INSTITUTIONAL INFLUENCES ON THE USE OF BLENDED LEARNING APPROACH AMONG BACHELOR OF EDUCATION STUDENTS IN SELECTED PUBLIC UNIVERSITIES IN KENYA

BY

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DECLARATION

Declaration by Candidate

I declare that this is my original work and has not been presented in any other university or any institution of higher learning for examination/academic purposes to the best of my knowledge.

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Declaration by the Supervisors

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DEDICATION

This study is dedicated to Almighty God who gave me a healthy mind and body, my parents who found it necessary and sacrificed their resources to take me to school, my wife and children who have always been patient and supportive of me through this journey and my friends who encouraged me pursue the doctor of philosophy course.

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ABSTRACT

Blended Learning has undisputedly proved to deliver quality education 'anywhere' and 'anytime.' However, these advantages are minimally tapped by many universities in Kenya. This study aims to assess the institutional on the implementation of blended learning as an approach for teaching and learning among Bachelor of Education students in selected public universities in Kenya. The research objectives were to establish the influence of learners' characteristics, lecturers' characteristics, and institutional preparedness on the use of blended learning for teaching and learning; and to develop a pedagogical model that explain institutional characteristics that influence the usage of blended learning for teaching and learning in public universities in Kenya. The study is grounded on Bandura's Social Learning Theory. Learning, according to Bandura's theory, is by looking, imitating, and modeling which are functions of motivation, self-efficacy, wellbeing, reinforcement or reward, and environment. This research used Pragmatism paradigm and exploratory sequential mixed research design to harvest actionable and relevant knowledge that solve the problem of low uptake of blended learning in public universities. Third-year bachelor of education students (N=6655), lecturers (N=218), heads of departments (N=8), and deans (N=8) in public universities in Kenya form the study population. The researcher used various sampling techniques because of the multiple sources of data (students, lecturers, and heads of department). Multiple-stage sampling and the Nassiuma formula were used to select 3rd-year education students (n=218) and lecturers (n=49). Universities (n= 8) and heads of departments (n=8) were chosen using purposive sampling. In order to mine data on institutional preparedness and blended learning in public universities, semi-structured questionnaires were used on students and lecturers. Interview guides were used on heads of departments and observation checklists for direct observation of infrastructure. Sequentially, the quantitative inferences were aligned to qualitative inferences alongside desk review findings. Data was descriptively analyzed in the form of frequencies, percentages, mean, and standard deviation. Structural Equation Modeling helped in path analysis facilitated by Amos version 24. Qualitative data was analyzed using content analysis techniques. The technique involved transcription and data coding using excel. The researcher drew meaning and structures of the transcribed data with objectivity which were clustered under relevant themes and research questions. The study found that students positively accepted the use of blended learning (M=5.08, SD=2.03), and lectures weakly supported blended learning M=4.7, SD=1.87. About institutions, participants weakly agreed that universities had a conducive social learning environment for blended learning (M=4.82, SD= 1). On the pedagogical model, the study discovered three significant paths: University preparedness and students' perception (regression estimate = .399; P>.05; University preparedness and students' self-efficacy (regression estimates = .389; P>.05); and blended learning adoption and students' perception (regression estimates = .55; P>.05). Students and lecturers responded that "Poor internet connection," and "Lack of appropriate infrastructure and equipment," as the main barriers. In conclusion, blended learning was an indispensable approach for 21st-century classrooms and universities' preparedness was crucial for its full implementation. The study recommended that students should undertake ICT skills training courses in the first year first semester; lecturers should be motivated and public universities create effective infrastructure, and policies and retool the faculty members. Further studies should be done on the use of Blended learning in private universities and secondary schools. The findings will help the university councils to create policies on blended learning and the Government of Kenya to adequately invest in ICT infrastructure in public universities.

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ABBREVIATIONS AND ACRONYMS

B.ED	Bachelor of Education
BL	Blended learning
COD	Chair of department
CUE	Commission for Higher Education
EHEA	European Higher Education Area
EMM	European Maturity Model
4IR	Fourth Industrial Revolution
HELAM	Hexagonal E-learning Assessment Model
ERT	Emergency Remote Teaching
HPL	How People Learn
ICT	Information Communication and Technology
LMS	Learning Management System
MoE	Ministry of Education
MoEST	Ministry of Education Science and Technology
NACOSTI	National Council of Science, Technology, and Innovation
ODeL	Open Distance and E-Learning
SBLEQ	Student Blended Learning Experience Questionnaire
SPSS	Statistical package for social sciences
TAM	Technology Acceptance Model
TBLEQ	Teacher Blended Learning Experience Questionnaire
UNESCO	United Nations Educational, Scientific and Cultural Organization

CHAPTER ONE

INTRODUCTION TO THE STUDY

1.0 Introduction

Blended learning refers to a hybrid approach to educational instruction that involves both face-to-face and virtual platforms of teaching and learning. Blended learning (BL) has become popular among teachers and students alike. Various empirical studies have consistently found that mixing face-to-face and virtual aspects of teaching and learning yielded optimum learning outcomes among adult learners in the postmodern era (Mitchell, Shiu, Enemark& Kavanagh, 2020; Norting, Petersen & Balle, 2018; Ashraf, et al., 2021; Galvis 2018). Despite this, the adoption and usage of blended learning among universities in developing countries, where a highly skilled workforce is needed most, have yet to be robustly researched (Kara, Tanui, & Kalai, 2020). This study, therefore, sought to establish the institutional influences on the adoption of blended learning approach in selected public universities in Kenya.

Chapter one is an introduction to the study. In the research protocol for empirical research, the first chapter explains the research setting (Majid, 2018), the topic, and the importance of the study (Syeda, 2021). It consists of the background, problem statement, purpose, objectives, and the questions guiding the research. In addition, it has justification and significance of the study, conceptual framework, and definition of terms. The background to the study defines the topic; what blended learning is and how institutional capabilities are necessary for adopting it for the effective delivery of curriculum in public universities in Kenya. It also analyses earlier studies that have been done since 2018 by citing their weaknesses in content, methodology, sampling, and data analysis to warrant further studies to fill the gaps.

Finally, the chapter defines key terms as used in the study. Defining blended learning has been elusive to many scholars. Various scholars have variedly defined it. In one instance, blended learning was defined as the mixing of classroom-based interventions with online interventions to bring about and sustain learning (Boelens, VanLear, DeWever, & Elen, 2015). Another is 'hybrid learning' or 'flipped classroom' that mixes online with face-to-face learning (Muthuraman, 2018). Others defined it as the intermixing of classroom and online teaching; a combination of different media for motivation and meaningful learning. Blended learning is the entwining of the e-learning approach into courses that are primarily face-to-face. Blended Learning integrated classroom teaching with online experiences (ibid).

1.1 Background to the Study

The 21st century also known as the postmodern era is another Copernican revolution with an unprecedented paradigm shift on how the curriculum is delivered in learning institutions. In higher education, the change is from face-to-face and online course delivery to Blended Learning (BL). The Fourth Industrial Revolution (4IR) era has virtualized education; entrenching a cyclical understanding of time and a new social order of 'self-in-relation.' The new worldview has immensely disrupted traditional education structures, theories, and instructional methods. A postmodern educator is hence challenged to explore new schooling techniques that fix new and complex schooling problems. Blended learning, therefore, is an expanded education delivery approach with a 'technological fix' in the postmodern era that responds to new millennium learners' needs (Kaniaru, Karani, Mirie, & Nyangina, 2019), by 'deterritorializing' classrooms, and reducing students' in-class seat time. Blended learning leveraged the power of information technologies to balance face-to-face and online teaching methods.

Universities as centers of teaching and learning for highly skilled manpower have not been spared, either. With the advent of 4IR, new and unprecedented technologies have emerged that have pushed face-to-face lecturing to relegation and obsoleteness. The way of learning and teaching had also to change because students' learning and communication behavior in and out of school changed. For instance, computers, tablets, and Smartphone technologies shortened learners' attention period and information retention. Lecturing as a face-to-face and classroom-based teaching method has been used in universities for ages. However, the method is passive and frustrating students' critical thinking. According to Okaz (2015), most learners at the university found class-confined teaching to be boring, unsupportive, and irrelevant to career requirements in the marketplace. As a result, the class attendance rate was low.

Lecturers have come to agree that paying attention solely to face-to-face learning disallowed collaborative learning and engagement of high-level thinking (Okaz, 2015). These have compelled lecturers to take a paradigm change from traditional teaching methods to blended learning to accommodate such changes and challenges of the 21st-century classroom. BL affords learners and lecturers the convenience of learning and teaching online without losing out on social interaction benefits provided by on-campus learning (Hawi, Heinrich, & Lal, 2021). As students discovered their strengths, weakness, and carrier paths on their own, lecturers afforded more time to do research and improve their educational careers (Wang, Liu, & Tu, 2020). The internet offered connectivity between the student and lecturer; the student with other professionals on professional list servers. In addition, the platform provided journals, digital library materials, and online lecture material, too. Consequently, it improved retention and students' academic performance (Muthuraman, 2018). It is a new traditional model' of learning propelled by technological advancements shaping the classroom of the 21st

century which is characterized by a knowledge explosion, growing demand for education, and overcrowded lecture halls (Zurita, Husbun, & Jerez, 2015).

Studies show that BL is gaining momentum as a form of educational instruction in institutions of higher learning (Gaebel, Zhang, Stoeber, & Morrisroe, 2021). On its outbreak of COVID-19, conventional learning activities such as physical classrooms closed worldwide and opened the doors for blended learning as an alternative method of teaching and learning (UNESCO, 2020). The approach restricted teacher-learner physical interaction as a stop mechanism to COVID-19 spread in education institutions (Adel & Dayan, 2020). COVID-19 control requirements and the emergence of digital and social media turned blended learning into a necessity (Marunic & Glazar, 2015). Although blended learning was an inevitable method of teaching and learning in education reform, Feneding (2009) warned that balancing face-to-face and online teaching methods was paramount. Not heeding such warning would lead an education system into a pitfall of technological determinism and legitimizing the marketplace logic.

COVID-19 ushered in a new method of education instruction that reinforced BL implementation (Gaebel, Zhang, Stoeber, & Morrisroe, 2021). Face-to-face teaching became a public health risk because it exposed students to COVID-19 (Abbaca-Tuguic, 2021). On its outbreak, conventional learning activities such as physical classrooms closed worldwide and opened the doors for blended learning as an alternative approach to teaching and learning (UNESCO, 2020). By the 20th day of March 2020, all universities in Kenya had closed shop, and no teacher-learner physical interaction was allowed. COVID-19 spread necessitated quick uptake of the blended learning approach by education institutions (Adel & Dayan, 2020). Apart from mitigating COVID-19 transmission, blended learning allowed interaction, flexibility, customized assessment

forms, and reduced dropout rates. Blended learning leveraged the power of information technologies to balance face-to-face and online teaching methods. The COVID-19 control requirements opened an opportunity for the emergence of digital and social media as a necessary option for learning (Marunic & Glazar, 2015). Despite BL proving to be an inevitable means of meeting both public health and learning needs, Kathula (2021) averred that most universities were found unprepared at the onset of COVID-19. Feneding (2009) warned that complementing face-to-face teaching with online teaching methods was paramount. Not heeding such warning would lead an education system into a pitfall of technological determinism and legitimization of the marketplace logic (Ferneding, 2009).

The global information revolution has forced countries to reform education and curricula. Education has been reformed to produce a workforce with the skills required by the postmodern market. Such quality human capital dictates a good schooling system and teaching and learning approach that is compatible with the technological and social milieu of the new era. As the world goes through the revolution of information technology, the education sector has undergone tremendous changes including blending ICT with face-to-face means of delivering courses (Mwendwa & Syomwene, 2019). Various countries, universities, staff, and students have differently interpreted and tapped into opportunities offered by technology to enhance learning.

Many countries have reconceptualized their education and curricula delivery to the advantage of available information and computer technologies as well as the Internet of things to create a connected learning community. Because of its benefits, many countries like the UK, Canada, New Zealand, Australia, and the USA now lead in leveraging blended learning for improved learning outcomes (Marah, 2010). Plus, with proven better learning outcomes among adults, blended learning has become a strategic

alternative for universities. These forces and advantages have caused a rapid increase in blended learning in universities, despite teachers resisting its adoption. Graham (2013) observed that diffusion has also permeated K-12 schools and corporations making blended learning an effective knowledge delivery method for the future.

According to the US Department of Education (2017), technology in blended learning has transformed an instructor into a co-learner whose role is supportive and stretches beyond classroom walls. To tap into the blended learning benefits, institutions need to rethink and train teachers/lecturers in techno-pedagogical skills to teach with technology; induct learners to be active, creative, and ethical participants; focus on building infrastructure and seamless systems that foster connectivity between teacher-learner, learner-learner, learner-content, teacher-teacher and content-content (US Department of Education, 2017).

Findings of a study on digitally supported educational instruction in institutions of higher education in 48 countries showed that 75% of institutions acknowledged the importance of blended learning as a means of course delivery. Across the European Higher Education Area (EHEA), 90% of higher education institutions used blended learning for library services, and 65% used Emergency Remote Teaching (ERT) as a response to COVID-19. Students and lecturers highly regarded blended learning, institutions heavily invested in equipment and infrastructure, and professional development.

However, the approach suffered from strained funding, the inability to design a concerted institutional approach, and inadequate staff (Gaebel, Zhang, Stoeber, & Morrisroe, 2021). An interview with students and staff across academic years found that universities in Europe faced challenges in using blended learning when COVID-

19 was on. Specifically, they faced difficulties managing potential learning losses, safely reopening campuses, and ensuring that no vulnerable student was left behind (Kiezenbrink, 2021). In the Netherlands blended learning served as a tool for professional development. Universities leveraged online videos, webs, discussion forums, and mobile apps for example, to mix with face-to-face to deliver training content to land professionals. It was acknowledged as having various learning options that fit various students; giving way to materials being shared and reused among learners (Mitchell, Shiu, Enemark, & Kavanagh, 2020).

In Australia, Madina (2018) observed the evolution of blended learning from the conception stage. While studying blended learning in higher education language teaching, Madina (2018) observed that Australia had reached a level of blended learning as both a 'delivery approach' and an 'opportunity' (Madina, 2018). It was an approach that leveraged available and emergent technologies to enhance interactions in learning and teaching. At the same time offered an opportunity to redesign, schedule, and deliver courses. Madina (2018) averred that blended learning in Australian Universities stopped being an *addition* of ICT to traditional learning methods but '*bricks and clicks*' that fused physical and virtual instruction teaching and learning approaches. A synthesis of findings on blended learning activities and projects in Victorian government schools between 2006 and 2011 revealed that blended learning was not taken as a mode of learning but an approach that offered educators and trainers innovative educational strategies. With the advent of UltraNet in 2010, the Victorian state in Australia exerted pressure on teachers to harness the benefits that online teaching provided.

In UK universities, a review of 300 documents on blended learning revealed that the approach was largely used as a virtual learning media that provided supplementary

resources for courses that were traditionally delivered. Few cases of transformative course designing using blended learning were observed, too (Sharpe, Roberts, Benfield, & Francis, 2006). Though staff still faced challenges, students were overwhelmingly positive about blended learning. Whereas students harnessed the blended learning approach by tapping into online resources via personal electronic gadgets, lecturers used it in course redesigning. Sharpe, Roberts, Benfield, and Francis, (2006) observed that lecturers redesigned courses by analyzing course content, gathering student feedback, undertaking the design as a team, designing courses guided by their underlying principle, and making the course interactive over the years.

Canadian universities also moved beyond on-campus classroom curricula delivery and adopted blended learning to reach as many students as possible. By 2016, most Canadian universities (85%) and faculty members (87%) used a blended learning approach for course delivery (Power, 2020). The universities mostly used Learning Management Systems(LMS), Blackboard, and Desire2Learn platforms. Others included Kistsews, webinars, wikis, online cafes, WebQuest, Facebook, blogs, and Twitter (Rogers, Usher, & Kaznowska, 2011). Despite the high rating in the uptake of blended learning, there were still hiccups such as a lack of policy support, 'value gaps,' inadequate resources, and unskilled personnel, which motivates this study to establish in Kenya.

In New Zealand, blended learning was developed as a smart method of learning activities for higher learning institutions. The COVID-19 pandemic accelerated the uptake of the blended learning approach to flatten the curve by reducing human interactions in institutions of learning (Adel & Dayan, 2020). In a survey study of how teachers balanced online and face-to-face instruction, it was discovered that universities in New Zealand had not maximized the advantages of blended learning. Though

blended learning was highly valued by instructors, courses needed to be redesigned to fit into the blended learning approach (Jeffrey, Milne, & Suddaby, 2014).

In developing nations, the uptake of blended learning is still low. In the last three decades, the East African region experienced an explosion in the need for education. Young, et al., (2021) found that there was a high and growing appetite for tertiary education, and blended learning was much needed to enable the growing numbers of students to access education. However, most institutions lacked capacities such as infrastructure, equipment, and funding to implement blended learning; hence the need to establish the current position in public universities. At a time, such as this, where the aims of higher education (i.e., improvement of education, strengthening of research, contributions to society, and improvement of management) are unmet, Kenya as a developing country urgently needed it. Blended learning proved to effectively respond to the diverse educational needs of adult learners at the university level. These needs included different courses of study, distance to the campus, promotion of private education, and regionalism in higher education. The second aim of higher education was to improve researchers' capacity and environment. Beyond teaching, BL exhibited remarkable learning outcomes in supervising postgraduate students writing their research projects. The third aim was to contribute to society. Higher education institutions, particularly universities, have been accused of missing out on issues affecting society today. On this basis, universities put research and extension top of their agenda list. Another aim of higher education in Kenya was that blended learning would help establish the legal, institutional, and financial framework. Universities were expected to lead in supporting policy formulation, strengthening governance and management functions, and broadening the financial income base.

Education reforms in Kenya aimed at making the country prosperous, globally competitive, and middle-incomed economy by 2030 (Republic of Kenya, 2007). Ambition to become a middle-income economy by 2030 needed a highly skilled workforce; a function of a relevant education system that was responsive to the postmodern market needs. Conscious of a highly mechanized world and education's role in socio-economic transformation, Kenya chose a path of intensifying applications of emerging technologies in delivering knowledge, skills, and attitudes to students. In addition, the country took a line of light from the old curriculum and instructional methods that were exam-based to one that focused on competencies for a globally competitive market. The *Kenya Vision 2030* envisioned achieving this by creating awareness of ICT benefits, building technical capabilities of educators in higher institutions of learning, improving infrastructure, and strengthening networking and collaboration. In evaluation of the above, this study sought to find out the extent to which these things were achieved and how they impacted learning.

Universities as higher institutions of learning have been challenged to intensify the use of new technological options in providing quality and relevant education for economic transformation. Addressing the challenges of the postmodern era required universities to share resources, be virtually networked; collaborate in designing educational programs, and address industry needs (Pavla, Hana, & Jan, 2015). This is only possible if universities move away from the traditional pedagogical systems of self-contained universities to the collaborative, flexible, and innovative option of blended learning. Therefore, the study established the situation as regards these things.

The Ministry of Education Science and Technology (MoEST) in Kenya, through the *National Education Sector Strategic Plan 2018-2022* has orchestrated deliberate education programs to reform public universities' approach to delivering requisite

skills, knowledge, and attitudes to the student. The programs include training lecturers in pedagogy and modern delivery methods for global competitiveness, upgrading and expanding infrastructure, establishing the Open University of Kenya, reviewing the quality and recommendations for Open, Distance, and E-learning(ODEL), digitizing contents of university programs, adjusting funding policy to accommodate ODEL students (MoEST, 2018) These interventions are aimed at facilitating the rapid shift of public university education systems towards more innovative educational delivery known as blended learning. However, the public universities in Kenya faced diminishing financing from the government and inadequate technological resources against a high increase in student enrolment (Hawi, Heinrich, & Lal, 2021).

Regarding the CUE requirements, a large amount of evidence-based research observed that students, lecturers, and university management were ill-prepared for the new way of pedagogy. Blended learning was sidelined in public universities despite being a proven timely and crucial panacea for 21st-century classroom challenges (Matheos & Cleveland-Innes, 2018). It beckons research, therefore, to deepen an understanding of students, lecturers, and institution preparedness in accepting BL as a new way of instruction for public universities where demand for higher education was exploding and resources were constrained (Mushemeza, 2016).

Implementing BL in institutions of learning, therefore, expanded access to education hence achieving the ‘education for all goal and the Kenya national education goals of developing the nation by addressing social, economic, technology, and industry needs. Education is also aimed at developing individuals and self-fulfillment as well as building social equality and responsibility (Mwaka, Kafwa, Musamas, & Wambua, 2013). Equally, it was contemplated in the Universities Act and MoEST plan to make quality and relevant higher education accessible equitably to all (MoEST, 2018).

Further, CUE (2014) emphasized quality teaching and learning for universities to churn out a workforce that would meet market needs. This goal was followed up in the CUE's 2nd midterm Plan 2013-2017. According to CUE (2014), innovation in pedagogical approaches was the means to generating globally competitive human capital for the 21st-century job market. Outrightly, the CUE policy does not refer to blended learning. However, it targeted to shape learners', lecturers', and institutional characteristics in improving the Open, Distance, and E-learning (ODEL) program; a key component of BL. The policy outlined for the universities a raft of guidelines and standards to be followed while implementing the program. With the advent of COVID-19, most universities have been forced to enforce the standards in LMS-supported learning alongside face-to-face pedagogy. The level to which this has been executed to achieve quality teaching and learning in public universities is not succinctly clear, hence forming the reason for the investigation.

