop the teachers' TPACK. *Contemporary Educational Technology*, 7(3), 264-276.

Radif, M., Fan, I. S., & McLaughlin, P. (2015). Internal and external barriers influencing LMS implementation in Iraqi higher education.

Ravjee, N. (2007). The politics of ELearning in South African higher education. *International Journal of Education and development using ICT*, 3(4), 27-41.

Rogers, P. L. (2000). Barriers to adopting emerging technologies in education. *Journal of educational computing research*, 22(4), 455-472.

Rothmann, I., & Cooper, C. L. (2015). *Work and organizational psychology*. Routledge.

Rorty, R. M., & Rorty, R. (1999). *Philosophy and social hope*. Penguin UK.

Sahu, P. (2020). Closure of universities due to coronavirus disease 2019 (COVID-19): impact on education and mental health of students and academic staff. *Cureus, 12*(4).

Salhab, R. A. (2019). Faculty Members' Attitudes towards Using Moodle at Palestine Technical Khadoorie (PTUK). *World Journal of Education, 9*(2), 151-165.

Sana, A., & Mariam, H. (2013). Use of information and communication technologies in e-learning system of Pakistan: A comparison study. *International Journal of Computer Science and Electronics Engineering, 1*(4), 528-533.

Sancar-Tokmak, H., & Yanpar-Yelken, T. (2015). Effects of creating digital stories on foreign language education pre-service teachers' TPACK self-confidence. *Educational Studies, 41*(4), 444-461.

Sarfo, F. K., & Yidana, I. (2016). University Lecturers Experience in the Design and use of Moodle and Blended Learning Environments. *The Online Journal of New Horizons in Education, 6*(2), 143-154.

Sari, F. M., & Oktaviani, L. (2021). Undergraduate Students' Views on the Use of Online Learning Platform during COVID-19 Pandemic. *Teknosastik, 19*(1), 41-47.

Sarrab, M., Hafedh, A. S., & Bader, A. M. (2015). System quality characteristics for selecting mobile learning applications. *Turkish Online Journal of Distance Education, 16*(4), 18-27.

Saxena, C., Baber, H., & Kumar, P. (2021). Examining the moderating effect of perceived benefits of maintaining social distance on e-learning quality during COVID-19 pandemic. *Journal of Educational Technology Systems, 49*(4), 532-554.

Scherer, R., Siddiq, F., & Tondeur, J. (2019). The technology acceptance model (TAM): A meta-analytic structural equation modeling approach to explaining teachers' adoption of digital technology in education. *Computers & Education, 128*, 13-35.

Schoonenboom, J. (2014). Using an adapted, task-level technology acceptance model to explain why instructors in Higher Education intend to use some-learning management system tools more than others. *Computers & Education, 71*, 247-256.

Schwab, K. (2015). World economic forum. *Global Competitiveness Report (2014-2015)* Retrieved from https://www3.weforum.org/docs/WEF_GlobalCompetitivenessReport_2013-14.pdf

Schwirzke, K., Vashaw, L., & Watson, J. (2018). A history of K-12 online and blended instruction in the United States. *Handbook of Research on k-12 Online and Blending Learning, 2*.

Sejane, L. (2017). *Access to and use of electronic information resources in the academic libraries of the Lesotho Library Consortium* (Doctoral dissertation).

Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill building approach*. John Wiley & Sons.

Selim, H. M. (2007). Critical success factors for e-learning acceptance: Confirmatory factor models. *Computers & education, 49*(2), 396-413.

Shahnaz, S. M. F., & Hussain, R. M. R. (2016). Designing Instruction for Active and Reflective Learners in the Flipped Classroom. *Malaysian Journal of Learning and Instruction, 13*(2), 147-173.

Shawaqfeh, M. S., Al Bekairy, A. M., Al-Azayzih, A., Alkatheri, A. A., Qandil, A. M., Obaidat, A. A., ... & Muflih, S. M. (2020). Pharmacy students' perceptions of their distance online learning experience during the COVID-19 pandemic: a Cross-

Sectional Survey Study. *Journal of medical education and curricular development*, 7, 2382120520963039.

Shraim, K., & Khlaif, Z. (2010). An ELearning approach to secondary education in Palestine: opportunities and challenges. *Information Technology for Development*, 16(3), 159-173

Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational researcher*, 15(2), 4-14.

Siemens, G., & Matheos, K. (2010). Systemic changes in higher education.

Smith, A. (2022) Older Adults and Technology Use. Retrieved from <https://www.pewresearch.org/internet/2014/04/03/older-adults-and-technology-use/>

Sobaih, A. E. E., Salem, A. E., Hasanein, A. M., & Elnasr, A. E. A. (2021). Responses to Covid-19 in higher education: Students' learning experience using Microsoft teams versus social network sites. *Sustainability*, 13(18), 10036.

Soffer, T., & Nachmias, R. (2018). Effectiveness of learning in online academic courses compared with face-to-face courses in Higher Education. *Journal of Computer Assisted Learning*, 34(5), 534-543.

South Africa. Department of Higher Education and Training. (2014). White paper for post-school education and training: Building an expanded, effective and integrated post-school system.