1.2 Problem Statement

The low uptake of blended learning (BL) in public universities in Kenya, despite its potential benefits, and the insufficient understanding of factors inhibiting its adoption was the problem of this research. Ideally, BL should have become the "new normal" in teaching and learning, replacing traditional face-to-face approaches, and its widespread adoption would improve education quality (Oduor, Ayiro, & Boit, 2018). Following the COVID-19 pandemic, BL was expected to offer a safe learning environment (Saboowala & Mishra, 2019). However, even though the pandemic made BL a necessity many universities have reverted to face-to-face methods as the crisis subsided, indicating a significant relapse. This study, therefore, aims to investigate the reasons behind this regression.

The slow phase-out of traditional face-to-face teaching is particularly alarming, especially given the Kenyan government's progress in ICT policy implementation for higher education (Tarus, Gichoya, & Muumbo, 2015). Despite the potential benefits, public universities still rely heavily on classroom-based instruction, a practice that is increasingly impractical due to socio-economic barriers that prevent many students from regularly attending classes (Hawi, Heinrich, & Lal, 2021). Additionally, the rapid increase in student enrollment and the pressure on university infrastructure make the continued reliance on outdated teaching methods unsustainable. Not adopting BL worsens the problem, contributing to declining quality and relevance in higher education (MoEST, 2018). Kara, Tanui, and Kalai (2020) predict that universities resisting modern teaching methods are producing an inadequately prepared workforce that is ill-equipped for the demands of a globally competitive job market, with lecturers being key to this inadequate preparation.

BL has shown to facilitate active and flexible learning, particularly benefiting adult learners who face family and work-related constraints (Bruggeman et al., 2021). For these learners, BL offers the flexibility to balance education with other responsibilities, promoting educational and career advancement. Moreover, BL has been associated with improved learning outcomes, highlighting its potential as an effective educational strategy. Implementing BL in low-income universities, in particular, could address challenges faced by lecturers, such as managing large classes and catering to diverse student needs, as well as the demand for accountability and the need to produce competent graduates (Ayere, 2020). These challenges have prompted a shift in how lecturers and students exchange information (Kathula, 2021).

Despite these advantages, the situation in Kenyan universities remains poorly understood. While it is suspected that many universities have not fully embraced BL as an educational strategy, the factors influencing its slow uptake have not been thoroughly documented. Knowledge about the adoption levels of BL by lecturers, students, and institutions is still limited, especially in public universities (Oduor, Ayiro, & Boit, 2018). While some universities have incorporated BL to some extent, there is a need to explore the challenges faced during the implementation process. This research aims to bridge these gaps, providing a better understanding of the barriers to BL adoption and identifying ways to improve the readiness and capacity of students, lecturers, and universities to embrace this teaching and learning approach in Kenyan public universities.

1.3 Research Purpose and Objectives

1.3.1 Research Purpose

The purpose of the study was to examine the institutional influences on implementation of blended learning methods for teaching and learning among students enrolled in Bachelor of Education (B. ED) in selected public universities in Kenya.

1.3.2 Research Objectives

Objectives in the research were intended to guide the researcher in discovering answers to research questions (Islam & Samsudin, 2020). In the effort to find accurate information on the variables of this research, the researcher was guided by specific objectives as shown below.

1) To determine the effect of learners' characteristics on the use of blended learning for teaching and learning among B. ED students in public universities in Kenya;

2) To assess the influence of lecturers' characteristics on the use of blended learning for teaching and learning among B. ED students in public universities in Kenya; and
3) To analyze the effect of institutional influences on the use of blended learning for teaching and learning among B. ED students in public universities in Kenya;
4) To develop a pedagogical model that explains institutional preparedness that influence the implementation of blended learning for teaching and learning among B. ED students in public universities in Kenya.

1.4 Research Questions

1. How do learners' characteristics influence the use of blended learning for teaching and learning among B. ED students in public universities in Kenya?
2. To what extent do lecturers' characteristics influence the use of blended learning for teaching and learning among B. ED students in public universities in Kenya?
3. To what extent do institutional preparedness influence the use of blended learning for teaching and learning among B.ED students in public universities in Kenya?
4. What pedagogical model best explains institutional influences on the implementation of blended learning for teaching and learning among B. ED students in public universities in Kenya?

1.5 Justification of the Study

New-era schooling problems are too complex to be solved by the old curricular delivery methods. The 21st century is considered a technological era and technology shapes the classroom (Kathula, 2021). Therefore, the postmodern educational problem requires the power of information technologies. Solutions to 21st-century classrooms rest in connectivity, creativity, collaboration, and digital technologies (Zurita, Husbun, &

Jerez, 2015). Blended learning is a shift from the old learning approach that leverages technological options to address the problem of overcrowded lecture halls, and COVID-19 spread and make up for weakness embedded in the old face-to-face learning approach. It was important to study blended learning in universities because it conveniently addresses the postmodern classroom challenges through the use of readily available technologies without losing on the benefits of face-to-face.

Quality education as Sustainable Development Goal (SDG) 4, calls for inclusivity and equity in education as well as lifelong learning opportunities for all. As time draws towards 2030, countries the world over have intensified efforts towards investing in education delivery systems such as blended learning that leaves no one behind. In the 2015 global declaration, the international community adopted technology-based learning as one of its strategic action plans in Sustainable Development Goal 4 which would result in human advancement and sustainable development (Odusola, 2017). By 2030, the world target is to substantially increase the quantity of youth and adults with appropriate skills in ICT that enable collaboration, creativity, and the use of digital technologies for employment, decent jobs, and entrepreneurship. Quality education is at the core of Kenya's overall development strategies contained in the *Big Four Agenda* and the *Kenya Vision 2030*. The development strategies believes in the competencies of highly trained human capital which was a function of education and effective delivery systems. By studying blended learning as an effective delivery system, the study will immensely contribute to the socio-economic development agenda globally and locally.

Studying BL and the perception of stakeholders provides a pathway that improves quality in education. Hawi, Heinrich, and Lal (2021) observes that Kenyans have increasingly picked up interest in education but because of socioeconomic restraints,

they cannot afford to regularly attend school. Most of those on campus miss attending class because of the scarcity of seating space. Consequently, they resort to informal learning circles with the aid of smartphones to achieve their learning goals. A study conducted at Tom Mboya University College (TMUC), among 114 students learning through BL, revealed that the use of smartphone technologies was an important strategy in the realization of quality education for all (Hawi, Heinrich, & Lal, 2021). Therefore, research in blended learning immensely contributes to inclusivity, quality, and expansion in participation in higher education by vulnerable communities. This means that research such as this allows everybody (poor or rich) access education without having to worry much about school fees and other expensive school levies at all.

Blended learning facilitates the achievement of the national education goals of Kenya. The Kenyan Eight education goals are anchored on the belief that education is a basic right to be provided for every Kenyan for political equality, unity of the nation, social justice, human dignity, and socioeconomic and technological development. In addition, education inculcates respect for diversity of culture and religion, fights ignorance, disease, and poverty as well as afforded equal opportunities for all citizens (Mwaka, Kafwa, Musamas, & Wambua, 2013). Guided by the goals, the government of Kenya prioritizes universal access to basic education, increase in enrolment, retention, and transition rates, improves relevance and quality of education, and responds to labor market demands. Integrating face-to-face with the power of postmodern technologies, blended learning proves effective in delivering education cheaply and conveniently to a larger coverage and population. Universities being a converging point of citizens (students and lecturers) from all walks of the nation need to be well-equipped to deliver curricula with national goals to all members. This study is therefore important because it focuses not only on broadening learning through blending online technologies with

physical classroom encounters, but also on building capacities for universities as centers of interconnectivity, collaboration, sharing resources, and nationhood.

Studying blended learning expands education to accommodate adult learners' challenges. According to the American Society for Training and Development, BL is not only a promising model for the future but also a 'top trend' in course delivery among adult learners (Graham, 2013). Adult learners are highly self-regularized and oscillate between work and family duties. These roles would keep them out of school in case schooling is solely face-to-face learning. This makes it important to invest in studies that allow quick adoption of models that accommodate adults' busy schedules and affords them lifelong learning opportunities.

Studying blended learning improves the management of diversity among adults. Studying blended learning helps instructors handle learners of different genders, cultures, learning preferences, and languages. Among 50 students randomly selected across disciplines in Owerri-Nigera, blended learning enabled learners to study anywhere and at their own pace which helps them balance between work and school (Ezekoka, 2015). New technologies provide blended learning with tools that allow negotiated learning, connectivity and accommodated students with different learning needs. Recent learning-supported technologies such as Learning Management Systems (LMS) has different features that manage students with diverse orientations and capabilities. Such features included LMS Moodle which is used to post reading materials, videos, wikis, forums, and quizzes. The features permit self-regulation as well as enhancing teacher-student interaction in out-of-class settings (Okaz, 2015).

1.6 Scope of the Study

In cognizance of the limited resources, research must define the domain of the study and the variables of focus (Simon & Goes, 2013); that is the subject, the study area, demography and time to be covered by the study (Akanle, Ademuson, & Shittu, 2020). Defining the scope makes the study simple, manageable, cost-friendly, measurable, and time-bound (Akanle, Ademuson, & Shittu, 2020).

Under subject, the study focuses on the learners' and lecturers' factors and the uptake of blended learning for delivering curriculum in public universities. Students' characteristics are about perceptions, self-efficacy, and previous experiences. Lecturers' characteristics refers to perceptions, motivation, and techno-pedagogical skills. Institution characteristics entail opportunities for staff and student capacity building, policies, and infrastructure that facilitates the acceptance of blended learning. Public universities are higher learning institutions chartered under the laws of Kenya and recognized by the Commission of Higher Education in Kenya as public. The study also rakes in successful models that supports lecturers and learners to use blended learning models. The study is carried out between May 2022 and April 2024 in selected eight (8) public universities across Kenya. The study targets education faculty members and students currently enrolled in third-year years.

On methodological scope, the researcher uses exploratory sequential mixed method design as well as a pragmatic philosophical paradigm. The application of quantitative and qualitative procedures sequentially generates greater overall strengths than either qualitative or quantitative methods would achieve alone. In a quantitative method, closed-ended questionnaires are used to gather data, and statistical methods are used to draw conclusions that apply to the population. In a qualitative method, Creswell (2009) observed that a descriptive study was suitable because it allows in-depth interviews,

observations, open-ended questionnaires, and inductive reasoning to derive conclusions.

1.7 Limitations of the Study

In research, limitations explained matters and manifestations that were out of the researcher's control. Such matters were integral to the design, methodology, reliability, and validity as well as tools used in the survey (Theofanidis & Fountouki, 2018). Validity was mitigated by the use of university supervisors and experts during development of research tools. Reliability was enhanced by a pilot study and Cronbach's test was applied on items under every construct in the tool.

The researcher also anticipated deficiencies in research designs such as controlled conditions that caused placebo effects during data collection. Another design deficiency was the inadequate logical systematic methods of generalization (Babbie, 2010). Placebo effect risks were mitigated by creating a free environment. The researcher also addressed the placebo effect by fully and honestly informing the participants about the research objectives.

Thirdly, Simon and Goes (2013) observed that instrument administration in surveys needed a lot of time which is always limited. This made the researcher hurry and the respondents overworked. Often, the instruments are hardly completed. The researcher addressed this risk by balancing the relationship with rigor (DeJenckheere & Vaughn, 2019); that is focusing on building a relationship with participants and enhancing facilitative skills among research assistants. Again, there were anticipated patterns inherent in structured tools that forced respondents' answers in a predetermined way without much reasoning hence limiting the range of responses (Simon & Goes, 2013). This was solved by alternating the pattern of questions in the tool.

1.8 Delimitations of the Study

Delimitations are occurrences caused by the researcher knowingly including and excluding some items during the study design (Simon & Goes, 2013). For example, the researcher deliberately disregarded related issues like ODEL and blended learning in private universities, when choosing the problem. In this context, the study exclusively pursued blended learning in public universities in Kenya. The findings neither applied to private universities nor other public higher learning institutions. The study did not include primary and secondary schools, too.

1.9 Theoretical Framework

Theoretical framework is a construction of carefully chosen recognized theories that steers the investigation of institutional factors and how they influence the implementation of blended learning for learning and teaching in public universities in Kenya. The structure holds and supports theory variables that describe variables on which information of the study is built by desk review and field data collected. In dissertation research such as this, the framework is constructed from a tests and validates theory to guide the researcher in thinking and planning. Like the structure of a house, it not only gives clarity and vision to the study but also the foundation on which all knowledge is constructed (Grant & Osanloo, 2014).

This study was mainly anchored on Social Learning Theory (SLT). The theory was propounded by Albert Bandura to explain how learning happens through observation, imitation, modeling, and self-efficacy in a social learning environment. This study sought to establish how public universities (a social environment) created opportunities for students to observe, imitate and model best practices in the use of blended learning. In this context, the theory guides the understanding of how lecturers, students, and

institutions in a social learning environment connect and make use of blended learning as a new method of teaching and learning in public universities (Graham, 2013).

In the perspective of Social Learning Theory (SLT), people learn by observing, imitating, and modeling. SLT was developed in 1971 by Albert Bandura, a Canadian psychologist (Bandura, 1971). According to Bandura, observation was the first stage in the learning process. At this stage people interact, observation happens and the observer pays attention, retaining and reproducing the behaviors portrayed by the model (the observed). Models were agents of socialization which include parents in families, characters in mass media, friends, religion, and school (Edinyang, 2016). For learning to happen at this stage, observation must be in the context of interaction and a meaningful environment. In a social environment, the learners watched and interacted with others (peers and seniors) to acquire new information and behavior. The second stage was imitation. At the imitation stage, the learner (observer) replicated or reproduced actions and behaviors he/she observed. The observers, at whatever age in life, absorbed and displayed behaviors exhibited by their models. The third step in learning, according to Bandura's SLT, was modeling. For modeling to occur, attention, retention, reproduction, and motivation must have prevailed.

Beyond observation, imitation, and modeling, SLT was expanded to focus on motivation, self-efficacy, performance, and well-being (Koutroubas & Galanakis, 2022). Whereas motivation explained how people were motivated and motivated others to learn new knowledge; self-efficacy explained personalized learning through self-belief, internal reinforcement, and self-regulation. Motivation reinforces learning and behavior in a learner through reward, punishment, and or environment (Nabavi, 2014). The Social Cognitive Theory by Bandura is related to this study in two ways. First, because it is about learning; clarifying how individuals learn by believing in themselves

and using the social platforms within a favorable environment. Secondly, because of its key components which are environment, perception, self-efficacy, vicarious experiences or past experiences, motivation or modeling, reinforcement and reward act as predictors of learning. This theory was later developed and summarized into three major interrelated themes 'triadic reciprocal causation' to explain the psychology of workers. The intrinsic reward lay in the learner's sphere which was personalized learning that was propelled by self-efficacy. In this respect, the lecturer and learner believed in themselves to develop, organize, and implement course content for teaching and learning, respectively. The themes included personal, behavioral, and environmental factors which this research had adopted. Personal factors are beliefs, attitudes, and knowledge acquired out of previous experiences that influence one's expectations and goals (Koutroubas & Galanakis, 2022). Behavioral factors refer to skills, practices, and self-efficacy that influence an individual's behavior. Finally, environmental factors concern social circumstances, societal contacts, and influences.

In essence, the theory states that effective learning (dependent variable) is a function of environment, observation, imitation, modeling, motivation, perception, self-efficacy, and previous performances (predictor/independent variables). Out of these variables, the investigator chose learning activities by blended learning to be the dependent variable and perception, motivation, self-efficacy, and environment (policy and infrastructure) to be the independent variable. Drawing from SLT, the investigator conceptualizes learners' characteristics as made up of not only self-efficacy but also perceptions and previous experiences. Lecturers' characteristics were conceptualized as perceptions or attitudes, motivation, and pedagogical skills that influenced them to use blended learning in the workplace. Under the SLT framework, the investigator felt that the lecturers were influenced to use BL for teaching by emotional cues or

perceptions, motivation, and skills acquired. Finally, the researcher conceived institutional preparedness from the social characteristics of the environment of the SLT. According to this study, staff competencies, university policies, and infrastructures play a key role in forming the behavior of lecturers and students, who are the key players in the implementation of blended learning. The students', lecturers', and environmental or institutional preparedness had a reciprocal relationship. For example, blended environment setup or institutional preparedness influenced the lecturers and the students. Lecturers who demonstrated greater motivational levels and additional competencies increased their students' attitudes and learning outcomes through 'verbal persuasion' towards the use of blended learning.

This theory has been applauded for explaining how people acquire, modify, and organize knowledge by observing, imitating, and modeling (Alshobramy, 2019). This theory was linked to the study by its focus on building an interactive environment where learners learned by using their sensory faculties of seeing and cognition to imitate and model new knowledge. The theory helped the researcher understand interactive or social learning environments as enabled by both face-to-face and computer-based learning management systems (LMS) to foster quality teaching and learning. A study on integrating computer-supported styles of teaching and learning showed that SLT best explained social learning environments with elements of computer-enabled collaboration and interaction. Raspopovic, Cvetanovic, Medan, and Ljubojevic, (2017) brought to the fore teacher-content, student-teacher, student-content, student-student, teacher-teacher, and content-content as key learning interactions enabled by BL (Raspopovic, Cvetanovic, Medan, & Ljubojevic, 2017). The study equally borrowed from SLT the self-efficacy concept which was required by BL students to believe in themselves and be self-motivated to tap into the benefits of LMS. Thirdly the theory

provided an understanding of what motivates students to learn and lecturers to motivate learners to learn under the BL approach.

The study embraced this theory because it proved in previous studies to explain well blended learning. This theory was found effective in an exploratory study on 145 pre-service teachers at La Salle University, Spain, to establish and explain 5 predictive factors in BL teaching. The factors were web 2.0 tools, collective work, expectations, social relations, and feedback (Martin-Martinez, Sainz, & Rodriguez-Legendre, 2020). Using a mixed methods case study, SLT gives a reliable explanation of self-efficacy and custom-made learning among k-12 teachers in the United States of America (Azukas, 2019). While reviewing the function of self-efficacy in online learning in the Asian scenario, Kundu (2020) discovered that self-efficacy determines both lecturers' and students' behavior and actions toward teaching and learning performance in using an online platform (Kundu, 2020). In Indonesia, a quasi-experimental study involving 58 students of class XI (2018/2019 academic year) of a private vocational school of informatics engineering, Santo Petros, Ruteng, SLT fitted well in explaining how BL develops self-efficacy in students in aspects of problem-solving, independent learning and knowledge search (Hawi & Sudira, 2019).

However, it was found weak. It was broad and missed unifying structures. The theory has also been criticized for using controversial concepts such as reinforcement, self-efficacy, and self-reporting and ignoring biological, hormonal, and genetic factors that explain the learning process (Nabavi, 2014). Despite the weaknesses, the study found it relevant in explaining institutional factors that influence the practice of BL as a pedagogy method among B. ED students in Kenya.

1.10 Conceptual Framework

This is a construction by the investigator as an explanation of the expected progress of the phenomena and clarifying the variables contained in the research. Informed by Bandura's SLT, the use of BL by public universities for learning and teaching depended on learners' characteristics, lecturers' characteristic and institutional preparedness. Learners' characteristics are defined by perceptions, self-efficacy, and previous experiences which Bandura calls precarious experiences. Again, learning by BL depended also on lecturers' characteristics which are described as perceptions, motivation and techno-pedagogical skills the instructor possesses. Finally, success in the use of blended learning is as a result of institutional preparedness which includes policies, developing staff capabilities and infrastructure as shown in Fig. 1.1. Policies, capabilities and infrastructure reinforce deliberate actions of using blended learning in a social environment such as public universities.

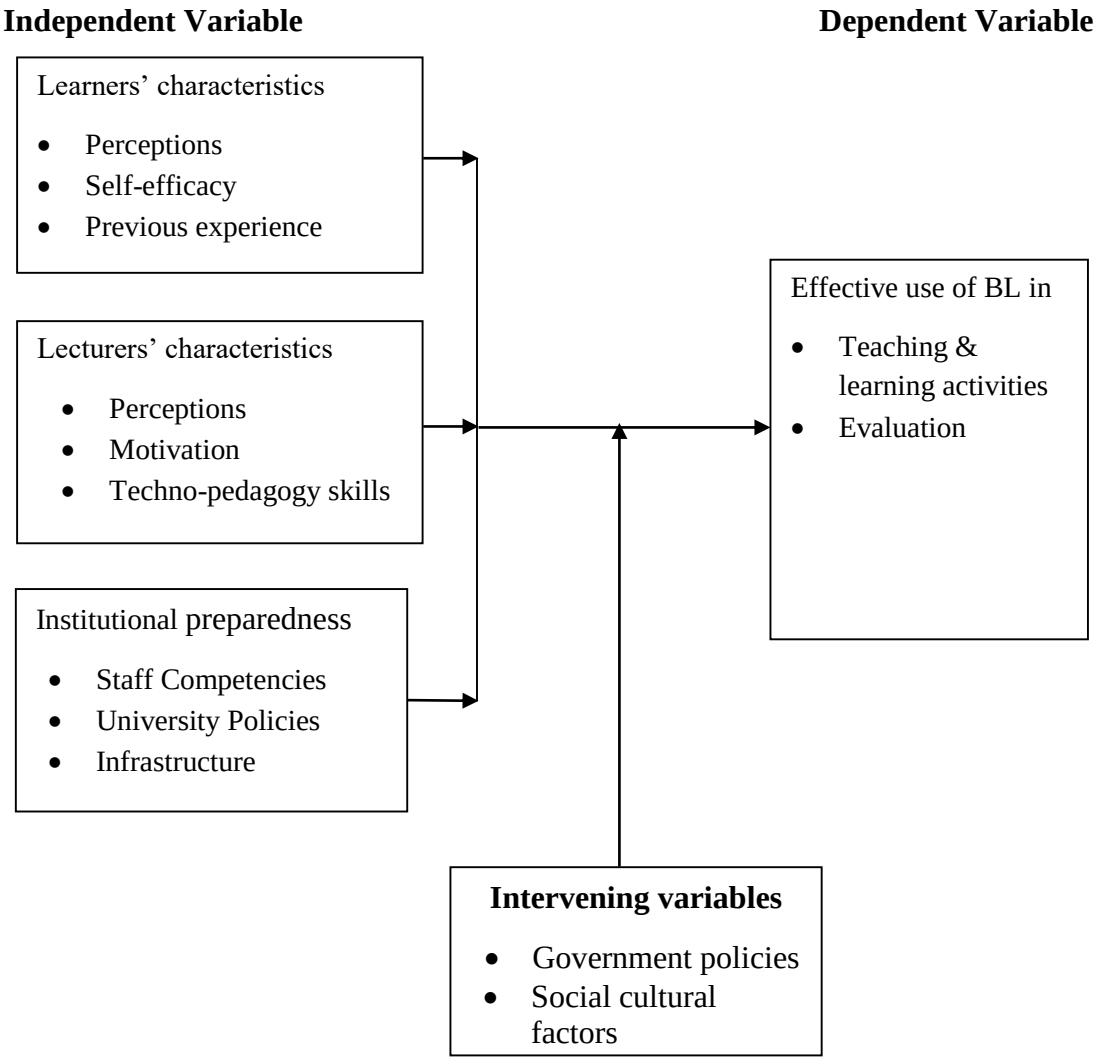

Fig. 1.1: Conceptual Framework of Blended Learning in Public Universities

According to the framework, if students and lecturers had requisite competencies and public universities had the right policies, infrastructures, and capacity building for staff *then* they would easily accept and implement blended learning to teach, evaluate, and supervise students during research. The outcome would be graduates with quality education and the most desired skills in the job market, people with financially rewarding jobs, and a community of learning networks. As fig. 1.1 shows, that effective learning and instruction in the higher education sector were a function of learners, lecturers, and institutional attributes and predispositions. The Independent variable was

the effective use of blended learning which consisted of learners' characteristics (perceptions, self-efficacy, previous experience); lecturers' characteristics (perceptions, motivation, techno-pedagogy skills); and institutional preparedness (staff capacity building, policies, and infrastructure). These institutional factors determined the embracing and using BL for effective instruction and education. This would happen in disregard of the intervening variable like government policies, and social economic factors among others. The dependent variable was effective instruction and learning that was demonstrated in teaching and learning activities and evaluation.

1.11 Summary

In summary, this chapter introduced the research topic 'institutional influences on the use of blended learning approach in selected public universities in Kenya' by setting the background and defining the problem, objectives, scope, theory, and conceptual construction of the research. According to the chapter, blended learning is a mix of virtual and face-to-face teaching and learning. Empirical studies in Europe, the USA, Asia, and East Africa region proved that BL gave enormous learning outcomes for 21st-century learners and teachers. These BL outcomes were much needed in Kenyan universities to churn out a competent human resource that would transform the economy into a middle-income and prosperous Kenya. Animated by the aspirations of the *National Education Sector Strategic Plan 2018-2022, Sustainable Development Goal (SDG) 4,* and *Kenya Vision 2030,* the Republic of Kenya significantly invested in supporting blended learning for instruction and education. However, the desired outcomes had not been optimally realized, especially in public campuses.

The study fixated on public universities in Kenya, BL, demographics of learners and lecturers as well as institutional preparedness and how they influenced the use of BL for instruction and learning. Given the connectivity, adult learning dynamism, and

uptake of innovation, the study was anchored on connectivism learning theory, andragogy theory, and the TAM model to explain how BL permeated into the public university system. The chapter concluded by explaining how the key variables relate in visual form (conceptual framework). Finally, the researcher defined the key terms.

1.12 Definition of key terms

Blended learning is a style that integrates face-to-face and virtual podiums for instruction and education.

Higher learning education in the context of the study, is the teaching and learning activities at universities.

Influence refers to the effect of independent variables (students, lecturers, and institutional preparedness) on blended learning adoption by public universities for curriculum delivery.

Institutional preparedness refers to the availability of opportunities for staff capacity building, policies, and infrastructures in a public university that accelerate the acceptance of blended learning for teaching and learning.

Institutional influence is a composite term that describe determinants that either retard or boost leaners and lecturers and institutions to adopt BL in public universities in Kenya.

Learners' characteristics refer to learners' perceptions, self-efficacy, and previous experiences that enable effective adoption and use of blended learning methods in university setups.

Lecturer characteristics are motivation, proficiency in ICT, and perceptions of instructors in public universities towards the usage of blended learning for instruction and learning.

The pedagogical model refers to a framework of social learning correlates that best gives learning outcomes when using the BL approach for instruction and learning for B. ED students in public universities.

Public universities are chartered universities under the University Act and regularized by the Commission of Higher Education (CUE) as public.

Quality education in public universities means an adequate learning environment, happy learners, and teachers. The learning environment consists of policies, infrastructure, and competencies. The learner component is concerned with students' positive attitudes, high self-efficacy, and positive previous experiences towards BL. Finally, the teacher component focuses on being highly skilled, motivated, and with a positive attitude towards BL.

Teaching and learning are the ways official courses are pedagogically planned and delivered to students at the university.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The purpose of the study was to examine the institutional influences on the use of blended learning styles among students enrolled for Bachelor of Education (B.ED) in selected public universities in Kenya. This section is on the review of literature. The aim was to search, select, and analyze relevant literature (Kumar, 2011); that related to institutional preparedness and their influence on using of blended learning style for instruction and learning at public universities in Kenya. The section intended to uncover new insights, build knowledge, and shape the thinking of the researcher on the problem under investigation. The study therefore identified, summarized, and synthesized published and unpublished works such as textbooks, journal articles, conference proceedings, theses, and reports to give a theoretical foundation and empirical evidence substantiating the existence of the research problem.

The literature is reviewed and organized as higher education in Kenya, blended learning in higher education, blended learning and quality standards in higher education and students' characteristics (perception, self-efficacy and previous experience) and blended learning in university education. Next is lecturers' characteristics (perception, motivation and techno pedagogical skills) and blended learning; institutional preparedness (policies, infrastructure and competencies) and blended learning; blended models in higher education. Finally, the chapter is summarized and gaps identified.

2.1 Higher Education in Kenya

In Kenya, the purpose of advanced education was to churn out a trained and competent technical workforce desired for prosperous socio-economic transformation. Higher education in Kenya owes its history to Makerere Technical College and University in

1922 and 1944 by recommendations of the Asquith Commission of Higher Education under the auspice of the University of London (Ooro, 2009). In 1956 the University of Nairobi (formerly Royal Technical College) was established. Shortly after independence, Kenya embarked on the 'kenyanisation' of universities through sessional paper no 10 of 1965 and the Ominde Commission Report of 1965 which showed that the Kenyan government committed itself to invest in higher education to supply a skilled indigenous workforce that would take up European jobs. Upon recommendations of the Ominde report the Royal Technical College was changed to the University of Nairobi (UoN) under the University of Nairobi Act (1970) as a fully-fledged university. The first *Development Plan of 1963 -1970* emphasized higher education for skilled manpower. Egerton and Kenyatta emerged as integral colleges of UoN.

The second phase in the evolution of higher education was dominated by government controls and expansion between 1974 and 1990. In 1974, the Republic of Kenya initiated the University Students Loans Scheme (USLS) by the Ministry of Education as a cost-sharing measure to cover fees and subsistence of students. The third *Development Plan of 1974-1978* equally stressed higher education for skilled manpower. The phrase had a presidential working party – the *Mackey Commission of 1981* that recommended more universities. This resulted in the establishment of universities such as Moi in 1984, Kenyatta in 1985, and Egerton in 1987. The *Commission for Higher Education* was formed in 1985 to regulate and foster quality education in universities. By 1989 the enrollment had increased to 20000 from 100 in the 1970s. This period was characterized by agitations against repressive rules. Universities were not autonomous; they were puppeteers of political mechanisms. The chancellor for all universities was the president. He determined students' admissions,

appointments, and dismissal of vice-chancellors at will. The academic staff were poorly remunerated and the quality of education deteriorated. The Kamunge report of 1988, the product of the *presidential working party on Education and manpower training* predicted 50,000 student enrolment by 2000.

Phase three (1991 -2000) was about liberalization of university education. In response to the gagging of universities, strikes, and insecurity became prevalent in universities. The university community enhanced agitation and succeeded in opening up democratic space by repealing section 2(A) of the constitution. This brought about many parties' systems and the upsurge in the desire for university education. Consequently, Maseno University (former Siriba Teachers College) and Jomo Kenyatta University of Agriculture and Technology through the support of JICA were established. The slow pace of public university growth in the face of high demand for higher education created an opportunity for private universities. Private university space was broadened which resulted in the Catholic University of Eastern Africa (CUEA), Baraton, Daystar, United States International University (USIU), and the Scott Theological University. In 1995 Higher Education Loans Board (HELB) with the power to recover students' loans was formed to replace the University Students Loans Scheme (USLS) (Ooro, 2009).

Phase four of higher education development was between 2002 and 2013. This phase is best known as the regionalization phase. The university enrolment shot up to 276, 349 students by 2013. Because of demand, President Kibaki's regime transformed many colleges and polytechnics into universities which gave birth to Dedan Kimathi University, Masinde Muliro University of Science and Technology, Pwani University, Technical University of Kenya, Chuka University, Technical University of Mombasa, University of Eldoret, Kisii University, Maasai Mara University, Meru University, Kibabii University, Multimedia University, Jaramogi Oginga Odinga University of

Science and Technology, South Eastern University, Laikipia University, Kabianga University, Karatina University and nine constituency colleges. Private universities such as Africa International University, St. Paul University, Pan African University, Kabarak University, and Mount Kenya University among others came into being. The spirit was to come up with universities in every region as a way of distributing learning opportunities across the country. As the regionalization of higher education increased, resultant tribalism, nepotism, and politicization of university administration emerged. Consequently, quality was compromised. *Sessional paper No.1 of 2005* recommended quality assurance among universities and tertiary institutions. Around this time universities experienced dwindling income. They embraced a '*dual-track policy*' that created module II or parallel programs as income-generating activities to supplement government capitation. The dual track propelled exclusion in higher education; where students with the financial ability to enroll for module II were more preferred.

The last phase (V) covered the period 2013 to 2022; the period under President Uhuru's regime. It was characterized by the expansion of both private and public universities in terms of student enrolment. Public students were shared by both private and public universities through government funding. There was a mass fiasco in Kenya Secondary School Education (KSCE) exams that caused a significant decrease in university enrolment due to examination reforms by CS Matiangi (Koyi, Chebii, & Manyali, 2020). In this phase, module II diminished as funding drastically went down; leaving several universities weak and unable to pay staff and bills. As a result of resource deficit, Koyi, Chebii and Manyali (2020) observed quality as well as relevance, tribalism, and exponential growth without consumerate facilities as problems plaguing higher education. The latter is best explained as 'institutional supply.' Though enrolment overwhelmed facilities, the country performed badly in enrolment at 12.08%

as compared to the world average of 32.9% (Zeleza, 2018). In addition, the faculty was inadequate to manage rapid growth in enrolment. Zeleza (2018) confirmed that in the 74 public and private universities, only 34% of the faculty members had doctoral degrees forcing universities to overdepend on part-time lecturers. The universities also underperformed in research output. According to the World Bank report of 2018, Africa contributed a paltry 1.3% in reach output of 169 researchers compared to 4,034 from North America. Politicization of the universities was found as another plague. Toxic politics permeated Kenyan public universities; reducing them into a pinnacle of tribalism and mismanagement (Koyi, Chebii, & Manyali, 2020).

While studying the quality of higher education in Kenya, McCowan(2018) also confirmed that resources in terms of staffing and infrastructure; governance i.e. structures and stakeholders participation strangled quality education in universities. Further, he emphasized pedagogical culture. Social hierarchies and approaches to teaching, curriculum, and assessments were critical roadblocks to the achievement of quality education within universities in Kenya. Unless policy and practice addressed the conditions of public universities and embraced modern pedagogical culture, quality was likely to drift further into a sorry state (McCowan, 2018). This study intended to focus on a postmodern pedagogical approach to teaching and learning to address challenges bedeviling public universities in meeting their teaching, research, and extension roles.

2.2 Overview of Blended Learning in Higher Education

Blended learning, in this context, is an emergent teaching style that integrates online with traditional classroom-based face-to-face instruction styles of delivering courses. Courses offered under blended learning integrated the two paradigms, that is, classroom–synchronous and online–asynchronous (Kaur, 2013). Antecedent studies

characterized blended learning as a strategy that mixed various internet-based technologies to score educational goals; an amalgam of traditional education approaches, technology, and internet; an amalgam of various instruction styles based on many theories; and educational programs that combined in-person classroom time with online individual studies (Alsalhi, Eltahir & Al-Qatawneh, 2019). The instructor pedagogically designed learning in a way that a share of old-style face-to-face learning is traded with online education. The blended learning approach requires the lecturer to play both a sage on the stage and a guide by the side roles (Shadiev, Zhang, Wu, & Huang, 2020).

Blended learning started in the 1990s with the emergence of unsettling technologies such as big data, Artificial Intelligence (AI), Internet of Things (IoT), and blockchain as new teaching methods to improve on traditional face-to-face teaching (Mitchell, Shiu, Enemark, & Kavanagh, 2020). The technologies disrupted the traditional way of learning; rendered it obsolete and offered a new range of digital learning alternatives that fit various students'" learning styles and approaches (Dube, Eck, & Zuva, 2020). The approach afforded learners and lecturers the convenience of learning and teaching online without losing out on social interaction benefits provided by on-campus learning (Hawi, Heinrich, & Lal, 2021). As students discovered their strengths, weakness, and carrier paths on their own, lecturers afforded more time to do research and improve their educational careers (Wang, Liu, & Tu, 2020).

The internet offered connectivity between the student and lecturer; the student with other professionals on professional list servers. In addition, the platform provides journals, digital library materials, and online lecture material. Consequently, it improved retention and students' academic performance (Muthuraman, 2018). It is 'a new traditional model' of learning that was propelled by technological advancements

shaping the classroom of the 21st century which is characterized by a knowledge explosion, growing demand for education, and overcrowded lecture halls (Zurita, Husbun, & Jerez, 2015).

According to Aristovnik, Kerzia, Tomazevic, and Umek (2016) disruptive technologies, in the last two decades, have changed education delivery methods. Information Communication and Technology (ICT) has made available to teachers more interesting and interactive pedagogical approaches and techniques that address new generation students 'born with smartphones.' In universities teaching and learning methods are moving from the old style to a learner-centered style of education where the student pedals his or her learning courtesy of technology and innovation (Reinhart, 2008). Blended learning which deliberately mixes face-to-face classroom-based learning with online modalities is increasingly being fronted as the best 21st-century option for the student (Rizvi, Gulzar, Wachira, & Nkorori, 2017).

On one hand, face-to-face classroom-based learning was in a brick wall classroom where students met their instructors and related face-to-face. Learning was in the form of classes, workshops, conferences, and seminars where all activities of teaching and learning were synchronously done in a classroom in a teacher-student-peer relationship. Nazara (2016) lauded face-to-face for its ability to strengthen the instructor-learner relationship which is critical in learning. Such relations turned stronger into long-lasting relationships. Secondly, students better understood course materials because of rich exchanges in information and experience via tone, body language, signs, volume, and variation of voice. Another benefit of face-to-face learning was that learners were able to leverage participation and group discussions especially if the course was difficult and complex. Fourth was that both males and females had equal and high potential for opportunities to learn through social interactions. Nazra (2016) also observed that

traditional classroom-based learning was inconvenient to learners. Students felt intimidated and shy by lecturers and their material.

On the other hand, online or E-learning simply means electronic learning. It included all types of learning supported electronically. It involved the usage of computer network technologies such as the internet and phones to produce, facilitate, promote, and deliver knowledge anytime and everywhere. Nwokike (2010) described E-learning as the usage of a computer as a critical device for learning. The devices helped deliver learning materials and information to those who required them. For example, computers and internet networks facilitated the transfer of knowledge and skills. e-learning is teaching delivered virtually through connecting different types of ICT-based media such as the internet, computer, LCD projector, or use of CD-ROM and video tapes to transfer information (Chilaoana, Makaza & Madizama, 2008).

E-learning could be either asynchronous or synchronous. In synchronous E-learning, students and teachers were at places and simultaneously participated, live. During instruction time, students were expected to be at their PCs. This type of knowledge transfer is called scheduled delivery of learning; allows students from different locations to learn at the same time (Alu, 2011). Slides or whiteboards were used by the instructors to teach. Students also had an opportunity to ask questions during the session. Examples of this scheduled delivery of learning are real-time interactive conferencing and multi-cast method. The benefits of this method were that students and teachers felt part of the learning community because of the intense interactions at a given time. Despite the advantages, synchronous e-learning was not flexible (Alu, 2011).

In contrast, Asynchronous E-learning was not live. Learning could take place at any time because lessons were “pre-coded,” available for use when need be. Students make their timetables for learning, hence learners have control over the process and content of education (Alu, 2011). Asynchronous e-learning has different types. Whereas some were as simple as the use of PowerPoint slides on a website, others were as complex as animation videos, online simulation graphics, and audio that required more involvement from the student.

Blended learning, therefore, is a student-centered approach that combines the synchronous learning activities of both old-style face-to-face and online events with asynchronous e-learning activities. The blend improved teaching and learning by maximizing and mixing the benefits of face-to-face and virtual delivery means (Tong, Uyen, & Ngan, 2022). In the United States, for example, a case study on the implementation of blended learning in delivering curriculum at Nottingham Trent University revealed that blended learning improved the quality of learning outcomes. However, students and universities encountered technology-related challenges such as students’ unrealistic expectations, difficulty in the use of sophisticated technologies, and pervasive access. In western Canada, a case study of the University of Manitoba (UM) revealed that blended learning was not anchored on any policy framework (Wallace & Young, undated). It was implemented in the university as an individual initiative to improve pedagogy.

In the Philippines, there were mixed perceptions on whether blended learning was new or old. On one hand, a descriptive-correlation design study found that BL was not new to many universities in the Philippines (Garcia-Bolanos, et al., 2022). On the other hand, Alvarez (2020) found BL as a new young teaching and learning approach in Palestinian universities. Being new, BL encountered technological and instructional

challenges as well as inadequate class size, technical support, and collaboration (Alvarez, 2020). In a qualitative case study of five instructors in Manila Philippines, BL was found to be an efficient and effective approach for delivering National Service Training Program (NSTP). At Marinduque State College, a descriptive study revealed that COVID-19 fueled the adoption of blended learning as an instructional methodology among Filipino students (Adling, 2022). According to Garcia-Bolanos, et al. (2022), Filipinos established the Centre for Blended Learning for teaching English, languages, sciences, and distance learning.

Whereas South African universities lacked institutional culture, procedures, policies, and assumptions about blended learning, a cross-sectional survey of universities in East Africa indicated that most universities lacked mentorship in blended learning, lecturers lacked motivation and never got protective time to design and present technology-driven courses (Rizvi, Gulzar, Wachira, & Nkorori, 2017). In a qualitative study that involved 26 students who were sampled using purposive and convenient sampling methods, Mpungose (2020) found the digital divide a significant challenge in the transition from the traditional instructional method to BL. Students from poor backgrounds could not afford to possess laptops, smartphones, and Wi-Fi routers that were relevant media for 21st-century classrooms (Mpungose, 2020). The study advised that the Moodle LMS should be customized to address the differentiated requirements of learners, particularly for those from humble backgrounds. The efforts should focus on providing free bandwidth, and free physical and online resources. Like Filipinos, a Blended learning information center should be established and upgrade facilities both at the community and university levels. Mpungose (2020) further advised that there should be university-wide capacity building on using a learning management system. Experience of the COVID-19 pandemic has disrupted old-style face-to-face instruction

and learning approaches and irresistibly forced instructors to shift to modern approaches (Adling, 2022; Mpungose, 2020; Chinengundu, 2021). While studying how smooth change from face-to-face to blended learning could be achieved in South African TVET institutions, four strategies emerged. They included planning, preparation, adaptation, and making the learning space appropriate (Chinengundu, 2021).

Since the onset of university education in Kenya in 1956, lecturing has been largely traditional (Jowi, 2019). This traditional approach was found to be passive and frustrating to students' critical thinking. According to Okaz (2015), most learners at the university found class-confined teaching to be boring, unsupportive, and irrelevant to career requirements in the marketplace. As a result, the class attendance rate was low. With the advent of new technologies, students' learning and communication behavior in and out of school has changed. The way they learn has also changed. For instance; computers, tablets, and Smartphone technologies shortened learners' attention period and information retention. Lecturers have come to agree that paying attention solely to face-to-face learning disallowed collaborative learning and engagement of high-level thinking (Okaz, 2015). These have compelled lecturers to take a drastic change from the old instructional method to blended learning to accommodate the 21st-century classroom challenges.