Steinberg, L. (2007). Risk taking in adolescence: New perspectives from brain and behavioral science. *Current directions in psychological science*, 16(2), 55-59.

Swan, K. P., James, S., & Daston, S. (2017). Student Success and the Taking of Courses Online. *AERA Online Paper Repository*.

Tahir, M. F., Haoyong, C., Idris, I. I., Larik, N. A., & ullah Adnan, S. (2018). Demand response programs significance, challenges and worldwide scope in maintaining power system stability. *International Journal of Advanced Computer Science and Applications*, 9(6).

Tarus, J. K., Gichoya, D., & Muumbo, A. (2015). Challenges of implementing ELearning in Kenya: A case of Kenyan public universities. *The International Review of Research in Open and Distributed Learning*, 16(1).

Tayebinik, M., & Puteh, M. (2012). Mobile learning to support teaching English as a second language. *Tayebinik, M., Puteh, M. (2012). Mobile Learning to Support Teaching English as a Second Language. Journal of Education and Practice*, 3(7), 56-62.

Teddlie, C., & Tashakkori, A. (2003). Major issues and controversies in the use of mixed methods in the social and behavioral sciences. *Handbook of mixed methods in social and behavioral research*, 1, 13-50.

Teddlie, C., & Tashakkori, A. (2012). Common “core” characteristics of mixed methods research: A review of critical issues and call for greater convergence. *American Behavioral Scientist*, 56(6), 774-788.

Teixeira, A. M., Bates, T., & Mota, J. (2019). What future (s) for distance education universities? Towards an open networkbased approach. *RIED. Revista Iberoamericana de Educación a Distancia*, 22(1).

Teo, T., Zhou, M., & Noyes, J. (2016). Teachers and technology: Development of an extended theory of planned behavior. *Educational Technology Research and Development*, 64, 1033-1052.

Tichavsky, L. P., Hunt, A. N., Driscoll, A., & Jicha, K. (2015). “It’s just nice having a real teacher”: Student perceptions of online versus face-to-face

instruction. *International Journal for the Scholarship of Teaching and Learning*, 9(2), 2.

Toven-Lindsey, B., Rhoads, R. A., & Lozano, J. B. (2015). Virtually unlimited classrooms: Pedagogical practices in massive open online courses. *The internet and higher education*, 24, 1-12.

Trochim, W. M., Donnelly, J. P., & Arora, K. (2016). The essential research methods knowledge base. *Boston, MA: Cengage*.

Tuapawa, K. (2017). Interpreting experiences of students using educational online technologies to interact with teachers in blended tertiary environments: A phenomenological study. *Australasian Journal of Educational Technology*, 33(1).

Ülker, D., & Yılmaz, Y. (2016). Learning Management Systems and Comparison of Open Source Learning Management Systems and Proprietary Learning Management Systems. *Journal of Systems Integration (1804-2724)*, 7(2).

UNESCO (2020). *COVID-19 Educational Disruption and Response*. Retrieved from <https://en.unesco.org/covid19/educationresponse>

Vallance, M. (2008). Beyond policy: Strategic actions to support ICT integration in Japanese schools. *Australasian Journal of Educational Technology*, 24(3).

Van Vaerenwyck, L. M., Shinas, V. H., & Steckel, B. (2017). Sarah's story: One teacher's enactment of TPACK+ in a history classroom. *Literacy Research and Instruction*, 56(2), 158-175.

Vasodavan, V., DeWitt, D., & Alias, N. (2019). TPACK in higher education: Analysis of the collaborative tools used by lecturers. *JuKu: Jurnal Kurikulum & Pengajaran Asia Pasifik*, 7(1), 9-17.

Vaughan, N. (2007). Perspectives on blended learning in higher education. *International Journal on E-learning*, 6(1), 81-94.

Venkatesh, V., Morris, M. G., & Ackerman, P. L. (2000). A longitudinal field investigation of gender differences in individual technology adoption decision-making processes. *Organizational behavior and human decision processes*, 83(1), 33-60.

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management science*, 46(2), 186-204.

Venkatesh, V., & Zhang, X. (2010). Unified theory of acceptance and use of technology: US vs. China. *Journal of global information technology management*, 13(1), 5-27.

Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS quarterly*, 425-478.

Venkatesh, V., Thong, J. Y., & Xu, X. (2012). Consumer acceptance and use of information technology: extending the unified theory of acceptance and use of technology. *MIS quarterly*, 157-178.

Villa, E. Q. (2017). *Using In-Depth Interviews as a Primary Source of Data for Developing Case Studies*. SAGE Publications Ltd.

Wang, C., Zhao, H., & Zhang, H. (2020). Chinese college students have higher anxiety in new semester of online learning during COVID-19: a machine learning approach. *Frontiers in psychology*, 11, 587413.

Wingo, N. P., Ivankova, N. V., & Moss, J. A. (2017). Faculty perceptions about teaching online: Exploring the literature using the technology acceptance model as an organizing framework. *Online-learning*, 21(1), 15-35.