In Kenya, blended learning started with the introduction of computers in the 1970s and the internet in 1993. By 1994 universities were using technology-based learning techniques such as the internet, course web pages, email, and computer simulations (Kathula, 2021). The Government of Kenya (GoK) and other stakeholders like UNESCO and the ICT Trust Fund have made great efforts and multi-investment to integrate ICT in education to accelerate the achievement of education goals. This is

demonstrated through various policy and strategy documents such as Kenya Education Sector Support Programme, 2005-2010, National ICT policy of 2006, and Sessional paper No.1 of 2005. In addition, the country has an ICT ministerial committee as an institutional framework led by the Ministry of Education, Science and Technology (MoEST) to monitor and evaluate the implementation of ICT integration in education. Chaired by the Permanent Secretary, the committee met monthly and reported quarterly on progress. Some of the strategic documents that guided the committee on evaluation were: Education for All and Sustainable Development Goals (Mwendwa & Syomwene, 2019). Kaniaru, Karani, Mirie, and Nyangina (2019) observed an increase in students who needed 3rd-level qualifications with an inverse available space and teaching staff. This forced the Government of Kenya (GoK) to accredit most constituent colleges into fully-fledged universities in 2013. Still, the universities could not accommodate them. The alternative pathway to address the challenges was Technology Enabled Learning (TEL) which comprised blended learning, E-learning, open courses, or using online course delivery, entirely.

In post post-COVID-19 era, TEL and BL in particular were found to be the most appropriate in ensuring that education at higher education in Kenya was stable, improved learning outcomes, and resilient to any eventualities that would disrupt learning (Simiyu, 2021). However, BL's uptake was slow and low in universities. In a literature-based study on the universities and how technology shaped their lecture halls, it was discovered that the blended learning uptake momentum of Kenyan universities was comparatively slow (Kathula, 2021). In many instances, BL programs were used at some point but dropped later. According to Simiyu (2021), the slow pace is explained by inadequate funding, institutional policies, and poor technological facilities. Equally, the instructors lucked requisite competencies and experience to design and implement

BL programs. Consequently, learning outcomes were compromised. This significantly affected universities' achievement of their objectives of research, teaching, and outreach or extension services. In cross-sectional design research on lecturer quality in eight public universities in Kenya, graduates were found to be inadequately prepared to transform the economy (Kara, Tanui, & Kalai, 2020).

2.2.1 Blended Learning and Quality Standards in Higher Education

Further, the Kenyan Government through the Commission of University Education (CUE), under the University Act No. 42 of 2012, fosters quality teaching, research, and outreach in universities by monitoring and fostering compliance with desired regulations, standards, and guidelines. Quality here meant that students perceived higher education as useful to get employment opportunities, academic staff found teaching and learning processes not difficult, university management achieved their goals and employers found graduates competent (CUE, 2008). Blended learning as an enabler of excellence and expanded admission to education is envisaged in the CUE's 2nd Medium Term Plan 2013-2017 as a desired innovation for universities to deliver globally competitive human resource capital and address unique demographic challenges (Juma, 2018).

In the fourth schedule, the Commission for Higher Education (CUE) acknowledged BL and set standards for blended learning under Open, Distance, and E-Learning (ODEL). Quality in blended learning, as per CUE (2014), would only be achieved by universities if they considered the need assessment of factors such as demographics; education and economic background; experiences; accessibility, and familiarity of ICT to learners and lecturers. In addition, CUE contemplated infrastructure; university vision and mission; budget and policy; governance, structures, and procedures; regional learning centers; collaboration with other providers; type of learning management systems (LMS); and

support services as key to effective and sustainable implementation of blended learning for instruction and learning (Commission for University Education, 2014). Given the above, CUE outlined nine (9) principles that governed ODEL (including the blended learning approach). The principles targeted the realignment of university mission and purposes; policies and plans; systems of governance; evaluation; faculty members; resources; integrity; students and academic support staff to the adoption and use of blended learning.

On infrastructure, CUE (2014) expected universities to have stable and adequate telecommunication networks, electricity, and transport. It is also expected universities to make available adequate institutional, technical, and ICT support infrastructure such as server space, loading space, technical helpdesk, and technical services for back-up. Universities were also supposed to have an ICT plan for maintaining and upgrading the infrastructure. CUE (2014) also expected universities to have clear governance and administrative structures to facilitate the development, coordination, management, and monitoring implementation of BL.

The Learning Management System (LMS) should effectively support e-learning and specify the media used, accessibility, cost of use, teaching strength, interactivity (capacity in creating interactivity), and the speed of setting it up. Alongside the establishment of LMS, CUE guided university management to support lecturers in using LMS to prepare course materials that were ‘fit for purpose;’ orientation for staff to ensure quality material; and training course team including course writers, media producers, editors/instructional designers, and reviewers.

CUE (2014) also guided universities on how to develop and approve process curriculum to be delivered by BL at department, school/faculty, and institutional levels. This

included recruiting qualified academic staff involved in the development, implementation, review, and approval process. Beyond recruitment, the academic staff should be oriented and trained in LMS, skills, and strategies for developing materials. The adoption of blended learning required building capacities of lecturers as core agents and students' attitudes (Kara, Tanui, & Kalai, 2020). Juma (2018) pointed at policy reforms, building university management capacity, and innovation universities as means to scale up the new approach to teaching and learning. Students should be equally oriented and socialized through pre-entry guidance and counseling in undertaking the BL program. The pre-entry guidance needed to focus on self-study skills and learning attitudes (Tong, Uyen, & Ngan, 2022).

To minimize the negative impact on students and faculty members when a technology change is introduced, universities were required to develop a technical framework. The framework included a 24-hour help desk; communication structure and Frequently Asked Questions (FAQ) and feedback systems for students and staff. The provision of services closer to students should be enabled by establishing regional learning centers. Burns (2011) advised that such centers played a critical role in deepening instructors' knowledge, skills, and attitudes on the use of BL for teaching and learning. The regional centers were handy in training the instructors on appropriate modes, models, and methods (Burns, 2011). CUE encouraged collaborative arrangements between universities with other providers under legally binding written agreements and ownership.

Despite the clear raft of guidelines by CUE, blended learning has not been successfully implemented by many universities. A large share of dons was aged and found it difficult to learn new strategies that are computer-based (Pavla, Hana, & Jan, 2015). A sample of studies on learners, and lecturers among selected public universities in Kenya

revealed significant discrepancies in access to education (Awori & Korir, 2018), ineffective teaching methods, and inadequate instructional materials (Maiyo, 2018). The studies implied that quality was still at stake and only 'innovation universities' that were able to leverage postmodern teaching and learning methods such as blended learning could fix it. According to CUE (2008), curriculum as organized programs could only be effectively delivered by blended learning if universities' managers were skilled in policymaking, team management, public and human relations, organization, and planning. Equally, academic staff needed to have appropriate and relevant academic qualifications; understand the concept, style, and practices of blended learning; understand learners' characteristics; instructional design for interactive learning, and strategies for developing instructional materials. Equally, students needed to be inducted and supported with courses on ICT, reading, and studying skills to effectively reap from blended learning (CUE, 2008).

Among public universities in Kenya, a mixed method study of 148 staff in three Kenyan public universities using blended learning revealed that the GoK had an elaborate institutional and policy framework to increase broadband internet and interconnectivity through Kenya Education Network Trust (KENET) for teaching, learning, and research in universities (Tarus, Gichoya, & Muumbo, 2015). Although the GoK had successfully interconnected the universities, only 11% of the students in public universities in Kenya used the blended learning approach. The barriers to the use of the blended learning approach were inadequate ICT infrastructure, finance, policies technical skills, assurance among faculty members, and sufficient time to create learning material.

Blended learning is an official education program in which learners get education partly by virtual platform and other parts under face-to-face and 'brick-and-mortar' classroom methods (Norm, 2012; Friesen & Norm, 2012), requiring the right lecturers, students,

and institutional predispositions to succeed. In expanding quality and equity in university education in the Asia-Pacific, UNESCO recommended eight key dimensions to be well-thought-out in creating a favorable blended learning ecosystem in universities. They included developing a clear vision and philosophy, curriculum, infrastructure, policy and structures, partnerships, research, and development that build blended learning. In addition, lecturers should be professionally developed and students technically supported to ease the use of the technologies (UNESCO, 2021).

2.3 Students' Characteristics of Blended Learning in University Education

Personal attributes and perceptions of end-users played a significant role in the ultimate use of an innovation. Individual perception determines an individual's behavior (in this context the students) towards embracing BL programs and the decisions to adopt it at the institution level (Li, 2020). The greatest asset in adult learning is the learner's experience. Adult learners were motivated to learn if they perceived learning to be meeting their personal needs and interests. Seeking to take full advantage of BL for instruction and learning in universities depended heavily on lecturers' and students' self-efficacy, computer experience, usefulness, ease of use, and social influence (Kurniawan, Pramana, & Budianto, 2021). Students' and lecturers' characteristics referred to personal demographics, attitudes, and capabilities of learners and instructors that supported or inhibited the adoption and use of blended learning approaches in institutions of higher learning.

Demographics are characteristics that describe the status of people being studied. They include age, gender, ethnicity, income, marital status, and location among others. In this context, the study considered status, gender, high school final grade, college, year of study, locality, study program, and occupation with other activities. Antecedent studies proved that demographics impacted technology acceptance and academic

achievements. For example, in Canada, Laval University in Quebec, Khechine, Lakhal, Pascot, and Bytha (2014) studied 114 students' characteristics doing information systems courses through a blended approach. The study revealed that age moderated students' intention to use a webinar system. On the contrary, being either a male or female did not matter in acceptance of webinars.

Among students of public administration in Slovenia, a survey study on 1083 using Moodle LMS platform in the University of Ljubljana found that students with lower high school grades perceived traditional face-to-face learning as more useful. On the contrary students with the best high-school grades found blended learning more useful. In addition, students who lived away from the campus found blended learning more helpful than face-to-face transmitted education (Aristovnik, Kerzic, Tomazevic, & Umek, 2016). Further study was done the following year in the same university on demographic and selected aspects of e-learning in university education. The results showed that the year of study influenced students' attitudes towards blended learning. First years perceived blended learning as less useful than third years. Female learners found it easier to find certain things in the e-course as compared to their male counterparts (Aristovnik, Tomazevic, Kerzic, & Umek, 2017).

A cross-sectional study was done in Saudi Arabia, the southern region on healthcare students' perception towards implementing e-learning between April 2020 and July 2020. The results showed that being female or male did not significantly affect learners' attitudes towards e-learning. However technical issues, psychological distress, experience, and unpreparedness had significant effects on students to accept e-learning aspects of blended learning (Alavudeen, et al., 2021). In a survey of students in the United Arab Emirates, gender, college, and status positively and significantly influenced academic performance (El-Refae, Kaba, & Eletter, 2021).

2.3.1 Students' Perception of Blended Learning in Higher Education

As theoretical concepts of Bandura's learning theory, expectations, and social relations influenced an individual's behavior. A study among one hundred and forty-five B.ED freshers at La Salle University in Madrid -Spain, revealed that students' expectations influenced teaching using BL. The study used purposive sampling and exploratory factorial analysis to identify participants and determine predictive factors for BL, respectively. Teachers' feedback, characteristics of Web 2.0, and classmates' collaboration were also found to significantly influence students' perception of blended learning (Martin-Martinez, Sainz, & Rodriguez-Legendre, 2020). The use of purposive sampling and self-rating limited the study with biases. The study findings focused on Madrid - Spain, a context not similar to Kenyan. This shortfall calls for the need of another study that focuses on blended learning in Kenyan public universities.

In recognition of the importance of BL as an innovative and useful teaching and learning approach, focusing on students as an indispensable component in implementing it has gained pace in the recent past. BL would only find favor in education circles if and when it met students' expectations; and was simple to use and functional for students (Pardede, 2013). As BL's academic teaching and learning approach gains popularity in universities, there is a need to recognize how students perceive its ease of use and usefulness, too. Across the European Higher Education Area (EHEA), 90% of higher education institutions used blended learning for library services, and 65% used as Emergency Remote Teaching (ERT) as a response to COVID-19.

A critical analysis explored UK university students' perceptions of blended learning. A pragmatic worldview and mixed methods were used to carry out the study. Convenient sampling helped to identify 1917 respondents to the study. Questionnaires and FGDs

were used to collect data. The findings revealed that the students were positive about blended learning because they did not see it to be intrinsically detrimental. Again they approved BL because it was flexible and inclusive (Syska & Pritchard, 2023). The European study setting may not apply to Africa, despite insightful findings. Therefore, there is a need for another study focusing on blended learning for curriculum delivery in public universities in Africa.

In Turkey, experimental research on 52 students in 7th grade enrolled for social studies revealed that blended learning gave larger and more effective learning outcomes than face-to-face learning (Cifta, 2020). Consequently, students and lecturers were highly positive towards blended learning.

While seeking to understand factors that contributed to deep learning, A quasi-experimental study among students of public universities in the U.S. Southwest revealed that blended learning was positively perceived and was preferred to face-to-face learning. The students also observed that blended learning was useful and required more time. The study used mixed methods to carry out an anonymous survey where qualitative and quantitative data were gathered with the help of a questionnaire (Luna & Winters, 2020). Among tenth-grade students studying a world history course in South Carolina USA, mixed method research discovered that students' positive perception of blended learning positively influenced their academic performance (Turpin, 2018). Further, a study on whether the proportion of time to online activities mattered was carried out on 20 undergraduate courses. The study findings showed that when 33% to 50% of the courses were virtual and the rest face-to-face, students' performance significantly improved (Owston & York, 2018). In North Carolina, it was contrary among students who used blended learning in American History II. Experimental design research found no statistically meaningful difference in learning

outcomes between learners who learnt the course through blended learning and those who learnt through face-to-face methods. However, blended learning increased the learners' online readiness skills (Rinehardt-cline, 2018). A systematic review study using a meta-analysis (k=21 effect size) confirmed that BL did not significantly affect learning outcomes, despite positive attitudes among students being noticed (Muller & Mildenberger, 2021). Despite the studies focusing on public universities, the findings are US-based universities that have different socioeconomic backgrounds and organizations, hence the results may not apply to public universities in Sub-Saharan Africa.

From the lenses of students, Lu (2021) sought to establish students' perceptions of the social, pedagogical, and technical design of blended learning and its impact on critical thinking. Using a mixed method design the study collected data via a Web-Based Learning Environment Instrument from 90 first-year non-English major students at Normal University in China. The findings showed students' positive impressions on the designs and expressed that the BL environment fostered critical thinking (Lu, 2021). On social design, the students found blended learning created an environment of prompt response and consultation as well as effective interactions between learners and instructors. The learners also expressed satisfaction that BL offered clear learning objectives, assignment expectations, planned tasks, content, and context. According to Lu (2021), students received and perceived technical support to be satisfactory, online material available, and conveniently enjoyed learning 'anywhere' and 'anytime.' In addition, the students deepened their understanding of the critical thinking concept, appreciated the importance of facts and evidence, and thinking from multiple perspectives.

A descriptive study to get the feeling of science and technology students in using BL measured achievements in the learning process, improvement in learning skills, and social presence experience using a pentatonic Likert scale. According to the perspectives of 139 students conveniently sampled in the Faculty of Computer Science and Mathematics in UiTM Kelantan – Malaysia blended learning improved achievements in the learning process, social experiences, and learning skills of students. Particularly the students felt their results improved, could determine their objectives, transfer knowledge to other subjects, and improve their learning styles. Regarding learning skills, the majority of the participants (77%) approved blended learning because it improved their study skills, discussion, and curiosity. Equally, the social presence experience improved. The students agreed that BL improved their communication and interaction within themselves and lecturers (Rahman, Arifin, Munaf, Ahmad, Zin, & Jamaludin, 2020). In as much as this study gives good behavioral insights of students towards blended learning, it has serious methodological weaknesses; such as the inability to measure causal relationships and students' likelihood of not being faithful in answering the survey questions. Its use of convenient sampling makes it non-representational. Therefore, the findings cannot be generalized beyond the subpopulation which is students undertaking computer science and mathematics at UiTM (Andrade, 2021).

In a similar study, Masadeh (2021) found BL to increase learners' satisfaction. Descriptive research in Marinduque State College - Philippines, BL boosted the learning experience among students taking English as a second language (Adling, 2022). Among a similar population of undergraduates learning English, a survey revealed that students perceived BL positively. The students described BL courses as interactive, flexible, easy-to-understand content, and richer learning outcomes (Wu &

Luo, 2022). In addition, a 34-item community of inquiry survey of learners registered in 22 sections of an FYW course found that highly blended classes demonstrated a well-spent time with a greater degree of social presence, cognitive presence, and teaching presence (Hilliard & Stewart, 2019). Similarly, a path model of 122 college student surveys confirmed that blended approaches did not only enhance social presence and lecturer involvement but also yielded higher student expectancy, behavioral engagement, and task value (Edwards & Taasoobshirazi, 2022).

In Maldives Island, a study was done to explore the perceptions of university students about blended learning. Students from 8 disciplines were interviewed using questionnaires and 407 responded. Data was analyzed using one-way ANOVA and descriptive statistics with the aid of SPSS. Overall, the students had a positive perception of blended learning. Specifically, students from science and Islamic disciplines were positive and receptive to blended learning as opposed to tourism and hospitality students. Inadequate internet infrastructure, technical support, and high costs of traveling during face-to-face classes were identified as challenges to the effective execution of blended learning in Maldives. The findings are good and founded on an adequate sample size. However, it leaned towards the quantitative strand alone. Again it is confined to universities in Maldive state, whose environment is different from Kenya.

Among students majoring in English education at Borneo Tarakan University-Indonesia, a mixed method study indicated that the majority of learners positively perceived blended learning. The study also showed that the students had challenges with internet connectivity. The study used mixed methods and questionnaires to collect data from 149 students majoring in English education. Quantitative and qualitative data were analyzed descriptively and content analysis, respectively (Rianto, 2020). Results

are a product of one university. Inferences, therefore, cannot be generalized to all public universities. Secondly, Indonesia is far away from Kenya, the place for this study.

A descriptive quantitative survey of 35 mechanical engineering students in the 4th semester at STTR Cepu, Indonesia showed that learners had positive views of using blended learning to deliver English lessons. The study used structured questionnaires with 19 items on a Likert scale and an observation checklist to collect information. When asked why they had positive perceptions, the students said that BL was good because it saved time and costs. In addition, it was found to be effective and efficient; made learning materials accessible and independent learning possible; enabled flexibility in terms of time for discussion; not costing lecturers a lot of energy in teaching (Istiqomah, 2021). Another pre-experimental research on 14 students in universities in Indonesia, revealed that BL motivated students enrolled in physics programmes (Suma, Suwindra, & Sujanem, 2020). Despite the studies eliciting helpful insights, feelings, and perceptions of students; they suffered from a snapshot disadvantage because of a very small sample size (n=35) and failed to give in-depth information on blended learning for language instruction and learning (Rahman, 2017). Therefore, there is a need for a more versatile mixed-method study on the views of learners on the implementation of blended learning.

A contrary perception was observed among 206 undergraduate and diploma students across 12 universities in the same country. In seeking to find out students' impression of the sudden introduction of online learning in universities during COVID-19 in Indonesia, students revealed a negative impression and expression that the model was not easy to use (difficult). When asked why? They gave reasons as 'cultural shock' necessitated by sudden shifts of routines and schedules. They also had difficulties with the lecturers' process of delivering materials and implementation of practicals. The cost

of the internet was also an impediment to most students (Susilana, Hutagalung, & Sutisna, 2020). In North Sumatera, Indonesia awareness and attitudinal study of private university students on blended learning was done. Mixed perceptions and attitudes were found among the students. Some perceived blended learning as useful and easy to use, but some perceived it hard to use (Winarto & Tambunan, 2019). In a survey of students enrolled for English lessons at Universitas Kristen Indonesia Jakarta, students perceived blended learning more positively than face-to-face instruction. The learners described blended learning as more useful, convenient, effective, and efficient. Further, they believed that blended learning improved their computer skills, creativity, internet skills, and critical thinking (Nazara, 2016). Varied perceptions of blended learning in higher education institutions in the same country indicate a need for further studies to harmonize the results.

In a study evaluating the excellence of blended learning in Omsn, Arab Open University, it was discovered that the learners had positive attitudes about blended learning. It improved attendance, retention, and academic performance among students. In addition, it made students active participants in learning and was flexible and cost-effective to universities (Muthuraman, 2018).

In India, a descriptive study using a five-point Likert scale questionnaire on 180 MBA students was done to find out their perception towards BL, feasibility, and ease of using MOODLE. The investigation showed that the learners perceived BL positively because it was easy to use. The students felt that accessing content was possible anytime, anywhere, and without interruption. They also observed that BL made learning topic-focused, self-paced, interactive, and experiential (Ughade & Badre, 2020).

Management students from selected higher education institutions in India positively perceived blended learning. The students also favoured and were prepared for BL as the next normal management education. The study involved 375 MBA, BBA, and B.Com students in descriptive research. Their views were collected by questionnaires and analyzed using descriptive statistics (Shrivastava & Shrivastava, 2022). The researcher used a simplistic design to address a complex problem, the blended learning phenomenon in public higher learning institutions.

Research on the preferred choice of blended learning type by Bangladesh university students revealed that students were positive and preferred blended learning to face-to-face learning. However, they disliked using mobile internet for online learning. Instead, they preferred broadband internet for online classes. The study was done in Dhaka City. It involved 306 students from the Bangladesh University of Professionals (BUP) and North South University (NSU). The direct choice experiment method and conditional logit model were used to analyze data (Ahmed, Amin, McCarthy, Khan, & Nepal, 2022). In as much as the study gave relevant insights on blended learning in both private and public universities in developing nations, it was skewed towards the quantitative data strand. Only one public university was involved, therefore, inferences may not adequately apply to many public universities in Kenya.

A quasi-experimental study on 112 students enrolled in ninth grade for science in the 2017/18 academic year in the United Arab Emirates found that their attitudes towards blended learning was positive and improved their performance. Blended learning made students active, creative, and better prepared for class. In addition, it made it possible for students to access educational resource material (Alsalhi, Eltahir, & Al-Qatawneh, 2019). Among the undergraduates who had enrolled to learn Mathematics (MTH121) course at Ajman University through blended learning, academic achievements were

greater than those who learnt through a traditional face-to-face approach (Alsalhi, Al-Qatawneh, Eltahir, & Aqel, 2021).

Positive perception by students was also evident among undergraduates in Nigeria. They found BL helpful in identifying knowledge gaps. However, intermittent supply of power, high costs of accessing LMS, and weak internet services were identified as challenges frustrating BL implementation at Osun State University. The study used a descriptive survey design and involved 551 undergraduate students from 5 colleges at Osun State University in Nigeria. The purpose of the study was to assess the undergraduates' feelings about the Learning Management System (LMS) for learning and teaching (Odekeye, Fakokunde, Mettu, & Adewusi, 2023). Limitations observed with this study are that it assumes LMS to be blended learning, which is not true. Secondly, it focussed on one public university, Osun State University in Nigeria. The inferences, therefore, may not adequately apply to many public universities in Kenya.

Evidence from Cameroon was obtained using a descriptive survey. Three hundred and eighty graduate students from public universities using Google Classrooms were randomly identified to participate in the study. A pentatonic Likert scale questionnaire was used to gather data from the participants. The purpose of the study was to assess the Cameroonian student's views and attitudes towards online education. Web 2.0 technology was the online learning platform used. According to the study, learners had a very high and positive attitude towards e-learning platforms (Haji, 2022). Descriptive design is so simplistic in analysis to address complex issues of blended learning. Again, the study findings are founded on self-reporting which is loaded with biases, hence weak to use the results to credibly inform the development and growth of blended learning in public universities in Kenya.

A qualitative study exploring evaluations of nursing and midwifery students of BL in public and private learning institutions in Rwanda showed that BL was new and mixed reactions were observed (Ndayisenga, et al., 2022). On one hand, results from 3 online FGDs and 33 filled questionnaires and analyzed inductively, revealed that students liked BL because it offered flexible learning because they could learn from the comfort of home and with ease accessed reading materials and books. The approach was perceived to save time and costs because the students needed no fare to campus. The students also observed an increase in grades since they started the BL method. The students also liked it because they could promptly contact and be responded to by the lecturer. On the other hand, the participants disapproved of BL because most students and lecturers lacked skills and knowledge on using technology. Students who had neither laptops nor Smartphones were challenged in accessing course materials. The students had negative experiences with BL when it came to clinical practice or during simulation lab sessions. It was difficult to learn using the module during practicals or hands-on courses (Ndayisenga, et al., 2022). Limitations in this student were self-reporting by respondents, a small sample, and confusion of BL to mean e-learning by respondents.

Bhagat (2020) surveyed 7 faculty members and 31 MBA students enrolled in BL courses in 2019 at Uganda Management Institute on the learners' attitude towards blended learning courses. The results showed that students' general experience was positive; the reason being the flexibility to learn anywhere and anytime. In addition, most students found courses delivered via BL to be relevant (71.7%). BL made the students attentive (54.8%), confident (58.06%), and connected with others (87.09%). Generally, the learners were satisfied (Bhagat, 2020). Like the previous studies, the study also suffered from self-grading and inadequate sampling which limits its results

to be generalized on the population of lectures and students. To address the deficits a broader probability sampled mixed study needed to be carried out.

Among 19 universities that offered bachelor of nursing in Kenya, experimental research was done in two public and two private universities on how they utilized blended learning on undergraduate nurses for post-intervention outcomes. The respondents were 486 nursing students in their fourth year and enrolled in the NRSG 400 course that was concerned with education concepts and instruction styles. The study revealed that most nurse students n=302(62.1%) were motivated to embrace blended learning. However, 75.1% of them experienced challenges while using the blended learning mode of delivery (Kaniaru, Karani, Mirie, & Nyangina, 2019). In a mixed-design pilot study on evaluating the attitudes of postgraduate student supervisors at Kenyatta University on a blended approach for thesis supervision, Miheso-O'Connor, Bwire, and Mwangisi (2020) found the students' attitudes not positive. There was lethargy in adopting the approach.

2.3.2 Students' Self-Efficacy

Self-efficacy is a key construct in Bandura's social cognitive theory. Self-efficacy is a self-belief to organize and execute the 'courses of action needed to produce given accomplishments and having exclusive power to predict one's behavior' (Bandura, 1977, P3). In an attempt to review the effect of self-efficacy on online education, a conceptual analysis revealed that self-efficacy was an indispensable factor for both lecturers and learners operating online learning (Kundu, 2020). The research was done in an Asian context. Its implications, therefore, may not apply in sub-Saharan Africa. Again, it assumes that online education is equal to blended learning. There is a need to do both conceptual analyses that would strengthen students' self-efficacy in Blended learning in a Kenyan context.

The belief is made up of four constructs: enactive mastery experience (performance accomplishments, vicarious experience, verbal persuasions, and physiological and affective state (Bandura, 1977). Self-efficacy as a key component of Bandura's theory of behavioral change was tested under B. ED students' characteristics as a possible predictor of usage of blended learning in public universities in Kenya. A review of antecedent literature on self-efficacy has different findings. For example, Katsarou (2021) sought to establish the influence of self-efficacy and computer anxiety on Greek L2 students' self-perceived satisfaction and digital competence in higher education through a cross-sectional study. The survey involved 331 undergraduates from the faculty of agricultural and forestry sciences at Democritus University of Thrace. The findings revealed that self-efficacy positively influenced IT attitude and usage (Katsarou, 2021). This study has good insights into Bandura's social cognitive theory and self-efficacy among public university undergraduates. However, the study assumes that attitude and use of IT are equivalent to attitude and use of blended learning.

A correlational study was done in Turkey. The aim was to assess the influence of reflective thinking, problem-solving, metacognitive awareness, and community of inquiry on learners' academic self-efficacy in blended learning. The study involved 217 undergraduates in the faculty of education enrolled in Turkish language and math for primary schools and were doing introductory computer courses. The sampling was purposive. According to the study findings, a community of inquiry, metacognitive awareness, problem-solving skills, and reflective thinking strongly and positively correlated with self-efficacy among undergrads (Gizem, Yilmaz, Ustun, & Yimaz, 2023). In this study, self-efficacy is a dependent variable instead of an independent variable. Secondly, it used purposive sampling subjecting it to serious bias. Thirdly it used correlational design which only establishes relationships and not cause effect.

These weaknesses point to the need for another study that is robust and making self-efficacy the subject and independent variable.

In Ireland, Dublin City University, a repeated measures study was done among 135 students enrolled for 1st iteration of the MOOC. The study investigated the effect of an online learning preparatory MOOC on students' levels of online learning self-efficacy and emotions. Pre and post-course questionnaires were used to gather information that was analyzed using regressions statistics. The study found that online learning preparatory MOOCs achieve higher self-efficacy in communicating online, navigating technology, learning at a distance, and managing time (Beirne, Brown, Mhichil, & Lochlainn, 2023). Despite the study giving a good description of self-efficacy in the context of preuniversity enrollment, it looks at self-efficacy as a consequence of blended learning (MOOC) instead of being the cause. The study assumed that MOOC, a type of learning management system, as Blended learning. This study's results are in a developed country (Ireland). Therefore, the inferences may not apply in a developing country like Kenya, hence the need for another study.

A similar study using pretest and posttest design was done in Boston, USA. The study aimed to examine changes in self-efficacy for service learners involved in various community services. The researchers interviewed 228 students from one state university and 4 community colleges across 19 courses. The study revealed that the motivating potential of courses moderated self-efficacy (Cronstaves, Metchik, Lynch, Bedezos, & Richards, 2023). The study focuses on the role of motivation potential of courses on self-efficacy and service learning. Again, the study was self-reporting research in the northeastern United States whose results are susceptible to self-bias and may not credibly apply in Africa.

Phan (2023) did a comparative study on self-efficacy among Taiwan and Vietnam engineering students. The study used mixed methods and an 11-point Likert scale questionnaire to collect information from 222 engineering students. T-test and regression analysis were used and demonstrated that the number of prior MOOCs, English proficiency levels, self-regulation, and age predicted self-efficacy (Phan, 2023). Like precedent studies, self-efficacy is a dependent variable. Therefore, it does not tell how it influences the use of blended learning among public universities.

Among management students in Indonesia, explanatory research was carried out to examine the effect of self-efficacy on the quality of e-learning and students' satisfaction. Data was collected using questionnaires from 345 learners and analyzed using regression. The study found self-efficacy a significant and positive predictor of e-learning and satisfaction among management students in Universitas Muhammadiyah Sumatera Utara. Despite the relevant findings, the study assumed that e-learning is blended learning and that the Indonesian context would apply to Kenyan public universities, which is not true. In the same country, synchronized and unsynchronized blended learning was tested if it improved self-efficacy among basic design students in a vocational school in Bali. The quasi-experimental study that used questionnaires and multivariate analysis showed that BL affected student's self-efficacy positively (Budhyani, Candiasa, Sutajaya, & Nitiasih, 2022). This study puts BL as a predictor of self-efficacy and not vice versa. Again, the findings are within the vocational school context and not public universities, hence the need for another study that examines self-efficacy as a predictor of blended learning.

In southern and northern China, an exploratory study was done in 8 universities on the relationship among self-efficacy, motivation, and autonomous English learning. The data was collected from 1,605 Chinese learners using questionnaires and analyzed by

descriptive statistics, ANOVA, MANOVA, correlation, and regression. The results were that self-efficacy positively and significantly predicted autonomous English learning among Chinese learners in southern and northern universities. These results are limited because they are a product of self-reporting and assume that autonomous English learning is equivalent to blended learning. The Chinese findings may not apply to Kenyan public universities, too.

Kabigting (2022) used mixed methods to study modalities of blended learning against academic efficacy, thoughts, and achievements. Fifty grade 10 ESL learners from Jaustino Sevilla High School, were purposively sampled and interviewed using a semi-structured questionnaire. Descriptive statistics were used to analyze the data. The researcher found that academic efficacy had as high as 78% Pearson r correlation with better performance in English among Philippines learners. These findings relate well to academic self-efficacy but fail to address blended learning for students at public universities, hence the need for another study.

2.3.3 Students Previous Experience

In Social Learning Theory (SLT), previous experience is the vicarious experience; the influence of students towards hating and liking blended learning depended on other previously completed tasks. Past experiences included their successful encounters with digital devices to interconnect with comrades and lecturers on a social platform. The previous experiences and performances with technical device tools not only give the students requisite skills for blended learning but also caused social persuasion or power of others(peers and mentors) on students' ultimate behaviour (Koutroubas & Galanakis, 2022).

How did learners' previous experience with BL influence their use of blended learning? This question was answered by an exploratory case study in Australia. The study involved 20 students enrolled in the Bachelor of Law program's introductory unit. The case study used focused group discussions and questionnaires and found that most of the students were direct high school leavers who had not had prior BL encounters. However, their previous experience did not influence their use of BL. Instead, students were quick to learn BL's benefits and used BL tools such as videos and quizzes to catch up (Pechenkina, Scardamaglia, & Gregory, 2018). This study was done in an Australian setting which was different from Africa. Secondly, a sample of 20 students is too small to infer for all public university students in Kenya.

Shedrout (2021) also used an exploratory case study, to examine experiences of elementary teacher candidates on technology tools. Twenty-seven teacher candidates enrolled in a teacher education program at the Catholic Liberal Arts College in the MidWest participated in the study. Previous experience of the teacher candidates influenced their use of blended learning. The previous experience made them familiar with digital tools and usage (Shedrout, 2021). The case study was largely qualitative, excluding the strengths of quantitative methods. It also used a very small sample(n=27) during COVID-19. The results may not be valid in normal post-COVID-19 times and a large population of public universities in Kenya.

In Jordan, a descriptive survey study was done to investigate the online component challenges. The study had 263 participants who were students enrolled in sports science BL classes at the University of Jordan. Information was gathered with the help of questionnaires and analyzed with the aid of SPSS and AMOS software. Students who had no previous experience in BL encountered significant challenges in the use of BL for learning in sport science studies at the University of Jordan (Bayyat, Muaili, &

Aldabbas, 2021); meaning that previous experience significantly and positively influenced students' use of blended learning in Jordan. The limitation of this study is that it is exclusively qualitative and applicable to Jordan settings. There is a need for a mixed-method study that applies to the implementation of a blended learning approach in public universities in Kenya.

Among students of Sultan Qaboos University - Oman, a study was done to discover variables that affected the adoption of BL in higher education institutions. The research was animated by the Theory of Planned Behaviour (TPB). Data was collected on demographics, attitudes, subjective norms, beliefs, perceived behavioral control, behavioral intention, self-efficacy, and actual usage from 362 social science students. The data was analyzed by Pearson correlation and multiple regression. The analysis revealed that previous experience positively influenced social science students at Sultan Qaboos University to use blended learning (Hamad, Shehata, & Hosni, 2024). The exclusive quantitative approach and Oman contextualization makes the results of the study not applicable to Kenyan public universities with utmost validity.

While investigating the reasons for liking or disliking a learning environment in a local university, Chaw and Tang(2023) found out that previous experience and particularly prior use of web applications influenced students' digital readiness. The study used an exploratory sequential mixed methods research design where data was collected from 117 diploma, bachelor's, and master's students using focus group discussions and online questionnaires (Chaw & Tang, 2023). Likes and previous experiences of students in Singapore may not apply in Kenya due to geographical and developmental pedestal differences. The study also assumes that previous experience in web applications is the same as previous experience in blended learning. Therefore, there is a need for another mixed methods study focussing on blended learning in public universities in Kenya.

2.4 Characteristics of Lecturers and Blended Learning

Lecturers' characteristics are attributes of the instructor. They are presumed to influence the instructors' acceptance and ultimate use of BL in delivering course content to the learners. The attributes included perceptions, motivation, and techno-pedagogical skills. Of interest to this research is to examine the effect of a lecturer's perception, motivation, and techno-pedagogical skills on lecturers' usage of BL for teaching.

2.4.1 Perceptions of Lecturers about Blended Learning

Perception means sensory impressions expressed by instructors out of their experiences of using various Blended Learning Models in delivering courses and supervising students doing research. In an internet-based study, 56 instructors from higher education institutions that were purposively sampled were asked about the benefits, barriers, and professional practices employed to implement BL classes. The study used explanatory design and quantitative techniques to gather and analyze data. Anchored on andragogy theory, the study revealed that instructors highly favored BL to traditional face-to-face. They cited lack of training and professional development as the barriers. The instructors went further to suggest a focus on teacher education, the development of strategic plans, professional development, and enhancing educational policy (Jenine A, 2022). The study lacked an adequate sample of participants and focus on BL in public universities in Kenya, despite good insights and recommendations for improving BL.

Ketsman (2022) carried out a mixed-method research seeking to understand preservice teachers' perception of integrating BL in courses at a Midwestern university in the United States. The survey involved 114 preservice teachers who overall had a positive experience and perspective towards blended learning. They explained their reasons for

approving BL as allowing learning at their own time and pace as well as giving them new learning opportunities. However, they found BL hard to stay motivated (Ketsman, 2022). The finding augers well with blended learning in university setups but is in the United States. This makes it difficult to apply to Kenya public universities.

A study involving 113 tutors enrolled for education at a university in the north of England showed that the tutors had a negative experience of online learning. The study applied explanatory mixed methods to collect and analyze data. Lack of engagement and collaboration among learners, access and usage matters and time used to create and manage online tasks contributed to the negative perspectives of tutors (Youde, 2020). The study assumes online learning to be blended learning. Again the findings were limited to England and by extension Europe, hence not applicable to Africa.

Evidence from 58 academics from 16 different universities in Turkey revealed that faculty members were generally satisfied with using blended learning. However, they observed class absenteeism by the students, low interaction levels, communication problems, and difficulty during practicals and applied lessons. The study was done by convergent parallel design. Qualitative data was analyzed using content analysis while quantitative information collected by Likert scale tools was analyzed using descriptive techniques (Sengel & Aktas, 2022). Even though the study revealed faculty members' thinking and concerns about blended learning, the research was limited by the use of a small sample, and descriptive statistics and limited to Turkey. It is important, therefore, to have a more robust study that reveals faculty members' thinking and concerns on blended learning with a focus on public universities in Africa.

In Mexico, teachers disapproved blended learning because it involves a lot of work and effort (Carmen & Salcedo, 2022). They were reluctant to shift their practices from

traditional to blended technologies, too. The study used qualitative and interpretative methods to collect and analyze data from 54 teachers and 120 learners affiliated with the University Center of La Cienega(CUCi), Department of Basic Sciences, technological sciences, computer and informatics engineering. Again the context of Mexico is different from Kenya. Therefore, its conclusions may not be compatible with Kenya's public universities context.

During Covid19 pandemic, an explanatory sequential mixed-method study was done on blended learning at a public university in Thailand. The study aimed to establish perceptions and experiences of English as a Foreign Language(EFL) instructors' evaluations and experiences regarding BL. A semistructured questionnaire was used to collect information from 2217 undergraduate EFL 1st year students and 16 EFL teachers. The EFL teachers highly accepted blended learning because it was suitable for COVID-19 times, convenient, and beneficial (Watanapokaku, 2022). Even though the study findings applied to blended learning in public universities, the university was in Thailand during COVID-19. There is a need for a similar study in Kenya during normal times.

Indonesia, for example, a descriptive qualitative study on 10 English teachers in 2 state vocational schools in the Deli Serdang district that used Edmodo-assisted BL, found that the teachers had positive perceptions. According to the teachers, BL assisted by Edmodo resolved teaching problems and made learning interactive (Ekayati, 2019). The teachers preferred the Edmodo platform for sending learning material, and assignments, assessing students, and storing lessons. The sample was too small to warrant the representation and generalization of such findings to a larger population of lecturers. This implies a need for a broader study that covers lecturers' perspectives.

At the same time in Indonesia, 68 lecturers at University Sebelas Maret - Surakarta, the Faculty of Teacher Training and Education, were purposively selected to answer research questions. The study aimed to describe the perceptions of lecturers and students on online learning. A 4-point Likert scale was used to gather information and descriptive quantitative techniques were used to analyse the data. according to the study, lecturers positively approved of online learning because it was flexible, helped deliver learning materials, and facilitated academic services such as administration and lecture complaints (Marmoah & Poerwanti, 2022). Another study was done in Indonesia to reveal the thinking of English instructors as a foreign language(EFL). Two hundred and forty-seven EFL teachers participated. Answers to research questions were gathered using a pentatonic Likert scale and analyzed by the Rasch model and ANOVA statistics. The findings showed positive approval of BL by EFL teachers and gender did not matter (Mulyono, Ismayama, Liestyana, & Komara, 2022). The findings of both studies were short of methodological rigor and were confined to Indonesia during COVID-19 which is different content from Africa.

Around COVID-19 time, a study seeking to explain the attitudes of teachers towards BL was done in Mazar District, Jordan. The study used a Likert scale questionnaire to gather information from 69 teachers and 201 outstanding students who were randomly chosen. The data was analyzed using descriptive methods and the outcomes were that teachers moderately approved of blended learning. Secondly, gender did not influence teachers' perception of blended learning during the COVID-19 pandemic (Ayasrah, Alnasraween, Alshorman, & Aljarrah, 20222). During a pandemic situation, people react and perceive strategies differently and desperately. Therefore, these results from Jordan may not fit well in the normal post-COVID-19 situation in Kenyan public universities.

In Malaysia, a qualitative study on teachers' perspectives using blended learning assisted by UROX found mixed perspectives; that is, both positive and negative feelings (Balan & Saeed, 2020). Among 413 lecturers across universities, polytechnics, and colleges in Malaysia, an exploratory study using the Model of Personal Computer Utilization (MPCU) theory and Least Square –Structural Equation Modeling found that social factors; that is, job fit, affect, long-term consequences, facilitating conditions, complexity and IT experience influenced the instructors' perception of BL for teaching (Bokololo, 2022). The social factor that influenced lecturers' perceptions included subjective culture that determined personal interaction with peers and colleagues. Bokolo (2022) also observed that affect(emotional reactions) equally determined the lecturer's orientation towards the use of blended learning.

Despite acknowledging the importance of BL in teaching and learning, lecturers in Africa recorded mixed experiences. Evidence from Nigeria showed that perceptions of lecturers (male and female alike) towards using BL for teaching and learning were positive. A descriptive survey involving 170 lecturers from 2 education colleges in the northeast of Nigeria found that BL was critical in achieving meaningful, productive, interactive, and individualized learning (Obielodan, Amosa, Ala, & Shehu, 2019). In Osun State, a similar study on 62 lecturers in a college of education showed that the instructors were positive about BL because it offered an opportunity for better teaching and learning (Olusanjo, Buraimoh, & Omididina, 2020). Because of is descriptive, the study falls short of inferential provision to generalize the results to larger faculty members across the region.

In Zambia, for example, descriptive research involving 4 deans, 8 CoDs, and 4 students revealed that some lecturers had negative perceptions of BL courses. Overcrowded classes, lack of access to online classes by the student due to nonpayment of 50% tuition

fee, poor internet connectivity, limited Moodle, insufficient support and infrastructure were some of the reasons for the negative perceptions (Magasu, Lubbungu, Mulima, Kamboni, Sakala, & Kapanda, 2022). Similar findings of the negative perspective of lecturers were harvested in a cross-sectional survey in East Africa. The lecturers had a negative perception because BL needed more time to design and deliver courses, which added neither to their professional development nor promotion and lack of mentorship (Rizvi N. F., Gulzar, Wachira, & Nkoroi, 2017).