Wolcott, H. F. (1990). On seeking-and rejecting-validity in qualitative research. *Qualitative inquiry in education: The continuing debate*, 121-152.

Woodill, G. (2010). *The mobile-learning edge: Tools and technologies for developing your teams*. McGraw Hill Professional.

World Health Organisation. (2020) *Coronavirus*. Retrieved from <https://www.who.int/health-topics/coronavirus#tab=tab-1>

Yakubu, M. N., & Dasuki, S. I. (2019). Factors affecting the adoption of e-learning technologies among higher education students in Nigeria: A structural equation modelling approach. *Information Development*, 35(3), 492-502.

Yang, Y., & Lin, N. C. (2010). Internet perceptions, online participation and language learning in Moodle forums: A case study on nursing students in Taiwan. *Procedia-Social and Behavioral Sciences*, 2(2), 2647-2651.

Zaharias, P., & Mehlenbacher, B. (2012). User Experience (UX) in Virtual Learning Environments. *International Journal of Human-Computer Studies*, 70(7).

Zainuddin, N., Idrus, R., & Jamal, A. F. M. (2016). Moodle as an ODL teaching tool: A Perspective of Students and Academics. *Electronic Journal of e-Learning*, 14(4), pp282-290.

Zanjani, N. (2017). The important elements of LMS design that affect user engagement with ELearning tools within LMSs in the higher education sector. *Australasian Journal of Educational Technology*, 33(1).

ZESHAN, A. (2021). Business Students Experiences about Online Learning During Covid 19: Problems and Opportunities. *Romanian Statistical Review*, (2).

Zhang, Y., Ghandour, A., & Shestak, V. (2020). Using learning analytics to predict students' performance in moodle LMS.

Zharova, M. V., Trapitsin, S. Y., Timchenko, V. V., & Skurihina, A. I. (2020, September). Problems and opportunities of using LMS moodle before and during COVID-19 Quarantine: Opinion of teachers and students. In *2020 International Conference Quality Management, Transport and Information Security, Information Technologies (IT&QM&IS)* (pp. 554-557). IEEE.

Zikmund, W. G., Carr, J. C., Babin, B., & Griffin, M. (2013). *Business research methods*. Nelson Education.

Zimmerman, B. J., & Schunk, D. H. (2011). *Handbook of self-regulation of learning and performance*. Routledge/Taylor & Francis Group.

Zsohar, H., & Smith, J. A. (2008). Transition from the classroom to the web: Successful strategies for teaching online. *Nursing Education Perspectives*, *29*(1), 23-28.

Zur, O., & Zur, A. (2011). On digital immigrants and digital natives: How the digital divide affects families, educational institutions, and the workplace. *Zur Institute—Online Publication*. Retrieved on February, 21, 2012.

Zusman, A. (2005). Challenges facing higher education in the twenty-first century. *American higher education in the twenty-first century: Social, political, and economic challenges*, *2*, 115-160.

APPENDIX A

INTERVIEW SCHEDULE -LECTURER

Thank you for participating in this interview. The information you provide will be used for the purpose of an academic research project for a Doctor of Philosophy thesis at UKZN. This interview is confidential and will not be used to identify you as an individual. I appreciate you assisting by participating in this interview.

Many thanks for your co-operation.

Performance Expectancy	
1.1	Questions
1.1.1	Does Moodle enable you to facilitate lectures better and did Moodle assist you in achieving your expectations of teaching/facilitating online or not. If yes, what was the most valuable aspect of Moodle that assisted you with, if no, were there challenges?
Effort Expectancy	
1.2	Questions
1.2.1	Were you able to easily use the various functionalities on Moodle and which functionalities do you use?
1.2.2	Were you able to mark assessments efficiently on Moodle? Can you share your experience?
Social Influence	
1.3	Questions
1.3.1	Did your superiors make the use of Moodle compulsory due to COVID-19, if yes why do you think this was the case?
Facilitating Conditions	
1.4	Questions
1.4.1	Was sufficient training and support provided when you started using Moodle? Can you provide details?
1.4.2	Did you experience technical difficulties whilst using Moodle? If yes was support readily available?

Hedonic Motivation	
1.5	Questions
1.5.1	Do you enjoy using technology in particular Moodle? If yes why?
1.5.3	What were your favourite parts of the teaching and learning journey via Moodle?
Habit	
1.6	Questions
1.6.1	Do you easily adapt to new technology and did you experience any challenges adapting to Moodle?
1.6.2	How did teaching and learning occur prior to COVID-19?
1.6.3	As a lecturer what are some of the daily activities that you are involved in on Moodle?
Price Value	
1.7	Questions
1.7.1	Is using Moodle beneficial for your job function, if yes please provide detail?
1.7.2	How can the institution improve the use of Moodle?
17.3	Due to using Moodle did you incur a cost saving as there were no travel costs especially during online summative assessment (OSA)? Explain your answer?
17.4	Have you incurred any cost using Moodle? If yes please explain details of the cost incurred?
Personal Innovativeness in the domain of IT	
1.8	Questions
1.8.1	Were you eager to use Moodle for Online Summative Assessment (OSA) due to COVID-19, explain your experience?
1.8.2	Were you eager to use Moodle more during COVID-19? Explain your answer?
Behavioural Intention	
1.9	Questions
1.9.1	Would you have used Moodle if the COVID-19 did not force the usage of Moodle for safety? Please explain your answers?