Evidence from Kenya in 7 public universities using a random sample survey of 210 lecturers and 420 students enrolled for Bachelor of Science (general), bachelor of commerce, bachelor of computer science, or ICT degrees revealed that Blended learning was new and a sizeable number of lecturers perceived it positively. The researcher also discovered that there was low usage of blended learning among lecturers because most universities had no policy. Lecturers found it easy to refer to hard copies, they feared technology failing during lectures, and most lecturers lacked ICT skills and inadequate internet connectivity. As much as this study gives bright insights under a large sample frame, it is obsolete. It was done between 2012 and 2014 before COVID-19.

In summary, a qualitative survey of 130 faculty members and administrators revealed that instructor's perception of modern technology in teaching and learning depended on two factors: the time it required and how the technology addressed their needs (Uzorka, Namara, & Olanilyan, 2022). When addressing instructors' professional development, therefore, it is paramount that continuous pedagogical and technical support works on aspects of technology and time as well as technology and the instructor's personal needs. For example, the universities should take care of lecturers' fears of loss of control and uneasiness on BL impact. The management should also

check lecturers' workload to save lecturers' burnout and institutional investment (Pardede, 2013).

2.4.2 Lecturers' motivation and blended learning

Motivation is a theoretical component achieved from modeling according to SLT. Motivation is a social characteristic, therefore, acquired from what is observed in the environment. Lecturers get motivated by what the institutions give in terms of rewards, the effectiveness of infrastructure, and enforcement of the policy. In the same reciprocal model, the lecturers' displayed behavior modeled the students' behavior; for people learn behavior by observing (Edinyang, 2016).

Using structural equation modeling to study variables that affected faculty members' usage of Learning Management Systems (LMS), 560 faculty members in two universities in the USA using LMS were interviewed. Besides system quality, the study revealed that faculty members' attitude toward LMS was a function of perceived self-efficacy and facilitation conditions (Fathema, Shannon, & Ross, 2015). While seeking strategic alternatives for blended learning in higher education, Pavla, Hana, and Jan, (2015) found a big share of dons an aging population who found it difficult to learn new strategies that are computer-based.

While investigating barriers and openings of blended learning in Canadian rural and remote schools, Ghimire (2022) used desk review. The study found that tutors lacked self-efficacy and actual readiness for blended learning (Ghimire, 2022). This study lacked the current feelings of education stakeholders in rural setups. Consequently, it did not have complete dependable facts on the challenges and barriers of rural and remote schools. The study's context is Canada. Canada's rural and remote setup may

not apply to the Kenyan setup. Finally, the study looked at schools and not public universities.

Quantitative research in Malaysia predicted behavioral intention and use of BL in higher education was carried out on 544 academic staff in universities, colleges, and polytechnics. The findings revealed that age, gender, ICT experience, and voluntariness did not matter in the lecturer's use of BL (Bokolo, 2021). This study was purely quantitative and ignored the qualitative strength of qualitative research. To confirm the result and enhance credibility, a mixed study is necessary.

Contrary findings were observed in Indonesia. Age affected lecturers' performance in the use of BL. Phenomenological qualitative research was used to appreciate the groups, events, roles, situations, or certain social interactions done at the University of Lampung. The study found a generation gap; junior seniors were missed among academic staff. Old lecturers were the majority and encountered difficulty in operating technology. They were either 'clueless' or exhibited low enthusiasm toward BL. The reasons for the behavior were: insufficient training and support; a lot of time was needed to prepare online material; they feared failing; and had a low opinion of the value of technology in education (Putri, Adha, & Pitoewas, 2020). This study used only qualitative and weak sampling non-probabilistic sampling method of snowballing; hence weak findings of effectiveness of age as a predictor to use of BL in teaching and learning in higher education. Therefore, there is a need for a better study using mixed methods and probabilistic sampling techniques to give credible results.

In a study seeking to enhance learning outcomes among students enrolled in BL courses, Pardede (2013) found out that lecturers suffered from burnout due to the lot of time required to prepare for courses. In this regard, the universities should take care of

lecturers' fears of loss of control and uneasiness on BL impact. The management should also check lecturers' workload to save lecturers' burnout and institutional investment (Pardede, 2013).

2.4.3 Lecturers' techno pedagogical skills and blended learning

While studying the teaching and learning styles, SLT was invoked to explain the blended classroom as a model scenario of a social learning environment. The scenario was perceived as an environment that provided a social network that integrated appropriate pedagogical skills and online learning (Raspopovic, Cvetanovic, Medan, & Ljubojevic, 2017). In a mixed study of 18 teachers involved in a nine-month professional development, appropriate pedagogical skills were identified as determinants of self-efficacy in teachers and modeling of students' behaviors (Azukas, 2019). The study was done among K-12 teachers to inform professional development. A small sample size and 12 teachers as participants weaken the applicability of its results on lecturers of public university lecturers.

According to the literature reviewed, lecturers used numerous Learning Management Systems (LMS) like, Edmodo, Moodle, Unirazak Online Experience (UROX), CANVAS, and Massive Open Online Course (MOOC) to teach, conduct online quizzes, share learning material, make course description, manage class assignments, announce course schedule/timetable and manage class attendance (Bokolo, 2021; Balan & Saeed, 2020; Ekayati, 2019). In other instances, BL was used to supervise postgraduate students during thesis writing. In so doing, different lecturers in different environments had varied experiences in using BL.

Regarding research supervision, a survey on masters' programs in Irish higher education institutions showed that lecturers had a positive perception. The supervisors

explained that BL gave a flexible opportunity for big and diverse student supervision. It also enabled the supervisors to build the capacity of students under master's programs as well as cascading effects in the supervision process. The study revealed that the approach enabled postgraduate students to complete novel and timely completion of studies (Donnelly & Fitzmaurice, 2015). In Australia, the use of BL in postgraduate supervision was perceived positively by lecturers. A qualitative study involving in-depth interviews of 8 supervisors and 9 students in 2 Australian universities showed that supervisors used basic IT platforms such as email, mobile phones, Skype, Dropbox, Twitter, and i. Annotate to meet students and guide students through their research process (Maor & Currie, 2017). Further research on supervision has identified serious challenges supervisors face with BL. In a cross-sectional qualitative study among 16 postgraduate student supervisors in Pakistan, a host of challenges were cited. The challenges included time, restrictions, irregular contacts, and technology for lecturers. It was also observed that students complained of supervisor contacts, diversity, perceptions, virtual communities, and academic communities as challenges that hampered their use of BL for teaching and learning (Zaheer & Munir, 2020). Because of a very small sample, the results failed to meet the reliability and validity threshold, hence weak to apply to lecturers' perceptions.

Bozkurt (2022) did a retrospective systematic review of 1986 studies to identify the bibliometric trends, patterns, and themes in blended learning. The study found that Bl was more used in higher education institutions. The study identified teacher education as a critical success factor in BL adaptation. Some of the skills required for the training include digital and media literacy, project management skills, and instruction design. Appropriate technology acquisition was crucial, too (Bozkurt, 2022).

In Uganda, an investigation on factors that predicted ICT integration in university education was done among lecturers of Kabale University in Uganda. A purposive random sampling survey was done and the findings indicated that techno-pedagogical skills and age significantly affected lecturers' integration of ICT in teaching. Lecturers aged below 40 years were compatible and used ICT more than their counterparts above 40 years old. Work experience was also found to have had a significant impact on ICT usage. Gender did not matter. Being a male or a female caused no difference in the use of ICT in teaching. Other variables that influenced teachers' use of ICT in teaching at Kabale University include low internet connectivity, inadequate financial resources for training, intermittent supply of power, and scarcity of computers (Besigomwe, 2016). A weakness in this study is the confusion of ICT for blended learning by respondents. Secondly, the study had a weak methodological approach that inclined toward non-probabilistic sampling and denied the inferential power of generalization.

2.5 Institutional preparedness and Blended Learning

Institutional preparedness entail vision, policies, structures, infrastructure, partnerships, and technical support systems that favor or frustrate the acceptance and implementation of blended learning at public universities. Perris and Mohee(2021) guide that quality in higher education embracing blended learning can only be assured when BL is anchored on institutional vision; policies and structures; infrastructures, partnership; research and innovation; program relevance and curriculum; learning support; and professional development (Mohee & Perris, 2021).

In a cross-institutional study among engineering students at Purdue, Trine, and McGill universities institutional dimensions were observed as critical success factors in BL implementation in higher education institutions. Blended learning was positively approved as a "freeform environment" for teaching and learning. However, institutional

preparedness such as extra curriculum pressures and responsibilities, time constraints, and technical support affected the application of blended learning. The investigator also discovered a lack of structures to realign online and face-to-face teaching affecting acceptance of blended learning. The study adopted Actor-Network Theory(ANT) which took students as active actors and implementors of blended learning. A semi-structured interview was done with 271 engineering students from the universities and a step-by-step thematic analysis of collected data (Evenhouse, Lee, Berger, Rhoads, & DeBoer, 2023). The sample was good enough. The fact that the study used a self-reporting method, weakened the study with subjectivity and bias. Secondly, thematic analysis weakened the study with limitations of new insights at saturation.

Empirical evidence from higher education institutions from Switzerland and South Africa identified and classified institutional challenges as technological, organizational, and teaching and learning. The study used a four-stage Delphi design and purposive sampling to reach and collect blended learning challenges from 51 experts; n=27 from South Africa and n=24 from Switzerland (Mirata, Hirt, Bergamin, & Westhuizen, 2020). According to the study, technological challenges entailed high-cost hardware and software, inadequate physical infrastructures, poor internet quality on campus, and unflexible functions of Learning Management Systems (LMS) and adaptive systems. On teaching and learning, the study found reluctance to shift to adaptive teaching and learning, lack of professional development, low commitment and unmotivated faculty members, and digital and media illiteracy. Regarding organizational challenges, the study identified poor institutional commitment to adaptive learning, a lack of a ‘distance university’ strategy, and a digital divide. Mirata et al. (2020) advise that institutions of higher learning need to mainstream adaptive learning by integrating it into the university strategy, investing in constructing necessary infrastructure, providing

resources and support as well as building lecturers' capabilities. Despite detailed findings, the study assumes that adaptive learning is the same as blended learning and views of experts are the same as the perceptions of students. Thirdly, universities in Switzerland and South Africa, the study sites, enjoy different socio-economic backgrounds and different organizational contexts from Kenya. The findings, therefore, are most likely unfit for blended learning implementation in Kenyan public universities. It is advisable to have a mixed-method study with a Kenyan focus.

2.5.1 Staff Competencies

In Canadian Universities, Sacher, Sacher, and Vaughan (2014) observed inadequacies in the capacities (knowledge, skills, and abilities) to use technology to deliver educational content in universities. Lecturers experienced bump-ups in designing, developing, and implementing blended learning. An online survey on the e-learning community in the western central part of Alberta, Canada revealed that integrating learning centers and mentors with online teaching by application of a web-based learning management system as a conferencing platform was a significant determinant of academic success (Sacher, Sacher, & Vaughan, 2014). In addition, there were 'value gaps' such as sustainability, passivity, and lack of community of learning. Resources to sustain blended learning activities were inadequate, blended learning was perceived as passive, and a sense of community was lacking when engaging in blended learning (ibid).

However, Palestinian higher learning institutions had students(72%) and instructors(75%) suffering from skills deficiencies in internet and computer applications (Shraim & Khlaif, 2010). In Philipines, Kalinga State University, a mixed method virtual survey of 508 participants revealed that institutions of higher education experienced technology lapses such as erratic internet connectivity among other

psychological factors that frustrated the use of BL delivering courses (Abbaca-Tuguic, 2021).

Across Africa, the adoption of BL was still at the embryonic stage. Kizito (2016) found that institutional factors such as organizational culture, paucity of trained and motivated staff, limited technological support, and absence of records of success to build on hampered the application of BL for teaching and learning by universities in Africa. A summative evaluation of blended learning in universities in East Africa revealed that blended learning was highly relevant. Most universities (80%) used blended learning. However, the students and lecturers experienced inadequacy in ICT infrastructure, a lack of supportive policies, overloaded teaching staff, unmotivated staff, and inconsistency in the application of blended learning for teaching and learning (Young, et al., 2021).

At Kenyatta University, there were inconsistent efforts to build supervisors' capacity and the university lacked resources to effectively implement blended learning which affected the completion rate (Miheso-O'Connor, Bwire, & Mwangisi, 2020). Specifically, training, planning, and legislation were found to be critical in the effective application of a blended learning model and in creating a favorable educational environment (Masadeh, 2021).

2.5.2 University Policies

Policy is a principle that guides decision-making and action to achieve a reasoned outcome (Nteere, 2012). This study refers to the presence of the university’s plan of action on acquiring and implementing blended learning for teaching and learning. To find key conceptual and theoretical features that facilitated success in implementing blended learning in higher education, a desk review approach was used to

systematically analyze 11 studies using Google Scholar and Scopus as search strategies. Institutional policy was identified as a core feature affecting blended learning. Other policy-related features identified by the studies were vision, goal, infrastructure, faculty, strategy, professional development, and support systems (Bekele, Karkouti, & Amponsah, 2022). Even though the findings are evidence-based, they are neither public university-specific nor Subsaharan Africa-specific.

In Canada, after reviewing the university website, and policy documents and interviewing faculty members in the University of Manitoba case study, Wallace and Young(2010) observed that the blended delivery approach was not supported by institutional policy. It was largely an individual initiative to migrate from face-to-face to blended delivery. Such policy gaps may hamper the continuity and effectiveness of the practice as well as support or undermine the university mission (Wallace & Young, 2010).

A case study in Canada reviewed policy documents to identify policy encounters in applying blended learning in universities. The study classified the challenges into two: faculty/academic and management/organizational related. The study identified faculty or academic gaps to entail a lack of criteria to assess parity or equivalence of BL courses and determine course workload for faculty members. Students' technology access and technology orientation issues were not addressed (Wallace & Young, 2010). Concerning management and organizational issues, the study identified a lack of fit of blended learning in university goals, and priorities at institutional, faculty, and departmental levels. Wallace and Young (2010) also found gaps in approval of BL courses, support for development and delivery of BL courses as well as ownership of intellectual property rights. The issues raised by this study are critical for the

development of blended learning policies for universities. However, the study was Canada-based, whose context may be different to Africa.

In Pakistan, an exploratory qualitative study, involving 30 faculty members and 60 undergraduates enrolled in social sciences, arts, and humanities, was done. The research aimed to identify the practices and issues affecting blended learning in Islamia University of Bahawalpur. Lack of policy guidelines was a key finding (Hussain, Shahzad, & Ali, 2019). In addition, the research found that the university did not support the adoption of online and blended learning, and lacked sophisticated technology, time management, authentic learning resources, and information. Weaknesses found in this study are methodic; which was skewed towards the qualitative strand alone. Secondly, the study setup is in Pakistan which is different from Africa.

A qualitative exploratory study on a developing university in South Africa. The aim was to assess faculty members' perceptions of blended learning. It was also to point out barriers to adopting blended learning in the faculty of education. The study was anchored on the Innovation Diffusion Theory (IDT) and Technology Acceptance Model (TAM). Apart from the review of documents, sixteen lecturers were interviewed using focused group discussions, eight CoDs, and one dean by individual interviews. According to the study, the university lacked policy, structures, management processes, support from leaders, and mechanisms facilitating the development of e-learning. The study also reported inadequate spacious classes, technological resources as well and computer skills as challenges to the implementation of blended learning (Tshabalala, Ndeya-Ndereya, & Merwe, 2014). Despite the resourceful findings on policy obstacles to blended learning in an African university, the study is weak because it assumes e-

learning to be blended learning. Secondly, it is weak because of its exclusive qualitative method and small sample of participants.

Among public universities in Kenya, a mixed method study of one hundred and forty-eight faculty members in 3 Kenyan public universities using blended learning revealed that the GoK had an elaborate institutional and policy framework to increase broadband internet and interconnectivity through Kenya Education Network Trust (KENET) for teaching, learning, and research in universities (Tarus, Gichoya, & Muumbo, 2015). Although the GoK had successfully interconnected the universities, only 11% of the students in public universities in Kenya used the blended learning approach. The barriers to the use of the blended learning approach were inadequate ICT infrastructure, finance, policies technical skills, assurance among faculty members, and enough time to create E-learning content.

2.5.3 Infrastructure

Across the European Higher Education Area (EHEA), institutions heavily invested in equipment, infrastructure, and professional development. However, the approach suffered from strained funding, the inability to design a concerted institutional approach, and inadequate staff (Gaebel, Zhang, Stoeber, & Morrisroe, 2021). The level of blended learning in Europe is at an advanced level; to the extent of developing a customized model. A 3-round Delphi study carried out between December 2018 and July 2019 on 28 European experts revealed that Europe had developed a European Maturity Model (EMM). EMM defined how blended education was designed and implemented in institutions of higher learning. The model systematically mapped blended learning activities, conditions, strategies, and policies. Maturity was the degree of formality and optimization of evidence-based decision-making design, recording, and CQI. The model helped to guide instructors to align course objectives, learning

activities, and assessments with target student groups. The model had 21 subdivisions that were grouped under course, program, and institutional levels (Dijkstra & Goeman, 2020). Lecturers were actors at the course level. Coordinators, deans, and departmental heads were actors at the program level.

Masadeh (2021) averred that infrastructure and technological tools positively promoted instructors' and learners' positive attitudes. Desktop review revealed that universities had poorly predisposed institutional capacity to accept and implement blended learning. Most universities had unfavorable structures, support systems, strategies, and human resources; facts that are little discussed in current literature (Porter, Graham, Spring, & Welch, 2014). In the United States, after a survey of 11 institutions of higher education that participated in the Next Generation Learning Challenge (NGLC), Graham (2014) found that institutional strategy, structure, and administration played a critical role in the adoption and application of blended learning for instruction and learning.

Infrastructure was identified as barrier number one in an exploratory qualitative study investigating the inhibitors of faculty blended learning in Ghana. The study purposively sampled 22 teaching staff from four faculties of a university in Ghana. Data collected was subjected to coding, comparative, and thematic analysis. Other barriers identified were institutional issues, faculty concerns, and technical support (Anturi-Boampong, 2021). The findings of the research showed a picture of challenges an African university in matters of implementing blended learning. However, the methodology is only qualitative with a very small sample that was purposively sampled. These make the findings weak and biased, hence the need for a study grounded on mixed methods and a bigger sample.

Among 114 students at Tom Mboya University College (TMUC), an exploratory study was done on taking advantage of informal education for the expansion of participation in Kenyan university education. The study used survey methods to collect data. The findings showed BL in Kenyan public universities was not at the desired level because of infrastructure. Specifically, there was a lack of computing resources that facilitated BL for teaching and learning (Hawi, Heinrich, & Lai, 2021). Because of the self-reporting method's weaknesses, the findings needed to be confirmed by a mixed-method study.

In a scoping review of challenges that faced e-learning in universities in Kenya, deficiency of Information, Communication, and Technology (ICT) infrastructure was cited as a major barrier. Other challenges were inadequate e-learning policies, fast change in technologies, technical and pedagogical incompetence among e-tutors and e-learners, and the absence of e-learning theory to support the e-learning exercise (Kibuku, Ochieng, & Wausi, 2020). In addition, Kibuku, Ochieng, and Wausi (2020) discovered that universities faced budgetary and sustainability challenges. The investigators also observed undesirable attitudes about e-learning, quality challenges, the dominance of technology and market forces in e-learning, and inadequate partnership among the e-learning participants. In as much as the study gives insightful knowledge on the barriers to the application of blended learning on campuses in Kenya, it is purely based on literature. No current feelings and views of actual participants are captured to validate the findings. The study also assumes that e-learning is equivalent to blended learning. Therefore, there is a need for a mixed-method study with a focus on how infrastructure hinders the use of blended learning in Kenyan public universities.

Infrastructure and unreliable technology were also found as a barrier to the sustainable upscaling of ABRACADABRA; an online platform for teaching and learning English

and French in Kenya. These findings were a product of an exploratory qualitative study that involved 40 respondents whose findings were descriptively analyzed. Other hindrances to the widespread use of ABRACADABRA were a lack of technical support at school, inadequate policies, negative students' attitudes, and a lack of professional development (Lysenko, Abrami, & Wade, 2022). The weaknesses of this study rest in the small sample and exclusive use of qualitative methods. Another research that includes quantitative and robust inferential analysis of data is needed.

In Kenya, Kathula (2021) observed that universities were obligated by the Republic of Kenya to embrace BL as a classroom of the future. Kaniaru, Karani, Mirie, and Nyangina examined 486 students from 2 public and 2 private universities and found that institutions of higher learning experienced inadequate infrastructure, and teaching staff to implement effectively blended learning. In addition, a study by Tarus, Gichoya, and Mumbo (2015) among 148 staff in 3 Kenyan public universities revealed that policies, finances, internet bandwidth, and time were lacking and hampered the use of blended learning use for teaching and learning.

To overcome the challenges, an analysis of initiatives by institutions to adopt blended learning placed senior management at a pivotal point with roles to fix most of the identified challenges (Groen, Ghani, Germain-Rutherford, & Taylor, 2020). Specifically, the study fests on senior management to handle physical infrastructure, policies, technical support, pedagogy, institutional culture, and ethical issues that facilitate blended learning in universities. The policy framework should address institutional priorities, resources, infrastructure, intellectual property, course selection, and approval. For institutions to succeed in implementing blended learning, they should be sensitive to local community and university needs, enhance organizational readiness, and technical resources, motivate faculty, improve communication, and establish

feedback channels. The second is to develop staff in active learning and building commitment to the concept. The third is to redesign courses to fit blended learning models in a scholarly and transformative manner.

2.6 Blended Learning Models for Higher Education

Globally, universities use various blended learning models to achieve innovation, flexibility, and greater learning outcomes and motivate lecturers and students (Faustino & Kaur, 2022). A large amount of literature has classified the implementation of blended learning into four models which include: rotations, flex, a la carte, and enriched virtual learning models (Harris, 2017; Saragih, Cristanto, Effendi, & Zamzami, 2019; Faustino & Kaur, 2022; Jayanthi, 2019; Shamad & Wekke, 2019; Adamu & Hawamdeh, 2020; Chukwuemeka, Anekwe, & Ochuma, 2020).

Like Europe, Asia has developed a Hexagonal E-learning Assessment Model (HELAM). Arabia is a head with an open university that used blended learning programs to expand access to education to diverse and dispersed students. The country adopted the Hexagonal E-learning Assessment Model(HELAM) to make blended learning effective. The model was defined by six dimensions, that is; learner perspective, supportive factors, information content quality, instructor attitudes, system quality, and service quality.

The first model is the rotation learning model. The rotation model is a package that learners learn either individually in small mall groups or as an entire class by rotating various learning stations that are both technology-based and paper and pencil-driven modalities (Harris, 2017). Within a given course, students rotate on *a fixed schedule or at the lecturer's direction* in classroom-based learning modalities. Rotation learning can be individual, flipped, lab, and station as shown in Fig. 2.1

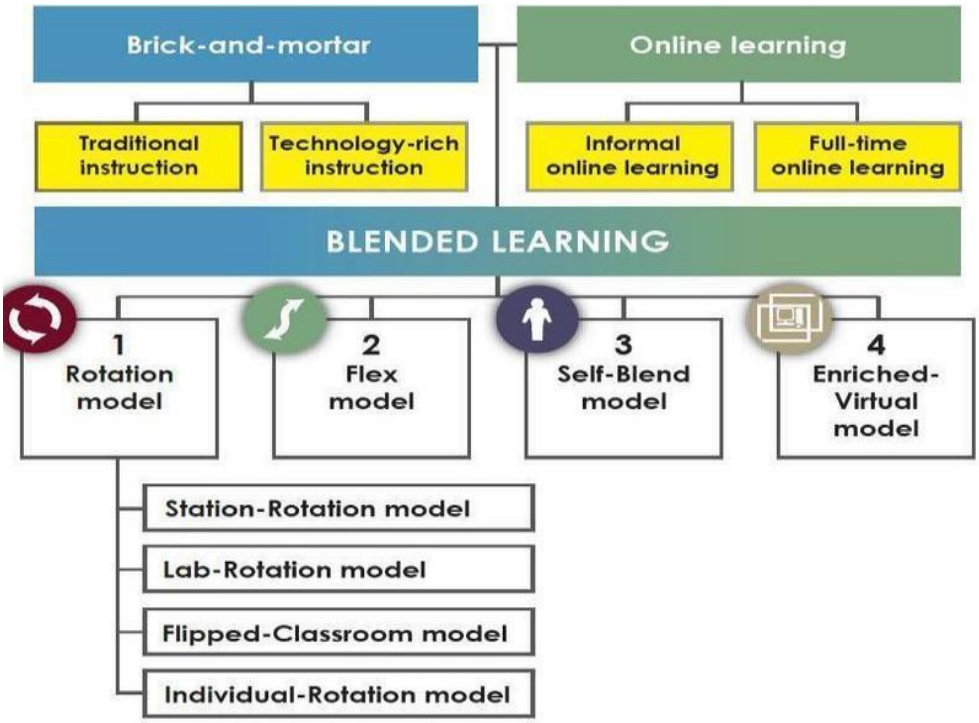

Fig. 2.1: Blended Learning Model. Adopted from Jayanthi (2019)

Individual rotation learning happens when a student has an individualized algorithm directed by a lecturer to rotate several stations available, one of which has to be of online modality in a fixed schedule. According to schedules set by a lecturer or software algorithms, learners learn by rotating activity stations only, on their playlists (Saragih, Cristanto, Effendi, & Zamzami, 2019). Learners have greater freedom of choice; choosing the learning options, the learning material to access, and the time (Faustino & Kaur, 2022). This makes individual rotation learning difficult in a school setting.

In lab rotation, a course is offered to learners by rotating them to a computer lab as an online learning station. In a predetermined schedule directed by the lecturer or software algorithm, learners change from one station to another, and specialized computers in a lab are provided for learning managed by a course lecturer. A survey study of class IX students at the Darul Mutaallimin Islamic Boarding School in Indonesia revealed that the lab rotation model not only motivated learners, but helped them to easily understand

learning materials (Adiwisastia, Mulyani, Alawiyah, Wibisono, Iskandar, & Purnia, 2020).

Flipped rotation is when students do online off-site learning before attending face-to-face classes with the lecturer's guidance. According to Jayanthi (2019), flipped learning delivered content and instructions online. Islamic higher education institutions in Indonesia applied all types of rotation models, but flipped classrooms were the most preferred by the lecturers (Shamad & Wekke, 2019). Another example of rotation blended learning is station rotation. In station rotation learning, students rotate all stations within a classroom or group of classrooms (Jayanthi, 2019). In a course, students are under the direction of lecturers or a fixed schedule, students rotate around classroom board learning modalities, one of the stations being the ICT station. ICT station acted as a source of general and instructional design information needed by the students to learn. In an experimental study among elementary school students, station rotation improved higher-order thinking skills and memory in learners (Rusijono & Bachfair, 2019).

The second model is the flex blended model. In the flex model program, content and instructions are primarily delivered to students online and the lecturer offers face-to-face guidance on a flexible, adaptive, and need basis. Flex model allowed learners to work on their own, engage, and develop concepts before a face-to-face encounter with the lecturer for debriefing (Adamu & Hawamdeh, 2020). While studying lecturers' involvement in blended learning in Islamic higher education in Indonesia, Shamad and Wekke(2019) observed that the flex model was best for lecturers providing supervision to students doing research projects at the college level.

A La Carte (ALC) or self-blend model is the third. In a la carte, students had a choice of taking some courses online and others in face-to-face (brick-and-mortar) classrooms. The online class could be taken on campus or remotely offsite (Jayanthi, 2019). A survey of 200 English language students at the University of Port Harcourt, Nigeria, revealed that phonetics students who learned through the A La Carte (ALC) model achieved better than the learners taught through face-to-face encounters. Equally, female students using the ALC model in phonetics performed better than their male counterparts (Chukwuemeka, Anekwe, & Ochuma, 2020). ALC allowed students to take a portion of the phonetic courses online to enhance the components taken in a classroom. Chukwuemeka, Anekwe, and Ochuma (2020) recommend this model to corporations because of its flexibility and adaptability that workers could learn either on the road to work or in the comfort of their homes.

The fourth model is the enriched virtual learning model. Under this model, students meet the lecturer face-to-face on inception and specific days. The rest of the days the students learn remotely and independently to complete the coursework before submitting it to the lecturer (Harris, 2017). Students rarely meet their lecturer and if it happens, it is optional or even a social event (Jayanthi, 2019).

2.7 Summary

In summary, the literature shows that education methods are undergoing a fast transformation driven by globalization, digitalization, the Internet of Things, and the COVID-19 pandemic. The drivers have disrupted the conventional, traditional classroom of face-to-face instruction and ushered in a new normal in the education sector where learners and instructors need not meet physically. Because of the benefits and weaknesses of each pedagogical approach, blended learning is emerging as the best option that taps into the advantages of e-learning to build on the weakness of face-to-

face. However, its implementation at the public university level is still an uphill task. Reasons for poor uptake of blended learning are both institutional and personal (students and lecturers).

The success of blended learning in public universities, therefore, depended on the personal characteristics of students and lecturers and the institutional preparedness of the universities. These challenges are best explained in connectivism learning theory, andragogy, and technology acceptance models that demonstrate how connectedness and acceptance of postmodern technologies would facilitate adult learning both on campus and away from campus. Borrowing from Europe and Arabia, public universities in Kenya are challenged to come up with the best models to create awareness, develop and their own blended learning for effective teaching and learning.

2.8 Research Gaps

A synthesis of the information written on blended learning in public universities showed that there were still some gaps to be filled. First is the failure of the researcher to desist from the linear approach of analysis in nonlinear studies. As much as there is a shift in the understanding of learning from linear to nonlinear (Merriam, 2017), most scholars still apply linear statistical analysis methods like linear regression to generate findings. Nonlinear studies must be approached by nonlinear statistical techniques. Complex and non-liner problems such as accepting and using innovative methods and learning among students in a public university cannot be solved by linear statistical methods such as regression. There is need for a more robust multifactorial analysis that model determinants of innovation adoption in a social learning system. This study fills this gap by providing structural equation modeling option of analysis.

The literature review also showed that most theories had weaknesses and needed improvements by either combining or introducing new variables. In blended learning literature, most studies used Technology Adoption Model (TAM) which had an overreaching weakness that did not consider the social learning environment perspectives. This study gives an alternative of grounding the solutions to accepting blended leaning methods on Bandura's Social Learning framework. According to the framework, perceptions, motivation, self-efficacy and previous experience of end users compounded with social environment factors like policy, infrastructure and capabilities play a critical role in adoption of new techniques.

The literature review shows gap in role models. There were no records of success to build on (Kizito, 2016). There were no documented university role models in the public sector, whose best practices and models could be used to inspire and mentor others. A systematic review of blended learning revealed that most research pointed at evidences from developed countries (Ashraf, et al., 2021). Consequently, this study seeks evidence of adoption of blended learning in local public university context. Further it develops a model that is relevant in implementing blended learning in Kenya.

Other gaps identified in the research are the scarcity of literature on ICT skills and infrastructure for teachers, students, and institutions. It was also observed that most studies dwelt on blended learning and students in universities, hence failing to align blended learning with lecturers and institutional strategies (Galvis, 2018). Consequently, it was necessary to carry out this study which sought to help public universities address the challenges of digital natives, increasing demand for higher education under constrained resources, and COVID-19-driven learning.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

The purpose of the research was to investigate the institutional influences on the acceptance of the blended learning method among Bachelor of Education students in selected public universities in Kenya. This chapter laid bare the path and plan through which the researcher conducted research on institutional influences on the implementation of a blended learning method in selected public universities in Kenya. This chapter was sectioned as philosophy, research methodology, design, study area, population, sampling procedures, instruments, instrument administration, data analysis, and ethical considerations. The sections on research philosophy and design described pragmatism and exploratory sequential mixed research design as the most preferred. The study area was Nairobi, Embu, Kirinyaga, Garissa, Kilifi, Bungoma, Nakuru and Kisumu Counties in Kenya and the population consisted of students, lecturers, and managers of public universities. The researcher used both multistage random and purposive sampling to identify respondents. Interview schedules, participant observation, and open and closed-ended questionnaires helped to gather data. Data analysis was descriptively done. The last section discussed how the research upheld ethical principles while undertaking the research.

3.1 Research Philosophy

The research accepted a pragmatic worldview. Pragmatism philosophy was based on the practicability principle or active human action (Budnk, Klepar, & Bluznuk, 2020). Pragmatist philosophy posited that truth was what worked and gave solutions to the problems at hand (Creswell, 2014). In addition, Budnk, Klepar, & Bluznuk(2020) argued that pragmatism provided for checks and balances through doubt-belief and

meaningful processes. This worldview was preferred because it gave latitude to the researcher a wide range of methods, techniques, and procedures for studying the institutional influences on the use of blended learning approach in selected public universities in Kenya. In evidence-based blended learning studies for higher education, pragmatism was highly recommended because of the rigor and clarity involved in establishing 'what worked' (Newton, Silva, & Berry, 2020). Creswell (2014) recommended a pragmatic worldview in studies where a mixed methods approach is applied. While conceptualizing the ontological, epistemological, and axiological stances, it was revealed that pragmatism was quite appropriate for a mixed-method technique because it legitimized the blending of quantitative and qualitative methods in one study (Maarouf, 2019).

3.2 Research Methodology

The selection of research methodology was determined by the characteristics of the research problem, the experience of the researchers, and the audience of the study (Ishtiaz, 2019). Given the determinants within an increasingly complex social context, the mixed method was the most appropriate approach to gather information to address the research questions (Hu & Chang, 2017). The mixed methods approach was an emergent third and preferred methodological movement for social and medical scholarly inquiry.

The methodology was an amalgamation of quantitative and qualitative methods. Whereas the quantitative approach attended to numeric data and analyses, the qualitative focused on narrative data and analysed open-ended research questions. The qualitative method permitted the investigator to explore deeper into the underlying issues that affected the success of blended learning in public universities. At the same

time, the method enabled the researcher to get the voices and perceptions of the students, teachers, and university managers. A qualitative approach was employed because of its ability to provide a general representation of the problem and yield a refined and extended explanation of the picture (Subedi, 2016). Bowen, Rose, and Pilkington (2017) advised that joining qualitative and quantitative types of information gave a deeper understanding and insight into the research issues than would have not been by using any of the approaches separately.

Beyond open and closed-ended questions for data collection, Croswell (2014) averred those mixed methods also involved merging, analysing and integrating both forms of data in the report. A similar study in Turkey to understand and interpret private school teachers' experiences with distance learning used mixed methods and found valid findings that reflected the views of instructors (Turan, 2022). In Spain, mixed methods research was used to study parental attitudes towards physical actions and the value of children's lives during the COVID-19 pandemic (Lopez-Aymes, et al., 2021). Mixed methods proved that it could be used best in assessing attitudes and obstacles of medical students at Al-Quds University in Jerusalem and An-Najah National University in Nablus. In addition, the method yielded relevant pedagogical strategies that addressed the interests, diverse needs, strong points and expectations of learners in Palestinian universities (Ayyaub & Jabali, 2021).

Locally mixed method research was found appropriate in a study involving 7 private universities in Kiambu County in Kenya. The study was about having quality blended learning system that facilitated completion among university students (Ngao & Kinyanjui, 2024). Again, an analysis of selected policy documents in order to streamline blended learning in Kenya found mixed method research appropriate to

study blended learning usage in a social learning environment (Dimba, Kingori, Sawe, & Syallow, 2014).

3.3 Research Design

The researcher opted for an exploratory research design to guide the study. According to Creswell (2014), the exploratory approach was one of the basic designs that enabled the integration of qualitative and quantitative data collection procedures and techniques (Hu & Chang, 2017). The exploratory design focused on addressing curiosity, better understanding, feasibility, and development of models to be used in subsequent research (Babbie E. , 2010). It was appropriate to investigate BL as a new phenomenon in teaching and learning using the sentiments of B. ED students and lecturers in public universities.

In Pakistan, for example, exploratory design was used to unearth practices and issues of blended learning among undergraduate students at the Islamia University of Bahawalpur. The study used qualitative data from 30 university lecturers and 60 students using focused group discussions. The findings fitted well in the blended environment; explaining that BL activated students' involvement in the learning process and sustained their motivation through edutainment (Hussain, Shahzad, & Ali, 2019). In the Philippines, an exploratory study design served well in exploring perceptions and experiences and learning strategies to fix problems in a BL environment. Among students learning English as a foreign language in Oman, exploratory design was also used to study 57 students and found that BL enhanced involvement, development and use of learning strategies (Gasmi, 2016). These pieces of evidence of the successful use of exploratory design support the decision to adopt it

to investigate the institutional influences on the use of blended learning approaches among B. ED students in selected public universities in Kenya.

3.4 Study Site

The study site meant the geographical space that the researcher confined himself or herself in identifying representatives for the survey (Theofanidis & Fountouki, 2018). The study was carried out Nairobi, Embu, Kirinyaga, Garissa, Kilifi, Bungoma, Nakuru and Kisumu Counties in Kenya. Considering regional balance, the researcher purposively picked 8 universities. The choice of the universities was informed by the larger 8 former provinces or current regions covering the whole country. The universities include Pwani University, University of Embu, University of Nairobi, Kibabii University, Kirinyaga University, Maseno University, Laikipia University, and Garissa University.

3.5 Target Population

The target population in research refers to a complete set of possible objects whose specified characteristics are to be investigated (ThackerII, 2020). The target population could be objects, cases, activities, or even phenomena. In this study, the target population are students, lecturers, Heads of Departments (CoD), and deans in the 41 public universities accredited by the Commission for Higher Education (CUE). As of the year 2020/2021, there were 546,699 university students. The study targeted B. ED students enrolled in the 3rd year; education faculty members (lecturers, CoDs and deans) and observed the infrastructure in the eight universities. The researcher enhanced the response rate by obtaining the sampling frame from the respective deans' offices. A study of sampling frame designs in the Netherlands revealed that a sampling frame improved response rate (Kolln, Ongena, & Aarts, 2019). The sample frame was a roll

of students enrolled for B.Ed. and in third year. The researcher concealed the participant's identity by assigning numbers for each respondent.

3.6 Sample and Sample Size

Nassiuma (2017) described sampling as choosing procedurally a representative subset of the population to generalize conclusions on the entire population. The sampling design entailed multistage sampling that guided the selection of part of the targeted population for the study. This study sampled students, lecturers, and CoDs from all public universities because it was cheaper and quicker to yield results with high precision as compared to collecting data from the entire population. The researcher obtained a list of public universities from CUE. Lists of B. ED students were obtained from deans, faculty of education of the targeted universities. The lists formed the sampling frames for the study. To reduce miss-outs and non-responses the lists had official names and contacts from the universities (Kolln, Ongena, & Aarts, 2019).

3.6.1 Sampling Procedures

Because of multiple sources of data (students, lecturers, CoDs and deans), the study employed different sampling techniques to systematically choose subjects or data sources from predefined populations (Sharma, 2017). Multistage sampling was used. The first stage involved selecting 8 universities out of the 41 universities licensed by CUE. Cluster and purposive sampling were used to group the 41 universities into 8 regions to address the geographic diversity. The research selected the 8 universities using purposive sampling based on the criteria of availability of education programs, willingness to participate in the study, and regional balance. Based on the criteria, the eight (8) universities were: Pwani University, University of Embu, University of Nairobi, Kibabii University, Kirinyaga University, Maseno University, Laikipia

University, and Garissa University. After getting 8 universities, the researcher used to go for the 3rd-year students enrolled in B. ED programs. The third-year students enrolled in B. ED were selected because of their long experience and knowledge. According to Table 3.1, there were 6655 third-year B. ED students in the eight selected universities. To get the representative populations of participants from the universities per each stratum, the researcher used the Nassiuma formula to select a sample from a population.

$$n = \frac{NC^2}{C^2 + (N-1)e^2}$$

Where; n= desired sample size

N = the proportion of the target population or estimated characteristics being measured

C = Covariance = 0.3

e = standard error ± 0.02

Table 3.1: Public university 3rd Year B. ED students sample size

	Students			Lecturers			CoDs
University	N	N	Appr.	N	n	Appr.	
Pwani University	675	22.07806367	22	20	6.666666667	7	1
University of Nairobi	1360	44.48320977	44	42	14	14	1
Maseno university	1420	46.44570432	46	10	3.333333333	3	1
University of Embu	950	31.07283035	32	8	2.666666667	3	1
Kirinyaga University	500	16.35412124	17	18	6	6	1
Kibabii University	750	24.53118186	24	10	3.333333333	3	1
Garissa University	150	4.906236372	5	10	3.333333333	3	1
Laikipia University	850	27.80200611	28	30	10	10	1
Total	6655	217.6733537	218	148	49.33333333	49	8

After the establishment of the sample size of the eight universities as n=218, the researcher determined the sample size for each university. Each university's sample size was determined as a fraction of the 218 proportionate to its 3rd-year B. ED enrolment population. For example, Maseno University and the University of Nairobi

had the highest sample sizes as compared to Garissa University and Kirinyaga University.

Because 3rd-year B. ED students had homogeneous population characteristics, a simple random sampling (fish bowl) technique was used to identify the actual participants using the nth number. A container with folded sheets of paper on which the names of the students were written was established. The names were picked randomly and those picked were not returned to the container. The picking went on till the predetermined nth number was attained.

Whereas all CoDs were identified using purposive sampling, lecturers in the faculty of education were identified by simple random sampling to fill out the lecturer's questionnaire. The researcher used a mix of face-to-face interviews and drop and pick techniques in filling the questionnaires on the selected students and lecturers. The researcher also carried out an institutional visit for active participant observation. Observation of the infrastructure available such as internet hotspots, ICT department and lab within the university environment helped the researcher fix self-assessment pitfalls. The observation method was also used because of its objectivity and ability to collect qualitative data (Morgan, Pullon, Macdonald, Mckinlay, & Gray, 2017). In the UK, a similar study employed institutional visits and observation and yielded more reliable and valid results on undergraduates' experiences of blended learning.

3.7 Instruments of Data Generation

Because the study used mixed methods to collect both qualitative and quantitative data from the participants, data was obtained from non-experimental (survey) techniques using semi-structured interviews. Given three sets of populations, the researcher had

three sets of tools: questionnaires for students and lecturers, an interview schedule for deans/CoD, and an observation checklist for infrastructure.