Content Knowledge	
1.10	Questions
1.10.1	Do you create your own content for your lectures for online delivery? If yes, can you explain the process
Pedagogical Knowledge	
1.11	Questions
1.11.1	Has using Moodle transformed teaching and learning in Higher Education if answered yes how?
Technological Knowledge	
1.12	Questions
1.12.1	Do you have the technical skills you need to use Moodle and do you resolve your own technical difficulties?
1.12.2	Do use technology to enhance teaching and learning, accept Moodle are there any other methods of technology adopted?
1.12.3	Are there any benefits using Moodle for e-learning, if yes what are some of these benefits?
1.12.4	Does Moodle require additional functionalities? If yes what functionalities would you recommend?
Pedagogical Content Knowledge	
1.13	Questions
1.13.1	Did you have to adopt new teaching pedagogies for teaching online or did your teaching pedagogies remain the same? Please provide details?
1.13.2	Do you use teaching approaches that can guide student learning and thinking in the learning journey? and how?
Technological Content Knowledge	
1.14	Questions
1.14.1	Do you believe teaching content via Moodle can assist the learning process? Please explain your answer.

Technological Pedagogical Knowledge	
1.15	Questions
1.15.1	Were you familiar with using Moodle for teaching and learning prior to COVID-19? Please provide detail.
1.15.2	Was there sufficient online interaction and engagement with your Students on Moodle?
Technological Pedagogical Content Knowledge	
1.16	Questions
1.16.1	Does your lesson plan have a combination of content, technology and teaching approaches? If yes please explain how did you include all these elements?
1.17.2	Do you use Moodle more frequently to facilitate the teaching of content due to COVID-19 and how has COVID-19 transformed the way you teach and use Moodle?
1.16.3	What are some of the advantages and disadvantages of teaching via an online medium such as Moodle?
1.16.4	What are some of tips and advise you would provide to students who will be taking the online learning journey?
1.16.5	Did you provide support to students in the learning journey if yes how was support provided to students in the learning journey?
1.16.6	Why do you use Moodle for e-learning in a learning journey the way they do?

2. Did you experience difficulties using Moodle due to connectivity issues? If yes explain your experience?

.....

.....

.....

.....

.....

Thank you for participating in the study.

Investigator contact details

Name : Raessa Jabar
Student Number : 219091679
Email : raessajabar@hotmail.com

Supervisor contact details

Supervisor : Prof Desmond Govender
Supervisor Email : Govenderd50@ukzn.ac.za

You may also contact the Research Office through

HSSREC Research Office contact details

Tel : 031 260 4557/4609
Email : HssrecHumanities@ukzn.ac.za

APPENDIX B

INTERVIEW SCHEDULE - STUDENT

Thank you for participating in this interview. The information you provide will be used for the purpose of an academic research project for a Doctor of Philosophy thesis at UKZN. This interview is confidential and will not be used to identify you as an individual. I appreciate you assisting by participating in this interview.

Many thanks for your co-operation.

Performance Expectancy	
1.1	Questions
1.1.1	Did using Moodle makes it more convenient to communicate with your lecturer and fellow students? Can you elaborate on how and why if applicable?
1.1.2	What were your expectations of completing your MBA online? Has these expectations been fulfilled?
1.1.3	Are there any benefits of using Moodle for e-learning if answered yes what are some of these benefits? If No, why not?
Effort Expectancy	
1.2	Questions
1.2.1	Did you have to put more effort into learning because you were using Moodle? Why do you think so or Why Not?
1.2.2	Did the support you get assist in any way towards the effort you had to put into using Moodle?
1.2.3	What were some of the functionalities made available by the institute on Moodle? Were the functionalities difficult to use, please provide details?
1.2.4	Have you experienced any challenges using Moodle if answered yes what are these challenges?
Social Influence	
1.3	Questions
1.3.1	Was your lecturer influential towards your use of Moodle for your studies? Please provide details.

1.3.2	Did your institution make the use of Moodle compulsory due to COVID-19 and why do you think this was the case?
Facilitating Conditions	
1.4	Questions
1.4.1	Was sufficient training and support provided when you started using Moodle? Please provide detail.
1.4.2	Did you experience technical difficulties whilst using Moodle if answered yes was support readily available when experiencing technical difficulties?
Hedonic Motivation	
1.5	Questions
1.5.1	Do you enjoy using technology in particular Moodle? Please provide details.
1.5.2	Did you enjoy lectures that were delivered via the online medium? If yes why, if no why not?
1.5.3	What are your favourite parts of the learning journey?
Habit	
1.6	Questions
1.6.1	Do you use Moodle more now due to COVID? If yes why, if no why not?
1.6.2	Did using Moodle required you to change your study habits and how?
1.6.3	How did Learning occur prior to using Moodle?
1.6.4	As a student what are some of the daily activities that you are involved in on Moodle?
Price Value	
1.7	Questions
1.7.1	Have you incurred any cost using Moodle? If yes please explain details of the cost incurred?
17.2	Due to using Moodle did you incur a cost saving as there were no travel costs especially during online summative assessment (OSA)? Explain your answer?
Personal Innovativeness in the domain of IT	
1.8	Questions
1.8.1	Are you eager to access webinars via Moodle? If yes why, if no why not?

1.8.2	Are you eager to use Moodle for Online Summative Assessment (OSA) due to COVID-19? If yes why, if no why not?
Behavioural Intention	
1.9	Questions
1.9.1	Are you motivated to use Moodle for e-learning? If yes why, if no why not?
1.9.2	Have you accepted Moodle as the norm for e-learning? If yes why, if no why not?

2. Did you experience difficulties using Moodle due to connectivity issues? If yes explain your experience?

.....

.....

.....

.....

.....

Thank you for your participation in this Study.

Investigator contact details	
Name	: Raessa Jabar
Student Number	: 219091679
<u>Email</u>	: <u>raessajabar@hotmail.com</u>
Supervisor contact details	
Supervisor	: Prof Desmond Govender
Supervisor Email	: <u>Govenderd50@ukzn.ac.za</u>
You may also contact the Research Office through	
HSSREC Research Office contact details	

Tel : 031 260 4557/4609
Email : HssrecHumanities@ukzn.ac.za

APPENDIX C

LECTURER QUESTIONNAIRE

Thank you for participating in this questionnaire. The information you provide will be used for the purpose of an academic research project for a Doctor of Philosophy thesis at UKZN. This questionnaire is confidential and will not be used to identify you as an individual. We appreciate you assisting us by completing this questionnaire. Please be honest when completing the following details. Please sign to indicate that you have read this and give your informed consent to participate in this research project. You may withdraw your consent and your data at any time.

Many thanks for your co-operation.

1. Please indicate a tick next to the Gender that is applicable to you.

Male Female

2. Please indicate a tick next to the length of time you have been using Moodle.

Less than 6 Months
 6 Months to 1 Year
 1 Year to 2 Years
 2 Years to 3 Years
 More than 3 Years

3. Please indicate a tick next to how frequently you have been using Moodle.

Once a month
 More than once a month
 Once a week
 More than once a week
 Daily

4. Please indicate a tick next to the length of time working at the institution

Less than 6 Months
 6 Months to 1 Year
 1 Year to 2 Years
 2 Years to 3 Years
 More than 3 Years

5. Please indicate a tick next to the age group that is applicable to you.

- 18 to 25
- 26 to 35
- 36 to 45
- 46 to 55
- 56 to 65

6. Please indicate your level of agreement to each of the following statements by placing a tick next to the number that represents your level of agreement or disagreement with it. Kindly ensure you respond to every statement.

Performance Expectancy						
6.1	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.1.1	Using Moodle enables me to facilitate lectures better					
6.1.2	Using Moodle improves my performance as a lecturer					
6.1.3	Using Moodle increases my effectiveness as a lecturer					
6.1.4	I mark more efficiently using Moodle					
6.1.5	Using the group chat function on Moodle enables me to communicate with my students with ease					
Effort Expectancy						
6.2	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)

6.2.1	I experienced technical difficulties whilst using Moodle					
6.2.2	Using Moodle is easy					
6.2.3	I can easily use the various functionalities on Moodle					
6.2.4	I adapted to using Moodle quickly					
6.2.5	Moodle is user friendly					
6.2.6	Using Moodle is frustrating					
6.2.7	Using Moodle is time consuming					
6.2.8	I convene lectures via the Moodle platform with ease					
6.2.9	I enjoy using technology					
6.2.10	Marking is more convenient using Moodle					
Social Influence						
6.3	Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
	I use Moodle because:	(1)	(2)	(3)	(4)	(5)
6.3.1	I use Moodle because All lecturers I work with are using Moodle					

6.3.2	I will not use Moodle if Using Moodle at my institute was not mandatory					
6.3.3	Lecturers who can use Moodle efficiently are respected					
6.3.4	I use Moodle because People who influence my behaviour believe that I should use Moodle					
Facilitating Conditions						
6.4	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.4.1	Sufficient training and support were provided when I started using Moodle					
6.4.2	Technical support is available whenever I require it					
6.4.3	I require more training to use Moodle effectively					
6.4.4	I have all the necessary technological resources to enable me to use Moodle					
6.4.5	My supervisor is very supportive of the use of Moodle for my job function					

Hedonic motivation						
6.5	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.5.1	I enjoyed convening Lectures/Webinars via the Moodle platform					
6.5.2	I enjoy engaging with students via Moodle					
6.5.3	I enjoy using technology					
6.5.4	I am eager to respond to the discussion group on Moodle					
6.5.5	I enjoy using Moodle to conduct marking					
Habit						
6.6	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.6.1	I work well with technology					
6.6.2	I have used Moodle previously					
6.6.3	I previously used a Learning Managing System					
6.6.4	Using technology comes to me naturally					
6.6.5	I easily adapt to new technology					
6.6.6	I use technology frequently					

Price Value						
5.7	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.7.1	Using Moodle is beneficial to me					
6.7.2	If I incurred personal cost I would not have used Moodle					
6.7.3	Saving travelling cost encouraged me to use Moodle					
6.7.4	The data cost affected my use of Moodle					
6.7.5	I was motivated to use Moodle because of the cost saving I experienced					
Personal innovativeness in the domain of IT						
6.8	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.8.1	I am always eager to use new technology					
6.8.2	I am eager to use Moodle					
6.8.3	I am eager to conduct webinars via Moodle					
6.8.4	I am eager to conduct marking via Moodle					
6.8.5	I am eager to use the various functionalities on Moodle to					

	provide my student with an innovative learning experience					
Behavioural Intention						
6.9	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.9.1	I am motivated to use Moodle for e-learning					
6.9.2	I have accepted Moodle as the norm for e-Learning					
Content Knowledge						
6.10	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.10.1	I am the subject matter expert of the modules I lecture					
6.10.2	I have sufficient knowledge to lecture the Modules I lecture					
6.10.3	I have sufficient knowledge on both concepts and theories within the modules I lecture					
6.10.4	I create an online lesson plan for every lecturer I deliver online					
6.10.5	I have created my own content for my lectures for online delivery					

6.10.6	I keep abreast with the new developments in my field of expertise					
Pedagogical Knowledge						
6.11	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.11.1	My teaching style can be adapted for different students					
6.11.2	I can assess student learning in multiple ways					
6.11.3	I can adapt my teaching style based on what students understand or do not understand					
6.11.4	I prepare my own lesson plan for the learning journey					
Technological Knowledge						
6.12	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.12.1	I have the technical skills I need to use Moodle					
6.12.2	I have the ability to use Moodle effectively					
6.12.3	I can resolve my own technical difficulties					
6.12.4	The institute I work at provided me with sufficient					

	opportunity to work with technology					
6.12.5	I seek assistance from technical support when I encounter technical difficulties					
6.12.6	I am familiar with various methods of technology that can be used to lecture					
6.12.7	I use technology to enhance teaching and learning					
Pedagogical Content Knowledge						
6.13	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.13.1	I convene lectures via the Moodle platform weekly					
6.13.2	I make use of the group chat function on Moodle to interact with students					
6.13.3	I understand that different content areas require different teaching approaches					
6.13.4	I provided support to students in their learning journey					
6.13.5	I have adapted new learning pedagogies for teaching online					
6.13.6	I prepare my content prior to online delivery					

6.13.7	I use teaching approaches that can guide student learning and thinking in the learning journey					
Technological Content Knowledge						
6.14	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.14.1	Teaching via Moodle can assist the learning process					
5.14.2	Students understand better when using technological platforms such as Moodle					
5.14.3	I use Moodle to facilitate the content I teach					
Technological Pedagogical Knowledge						
6.15	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.15.1	I have the technical skills to teach on Moodle					
6.15.2	My teaching approaches change when using Moodle					
6.15.3	Understanding technology allows me to teach effectively					
Technological Pedagogical Content Knowledge						

6.16	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.16.1	I have the ability to integrate the use of technology when teaching content					
6.16.2	My lesson plan has a combination of content, technology and teaching approaches					
COVID -19						
6.17	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.17.1	My superiors made the use of Moodle compulsory due to COVID-19					
6.17.2	I use Moodle more now due to COVID-19					
6.17.3	I am eager to use Moodle for Online Summative Assessment (OSA) due to COVID-19					
6.17.4	I am glad that COVID-19 has forced me to use my innovativeness with my students					
6.17.5	A new teaching style had to be adopted due to COVID-19					

6.17.6	I prepare my content differently due to how I teach during COVID-19					
6.17.7	I use Moodle more frequently to facilitate the teaching of content due to COVID-19					
6.17.8	Irrespective of COVID-19 I would have used Moodle					
6.17.9	I was motivated to use Moodle as it was a secure environment compared to conducting face to face lectures during COVID-19					
Security and Trust						
6.18	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.18.1	I have the fear of being hacked whilst using the various functions and tools on Moodle					
6.18.2	I am confident that the Moodle platform is a secure platform					
6.18.3	I trust Moodle as a platform					

6. Did you experience any difficulties using Moodle? Kindly advise what were the difficulties experienced?

.....

.....

.....

.....

7. What did you use Moodle for?

.....
.....
.....
.....

8. How frequently do you use Moodle?

.....
.....
.....
.....

9. Does Moodle require additional functionalities? If yes what functionalities would you recommend?

.....
.....
.....
.....

10. Has Moodle transformed teaching and learning in Higher Education? If yes how has Moodle transformed teaching and learning in Higher Education?

.....
.....
.....
.....

11. Why do you use Moodle for e-learning in a learning journey the way they do?

.....
.....
.....
.....

12. How has COVID-19 transformed the way you teach and use Moodle?

.....
.....
.....
.....

13. Did you use Moodle for Online summative Assessment during COVID-19? If yes explain your experience?

.....
.....
.....
.....

14. Did you experience difficulties using due to connectivity issues? If yes explain your experience?

.....
.....
.....
.....

15. Should you be chosen would you be prepared to participate in a one-on-one interview regrading this topic?

- Yes
- No

Thank you for your cooperation.

You may also contact the Research Office through

HSSREC Research Office contact details

Tel : 031 260 4557/4609

Email : HssrecHumanities@ukzn.ac.za

APPENDIX D

STUDENT QUESTIONNAIRE

Thank you for participating in this questionnaire. The information you provide will be used for the purpose of an academic research project for a Doctor of Philosophy thesis at UKZN. This questionnaire is confidential and will not be used to identify you as an individual. We appreciate you assisting us by completing this questionnaire. Please be honest when completing the following details. Please sign to indicate that you have read this and give your informed consent to participate in this research project. You may withdraw your consent and your data at any time.

Many thanks for your co-operation.

1. Please indicate a tick next to the year you are currently registered for.

- Year 1
- Year 2
- Dissertation component

2. Please indicate a tick next to the Gender that is applicable to you.

- Male
- Female

3. Please indicate a tick next to the length of time you have been using Moodle.

- Less than 6 Months
- 6 Months to 1 Year
- 1 Year to 2 Years
- 2 Years to 3 Years
- More than 3 Years

4. Please indicate a tick next to how frequently you have been using Moodle.

- Once a month
- More than once a month

- Once a week
- More than once a week
- Daily

5. Please indicate a tick next to the age group that is applicable to you.

- 18 to 25
- 26 to 35
- 36 to 45
- 46 to 55
- 56 to 65

6. Please indicate your level of agreement to each of the following statements by placing a tick next to the number that represents your level of agreement or disagreement with it. Kindly ensure you respond to every statement.

Performance Expectancy						
6.1	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.1.1	Using Moodle enables me to attend webinars from the comfort of my home					
6.1.2	Using Moodle improves my performance as a student					
6.1.3	Using Moodle increases my effectiveness to study					

6.1.4	I preferred to receive my results via Moodle timeously					
6.1.5	Using the group chat function on Moodle enables me to communicate with my lecturer with ease					
6.1.6	My Expectations of completing my MBA online was fulfilled to a greater extent because of the use of Moodle					
6.1.7	Moodle makes it more convenient to communicate with my lecturer and fellow students					
6.1.8	I preferred to use Moodle to submit projects and assignments					
Effort Expectancy						
6.2	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.2.1	I experienced technical difficulties whilst using Moodle					
6.2.2	Using Moodle is easy					

6.2.3	I can easily use the various functionalities on Moodle					
6.2.4	I adapted to using Moodle easily					
6.2.5	Moodle is user friendly					
6.2.6	Using Moodle is frustrating					
6.2.7	Using Moodle is time consuming					
6.2.8	I enjoy using technology like Moodle					
6.2.9	Using Moodle has been challenging					
6.2.10	Using Moodle enables me to submit projects and assignments faster					
6.2.11	Receiving my results via Moodle is more efficient than the conventional methods					

Social Influence						
6.3	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.3.1	I use Moodle because other students use it too					
6.3.2	I use Moodle because the institution prefers me to use Moodle					
6.3.3	Students who can use Moodle efficiently are respected					
6.3.4	I use Moodle because My lecturers are very supportive of the use of Moodle for my studies					
6.3.5	People who influence my behaviour believe that I should use Moodle					
Facilitating Conditions						
6.4	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.4.1	Sufficient training and support were provided when I started using Moodle					

6.4.2	Technical support is available whenever I require it					
6.4.3	I require more training to use Moodle effectively					
6.4.4	I have all the necessary technological resources to enable me to use Moodle					
Hedonic motivation						
6.5	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.5.1	I enjoyed attending lectures/webinars via the Moodle platform					
6.5.2	I enjoy engaging with my lectures via Moodle					
6.5.3	I generally enjoy using technology					
6.5.4	The group chat function is useful					
Habit						
6.6	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.6.1	I work well with technology					

6.6.2	I have used Moodle previously to some extent					
6.6.3	I previously used a Learning Management System					
6.6.4	Using technology comes to me naturally					
6.6.5	I easily adapt to new technology					
6.6.6	I use technology frequently					
6.6.7	I Login to Moodle daily					
6.6.8	Using Moodle required me to change my study habits					
6.6.9	I use Moodle to study on a weekly basis					
6.6.10	I make use of the group chat function on Moodle often					
Price Value						
6.7	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.7.1	Using Moodle is beneficial to me					
6.7.2	If I incurred personal cost I would not have used Moodle					

6.7.3	Saving travelling cost encouraged me to use Moodle					
6.7.4	The data cost affected my use of Moodle					
6.7.5	I was motivated to use Moodle because of the cost saving I experienced					
Personal innovativeness in the domain of IT						
6.8	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.8.1	I am always eager to use new technology					
6.8.2	I am eager to use Moodle					
6.8.3	I am eager to access webinars via Moodle					
6.8.4	I am eager to use the various functionalities on Moodle					
Behavioural Intention						
6.9	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.9.1	I am motivated to use Moodle for e-learning					
6.9.2	I have accepted Moodle as the norm for e-learning					

COVID -19						
6.10	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.10.1	I am glad that COVID-19 has forced me to use Moodle					
6.10.2	I use Moodle more now due to COVID-19					
6.10.3	I am eager to use Moodle for Online Summative Assessment (OSA) due to COVID-19					
6.10.4	I had to adopt a new style of learning due to COVID-19					
5.10.5	Irrespective of COVID-19 I would have used Moodle					
6.10.6	I was motivated to use Moodle as it was a secure environment compared to conducting face to face lectures during COVID-19					
Security and Trust						
6.11	Statement	Strongly Disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)
6.11.1	I have the fear of being hacked whilst					

	using the various functions and tools on Moodle					
6.11.2	I am confident that the Moodle platform is a secure platform					
6.11.3	I trust Moodle as a platform					

7. Did you experience any difficulties using Moodle? Kindly advise what difficulties did you experience?

.....
.....
.....
.....
.....

8. What did you use Moodle for, mostly?

.....
.....
.....
.....
.....

9. Does Moodle require additional functionalities? If yes what functionalities would you recommend?

.....
.....
.....
.....
.....

10. Has Moodle transformed teaching and learning in Higher Education? If yes how has Moodle transformed teaching and learning in Higher Education?

.....
.....
.....
.....
.....

11. Why do you use Moodle for e-learning in a learning journey the way they do?

.....
.....
.....
.....
.....

12. How has COVID-19 transformed the way you study and use Moodle?

.....
.....
.....
.....

13. Did you use Moodle for Online summative Assessment during COVID-19? If yes explain your experience?

.....
.....
.....
.....

14. Did you experience difficulties using due to connectivity issues? If yes explain your experience?

.....
.....
.....
.....

15. Should you be chosen would you be prepared to participate in a one-on-one interview regrading this topic?

- Yes
- No

Thank you for your cooperation.

You may also contact the Research Office through

HSSREC Research Office contact details

Tel : 031 260 4557/4609

Email : HssrecHumanities@ukzn.ac.za

APPENDIX E

CONSENT LETTER QUANTITATIVE DATA COLLECTION

Dear Participant

You are invited to participate in a research study, titled **Using Moodle for e-learning in a learning journey at a Private Distance Higher Education Provider**.

The study is being conducted by Raessa Jabar [REDACTED] (raessajabar@hotmail.com), a registered PhD student at UKZN Edgewood, School of Humanities.

The purpose of this study is to critically analyse the use of Moodle for e-learning in a learning journey at a Private Distance Higher Education Provider.

Your participation in the study will contribute to a better understanding of using Moodle for e-learning in a learning journey at a Private Distance Higher Education Provider.

You are free to contact the researcher at the above phone number to discuss the study. If you agree to participate please note:

- The Questionnaire will take approximately 15 minutes of your time;
- Participation is voluntary;
- Participation will not be remunerated; and
- Responses will be treated confidentially

Risks/Benefits/Confidentiality of Data

There are no known risks. There will be no costs for participating, nor will you benefit from participating. You will complete the questionnaire as anonymous.

Participation or Withdrawal

Your participation in this study is voluntary. You may decline to answer any question and you have the right to withdraw from participation at any time.

Contact

If you have any questions about the study, contact the researcher **Raessa Jabar** at



Thank you

APPENDIX F

CONSENT LETTER QUALITATIVE DATA COLLECTION

Dear Participant

You are invited to participate in a research study, titled Using Moodle for e-learning in a learning journey at a Private Distance Higher Education Provider. The study is being conducted by Raessa Jabar [REDACTED] (raessajabar@hotmail.com), a registered PhD student at UKZN Edgewood, School of Humanities.

The purpose of this study is to critically analyse the use of Moodle for e-learning in a learning journey at a Private Distance Higher Education Provider.

Your participation in the study will contribute to a better understanding of using Moodle for e-learning in a learning journey at a Private Distance Higher Education Provider.

You are free to contact the researcher at the above phone number to discuss the study. If you agree to participate please note:

- The interview will take approximately one hour of your time;
- Participation is voluntary;
- Participation will not be remunerated; and
- Responses will be treated confidentially
- The interview will be recorded via the zoom platform

Risks/Benefits/Confidentiality of Data

There are no known risks. There will be no costs for participating, nor will you benefit from participating. You will complete the questionnaire as anonymous.

Participation or Withdrawal

Your participation in this study is voluntary. You may decline to answer any question and you have the right to withdraw from participation at any time.

Contact

If you have any questions about the study, contact the researcher **Raessa Jabar** at



Thank you

APPENDIX G

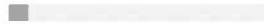
PLAGIARISM REPORT



Plagiarism Checker X - Report

Originality Assessment

8%



Overall Similarity

Date: Feb 24, 2023
Matches: 4954 / 63713 words
Sources: 118

Remarks: Low similarity detected, check with your supervisor if changes are required.

Verify Report:
Scan this QR Code