3.7.1 Questionnaires

For questionnaires, *open (qualitative)* and *closed-ended (quantitative) questionnaires* are used to collect data. Sekaran (2013) recommends that questionnaires are efficient data collection tools that enable the researcher to know exactly what is relevant and how to test the variables of interest. They are also important in measuring the factors of concern. Questionnaires are simple to handle and beneficial because they cover a huge population within a short time. It is also cost-effective and promotes freedom and precision of answers from the participants (Sekaran, 2013).

A questionnaire is used to extract information relating to the survey (Nassiuma, 2017). This study designed two sets of questionnaires to extract information from sampled lecturers and students. On one hand, the student blended learning questionnaires are formulated as per the study objectives in an orderly manner. For example, section A captures demographics; Section B BL course information; Section C – students' perception of BL; Section D – students' self-efficacy; Section E captures previous experience; Section F – challenges; Section G – suggestions for improvement. On the other hand, the lecturers' blended learning questionnaire is sectioned as follows. Section A captures data on demographics; Section B – the perceptions of lecturers on BL; Section C – motivation of lecturers to use BL; Section D – techno-pedagogy skills; Section E – challenges; and Section E – suggestions by lecturers for improvement.

Borrowing from Jackman (2018) and Dziuban, Graham, Moskal, Norberg, and Sicilia (2018) studies, the study constructs Teacher Blended Learning Experience Questionnaire (TBLEQ) and Student Blended Learning Experience Questionnaire

(SBLEQ) that is blended with open-ended questions to capture qualitative data, too. The questionnaire items are built based on a Likert scale answer design. The researcher promotes response rate, discriminative power, validity, and reliability by adopting a seven-point Likert scale instead of a five-point Likert scale (Omillo, 2019). On a seven-point Likert Scale, students and lecturers were asked for information to address research questions. The response range was from 1 -Strongly disagree; 2 – disagree; 3 – Slightly disagree; 4 - Neither agree nor disagree; 5 - Slightly agree; 6 – Agree; 7 – Strongly agree.

3.7.2 Interview Schedule

To take care of the qualitative strand, the researcher carried out in-depth open-ended interviews. The researcher used an interview schedule to conduct in-depth interviews. The interviews were administered to key informants; that is, deans as respondents. The interview format was Section A – background characteristics; Section B – institutional factors; Section C – lecturer factors; Section D – student factors; and Section E-pedagogical factors.

An in-depth interview is a tête-à-tête between interviewee and interviewer to describe the interviewee's views, experiences, feelings, thoughts, and perspective about a phenomenon being investigated (Morris, 2015). In-depth interview is widely used in tapping valuable knowledge from experienced stakeholders. The method is encouraged for qualitative research because of its versatility, credibility, flexibility, and granularity of data. Morris (2015) described the in-depth interview as a versatile strategy of data collection; applicable to a wide range of questions and its outcomes were impactful to the public perspective. A stronger interviewer-interviewee relationship eliminates distortion of information, hence reducing biases and increasing the credibility of data.

The flexibility of the interview format embedded in in-depth interviews allowed the investigator to tailor the order of questions, probe for clarity, and stimulate the subconscious opinions of the respondents. Another observed strength of interviews is that they yielded granularity in data. It produced rich information in fine details (Roller, 2020).

The method was selected by the investigator because it has previous compatibility in social, ethnographic, and phenomenological studies. In blended learning studies, in-depth interview was found suitable for identifying the technological, instructional, class size, technical support, and collaborative roadblocks encountered during the implementation of blended learning among learners enrolled in the National Service Training Program (NSTP) in a University in Manila, Philippines (Alvarez A. V., 2020).

3.7.3 Observation Checklist

In addition, the study used direct observation. The researcher was keen to see how BL is used in public universities, the characteristics of learners, lecturers, and institutional support facilities and infrastructure, specific availability of electricity, Wi-Fi, bandwidth, and application networks, and how they support the functioning of blended learning and teaching. While collecting data, the researcher had to maintain a balance between an 'insider' and an 'outsider' to remain objective throughout the process.

Direct observation was a more nuanced systematic description of a phenomenon in a social setting. It is a written picture of the situation that provides for verifying nonverbal expressions of feelings. In social science, participant observation is acclaimed for its validity, insightfulness, and flexibility. In educational ethnography, participant observation was commended because it helped the researcher collect naturalistic data on significant aspects of a phenomenon (Antoniadou & Dooly, 2017). Among 12th-

grade TKJ students in Negeri, participant observation proved a success in exploring the incorporation of outcome-based education in the curriculum through the blended learning method (Ni'mah, Solihin, & Sari, 2024).

Table 3.2 Data Gathering Tools per Objective

	Objective	Tools	Respondents
1.	to establish the influence of learners' characteristics on the use of blended learning for teaching and learning B.ED students in public universities in Kenya;	Questionnaires	Students
2.	to determine the influence of lecturers' characteristics on the use of blended learning for teaching and learning in public universities in Kenya;	Questionnaires interview guide	Lecturers and deans
3.	to find out the effect of institutional preparedness on the use of blended learning for teaching and learning among B.ED students in public universities in Kenya;	The questionnaire, interview guide, observation checklist	Students and lecturers
4.	To develop a pedagogical model that explains institutional characteristics that influenced the use of blended learning for teaching and learning	Questionnaire Interviews	Students, Lecturers, deans

3.7.4 Validity of Research Instruments

Research tools' validity mean that the instruments test what they were intended to test. The validity of the tools is checked before being used to ensure trustworthiness, authenticity, and credibility. Validity in mixed research is the legitimization process of knowledge produced, research practices, and design (Ngulube 2020); and if the tools measure what it was intended to measure appropriately, meaningfully, and usefully (Varlik, Sorm, & Gunbayi, 2021). In an exploratory sequential mixed methods design, Creswell (2014) advises validity of quantitative scores and the accuracy of qualitative

findings are to be ascertained. Widely, the researcher sampled the target population and judiciously selects items in the instrument. Various items in the various tools used were subjected to the lecturers for critique and reconstruction to ensure that they sought information they were intended to capture.

In addition, the researcher employs triangulations by examining pieces of evidence from different data sources; a 'rich, thick description' of the study settings; including divergent or contradictory evidence to the themes (Creswell, 2014); spending longer time in the field for in-depth information on the manifestation of BL in public universities; and engaged university supervisors and experts to examine whether data gathered by instruments resonated well with the lecturers, students, and deans.

Content validity is ensured by observing Crocker and Algina's (1986) four-step procedure. The first step is to identify and outline the domain of interest that is blended learning as it is used in public universities. The study develops adequate items in the instrument that tapped into the domain of interest guided by the research objectives. The second step subjects the instrument to the guidance of the domain experts. The experts are supervisors from Moi University who guided the researcher in developing the instruments. Judgment of experts, reviewers, and assessors in the field, helped the researcher correct uncertain and ambiguous questions or discard ineffective questions in the instrument (Mohajan, 2017). Third was by consistently matching methodology to the study objectives. Finally, it matched the analysis of findings to address the set objectives (Crocker & Algina, 1986).

Construct validity of tools of research was checked by use of correlation analysis. This established whether the hypothesized relationship existed between the constructs of interest. The study also used scale in the instruments that were context and population-

dependent. This was informed by a review of previously related studies. For example, a similar study at the University of Central Florida (UCF) revealed that binary scale and regression analysis gave credible findings on students' perception of blended learning as a 'new traditional model' for teaching and learning (Dziuban C. , Graham, Moskal, Norberg, & Sicilia, 2018). In the University of Trinidad & Tobago, a mixed method; a blended Learning Experience Questionnaire (SBLEQ) for students as well as a Teacher Blended Learning Experience Questionnaire (TBLEQ) for lecturers were effectively used to gather evidence on students' and lecturers' experiences of switching to blended learning from traditional learning method (Jackman, 2018). Open and close-ended questions were also used to measure the attitudes of 4th-grade mathematics teaching students at Kocaeli University on the role and responsibilities of instructors and learners in BL course content delivery. Building the data gathering instruments informed by the numerous evidence of specific tools and methods from studies measuring perceptions and experiences of lecturers and students was a test for construct validity. In a behavioral science study focusing on students in public schools in California, content and construct support tests based on evidence elsewhere were found to be critical in curing culture and gender biases that were likely to occur in the instruments (Cermak & Bissell, 2014).

3.7.5 Reliability of Research Instruments

Ondieki, Abobo, and Orodho (2015) described reliability as dependability. It is the level of consistency in reproducing similar outcomes by the same instruments if another study is done. The researcher determined the consistency or dependability of the SBLEQ and TBLEQ to create similar outcomes if used in more than one study to measure hypothetical statements. SBLEQ and TBLEQ were considered reliable if the results were reproducible and similar in measuring the same construct another time.

Molla and Bissdoff (2012) argued that high reliability indicated that items in the tools were valid and consistent and that items in SBLEQ and TBLEQ would be closely related.

The reliability of the SBLEQ and TBLEQ were enhanced through a pilot study that was carried out at the University of Eldoret. Sincero (2012) described a pilot study as the usage of a small sample to measure questionnaires' reliability and validity. In a similar study of assessing teachers' perceptions towards school-based assessment, a mini, replica, and rehearsal of the main survey were done to measure the reliability and validity of the data collection tools. In this study, piloting helped to tune and deliver highly reliable tools by eliminating irrelevant items (Ghazali, 2016). The University of Eldoret was used for piloting because it is a public university and shared similar conditions with other public universities. The piloting of the questionnaire helped in detecting faults and enhancing the reliability of the tools.

Reliability coefficient alpha was the most preferred measure in testing Likert-scaled instruments that measured perceptions of students and instructors in a blended learning environment. For example, the reliability coefficient best measured the reliability of the attitude scale and magnitude of inter-correlation in a study on the perception of learners about BL in comparison with face-to-face and online learning (Huang, 2016). In a similar study to assess student satisfaction with BL, the reliability coefficient of Cronbach's alpha was found to fit in determining the internal consistency of research instruments.

The Cronbach alpha coefficient ranged between 0 and 1. The closer the alpha was to 0, the greater the unreliability; and the closer the alpha was to 1 the stronger the reliability. In other words, when the alpha was close to 1, it meant that the items in the instrument

had high internally consistent covariance (Hajjar, 2018). The computer Software SPSS version 23 was used to compute the test score. Oluwatayo (2012) and Balan (2013) averred that 0.7 would be considered an acceptable threshold. In this study, the overall reliability coefficient was 0.804, which is closer to 1, meaning that the instrument demonstrated very high internal consistency and covariance. On this ground, the instruments were found to be highly reliable and fit for data collection.

3.8 Administration of the Instruments

After institutional approval of the proposal, the researcher embarked on the protocol for collecting data. The approval entailed obtaining an introductory letter from Moi University and a research permit from the National Council of Science, Technology, and Innovation (NACOSTI). A pilot study was done before the main survey to check the validity and reliability of the instruments. The tools were adjusted by recommendations from the university supervisors and pilot study results. On the ground, the researcher visited and sought permission from county commissioners, their deputies at the sub-county level, the education officers in the study area, and the university registrar academics. The registrar academics introduced the researcher to the deans and CoD who later introduced the researcher to the students selected to participate in the study.

The researcher recruited eight research assistants with a first degree either in education or statistics. They were trained on research objectives, the contents of the tools, and how to handle interviews. They were also trained on interview schedules and in-depth interviewing skills. Before starting face-to-face interviews, the investigators and research assistants sought the respondent’s consent. On closing the data-gathering

process, the investigator sent appreciation messages to participants who participated in the interviews.

3.9 Data Analysis

Data processing was centrally done by the researcher. After the collection of data, coding followed using SPSS and spreadsheet to allow analysis and checking for misses. The researcher used a sequential mixed method in analyzing both qualitative and quantitative datasets; one after the other and merging the findings during interpretation. Sequential mixed-method analysis was preferred because of its proven ability to comprehensively handle comparative studies such as this where several universities were involved (Almeida, 2018). The sequence of analyzing data using the two strands was to start with the quantitative and then qualitative strand to help contextualize, and enrich the findings and assist in generating new knowledge (Bowen, Rose, & Pilking, 2017). This sequence was also echoed in a study on perceptions of Israel healthcare workers and health executives (Gresser-Edelsburg, Cohen, Shahbari, & Hijazi, 2020). The analysis of every objective was done as shown in Table 3.3 below.

Table 3.3: Objectives, Tools, Type of Data and Analysis

	Objectives	Tools	Data type	Analysis
1.	to determine the influence of learners' characteristics on the use of blended learning for teaching and learning among B.ED students in public universities in Kenya;	Questionnaires	ordinal data (graded opinion on 7-point scale)	Descriptive
2.	to examine the influence of lecturers' characteristics on the use of blended learning for teaching and learning among B.ED students in public universities in Kenya	interview guide Questionnaires	Nominal (to measure demographics) Qualitative data from interviews	Descriptive Thematic analysis
3.	to analyze the effect of institutional preparedness on the use of blended learning for teaching and learning among B.ED students in public universities in Kenya;	Questionnaire Observation guide	Ordinal data (grading feelings of lecturers and learners)	Descriptive
4.	To develop a pedagogical model that explained the institutional influences on the use of blended learning	Amos version 24	Use of regression estimates to determine the best combination of factor and paths	Inferential

The researcher analyzed the survey data quantitatively through frequencies, percentages, means, standard deviation, chi-square, and correlation. The use of SPSS version 23 helped the researcher in coding and analyzing the data.

The development of a pedagogical model explaining the institutional influences on the use of blended learning was done using structural equation modeling with the aid of AMOS version 24 software loaded on SPSS. Results of items relating to learners'/students' perception, self-efficacy, and previous experience were grouped and transformed into indices under each variable as exogenous variables, the same was done

on outcome variable; that is institutional factors and effective teaching and learning. To come up with the model, the researcher followed the following steps.

1) Opened Amos' work page and set the paper size as legal.
2) Drew the model as informed by the conceptual framework using the observed variable icons for exogenous and endogenous variables; latent variable icons for error terms or disturbance terms; double-edged arrow for covariance; single arrow for effect/regression/predictor estimation;
3) Drew SPSS transformed data into Amos by selecting the data file, opening it, and allowing Amos to read the file. This was confirmed by clicking on the list variables tab.
4) Placing data for variables from the Amos data file (list of variables) to the respective model icons
5) The researcher did covariance of exogenous variables (students' perception, efficacy, and previous experience) using the double-edged arrow; and straight single-edged arrow showing prediction or regression estimates.
6) Generated estimates using maximum likelihoods, estimates of means and intercepts taking care of missing data, and standardized data.
7) Calculated estimates by analyzing correlations, regression estimates, and intercepts for predicting endogenous variables (outcome variables i.e. institutional influences and effective teaching and learning.
8) Finally, the researcher did a model fit test to check if the data fit well in the model. The tests were chi-square (**CMIN),** Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA). The thresholds for data fitting in the model are shown in Table 3.4 below. The actual score from Amos model fit estimates will be entered in the

respective box of the last row and compared with the threshold. For example, if P was less than 0.05 in CMIN results, then the chi-square indicator would show that the data did not fit well in the model and vice versa.

Table 3.4: Model Fit Table

Test	Chi-square	TLI	CFI	RMSEA
Threshold	CMIN ≥0.05	TLI≥0.95	CFI≥0.90	RMSEA≤0.08

Qualitative data was gathered by open-ended questionnaires, document analysis, observations, and in-depth interviews were analyzed using content analysis techniques. The researcher transcribed the collected data into protocols and transcripts. After transcription, it was recommended that the transcribed data be coded using qualitative data management software (specifically Excel) for further analysis (Bussetto, Wick, & Gumbinger, 2020). Coding entailed the researcher labeling the data with cues as per the variables under investigation. The process included 'bracketing' and 'phenomenological reduction' (Hycner, 1985); where the researcher drew meaning and structures of the transcribed data from the realm of the respondent with objectivity. The researcher collated the meanings into clusters aligned them to relevant themes and research questions and eliminated redundancies. Unique themes from the responses were also identified and contextualized before writing a composite summary of the qualitative survey. Merging of the quantitative and qualitative findings followed to determine whether the students and lecturers could adopt blended learning for teaching and learning. The reason for merging the two strands of data was that one strand is to argument or play a supportive role to the other (Subedi, 2016).

3.10 Ethical Considerations

Ethical considerations in education research are principles guiding the researcher to uphold good practices and values such as objectivity, honesty, carefulness, and integrity through a research process to yield results that may help to solve education-related problems in society. Natade, Murunga, and Kabesa (2023) considered it important because it promoted the correct search for knowledge, truth, and limited occurrence of error. Ethical considerations also encouraged collective work standards such as fairness, mutual respect, compliance with a legal framework, social responsibility, and human rights (Natade, Murunga, & Kabesa, 2023). During the design, literature review, data collection, analysis, and reporting the researcher observed 'do no harm,' consent, confidentiality, plagiarism, conflict of interest, data integrity, and approval.

The researcher embraced the 'do no harm principle.' Risks entailed possible harm that may arise from the research. Such harm would be loss of resources such as time, reputation, physical and emotional (Fleming & Zegwaard, 2018). The doing no harm principle demands that the researcher evade risks and distribute the benefits of research equitably in society. And where risks were likely, participants were informed. The researcher addressed this by way of a descending approach; that is minimized risks by creating awareness, elimination, and isolation. Particularly, the rights of participants were respected by the investigator. Equally needs, values, and desires of the respondents were respected. Because collecting data from lecturers and students concerning blended learning in universities has far-reaching implications for places of work and learning, moral choices affecting decisions, standards, and behavior; the researcher protected the respondents, developed trust in them, and safeguarded them against misconduct and impropriety that institutions may suffer.

The researcher obtained informed consent from the respondents before engagement. The investigator ensured the students, lecturers, CoDs, and deans understood the purpose and procedure of the research, the limits, and the likely potential risks. The investigator made data collection methods known to the respondents. The goal and objectives of the information collected were made known to the respondents. The respondents were made to fill out and sign an informed consent form before engaging as proof that they were sufficiently informed, gave voluntarily the information without compulsion, and were free to withdraw at any point of the research process (Abed, 2015).

The researcher upheld the anonymity and confidentiality of the respondents. Whereas confidentiality was about not sharing with other participants' private information; anonymity was the degree to which the source of information could be known (Bos, 2020). Confidentiality meant that the investigator de-identified data and kept the respondents' identities confidential (Fleming & Zegwaard, 2018). The researcher enforced the two by using a pseudonym to withhold the real identity name from the study and made information obtained during the interview untraceable to the participant (Dougherty, 2021). As recommended by a systematic study on blended learning, the investigator managed confidentiality by anonymizing the data, not showing respondents' names in the data set, strictly managing participants' data and cautiously handling sensitive data (Bergdahl, Nouri, Karunaratne, Afzaal, & Saqr, 2020).

Plagiarism as an act of intellectual dishonesty, is when other authors' works were used by the investigator without acknowledging by either citing or referencing (Khan, 2016). In this context, the researcher mitigated plagiarism by respecting other researchers' work by acknowledging, paraphrasing, citing, and properly referencing all publications

used. Before submitting the thesis report for examination and dissemination, an anti-plagiarism test was carried out by the Moi University librarian and issued with a non-academic plagiarism certificate to prove the authenticity of the study. The researcher disseminated research findings to the public and informants through publications in reviewed journals and academic conferences.

Also, the researcher avoided conflict of interest by ensuring that business or blood relationships did not exist and influenced their study. According to Bassey (2019), scholars doing educational research need to consider conflict of interest to produce bias-free and useful findings. This was implemented by evading to collection of data from his institution and using research assistants in data collection.

Data integrity is also one of the ideals prescribed for educational research management (Bassey, 2019). The investigator ensured data integrity by not manipulating respondents' answers. The researcher also avoided fabricating results to suit study objectives. Data was handled with the utmost professionalism, honesty, and integrity. During data reporting, the researcher prioritized the respondents' rights, interests, and wishes. The investigator upheld impartiality during the information collection, analysis, and reporting stages.

Approval from relevant institutions was another ethical issue that was considered important, especially when human participants were involved (Fleming & Zegwaard, 2018). While designing a blended learning course for medical students in a university, a quasi-experimental study found that getting permission from college management was important (Mosalanejad, Ebrahimi, Tafvizi, & Zarifsanaiey, 2020). Keeping in line with GoK laws, after the proposal defense, the researcher obtained letters of

introduction from Moi University and approval from NACOSTI before going to the field to collect data.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.0 Introduction

This research aimed to examine the institutional influences on the use of blended learning approaches among Bachelor of Education (B. ED) students in selected public universities in Kenya. Using a comprehensive methodological path laid in chapter three, this chapter endeavors to address research questions and objectives by reviewing, analyzing, and compiling qualitative and quantitative findings from the field. The chapter is organized into six sections: introduction, response rate, pilot test results, demographic analysis, analysis of study variables (blended learning, learners' characteristics, lecturers' characteristics, and institutional preparedness), and pedagogical models.

4.1 Response Rate

Response rate is described as the proportion of the persons who participated in the study compared to those who were invited to participate. In behavioral studies such as this, the response rate demonstrated the willingness or level of cooperation of the respondents to partake in the study.

The response rate is shown in Table 4.1 below.

Table 4.1: Response Rate

Population description	Sample (n)	Actual returned	Percentage (%)	usable questionnaires
3rd year BED Students	218	196	89.9	180
Lecturers	148	49	77.6	38

Out of the 218 sampled students for the study, only 196 (89.9%) questionnaires were filled and returned. After sorting and cleaning data, only 180(82.57%) questionnaires were found usable. Above 80% response rate, the survey is considered responsive and the response rate satisfactory.

The response rate for lecturers is low 77.6 %). Out of 148 lecturers, 49 returned the questionnaires and only 38 were usable. The low return rate was because of busy schedules for lecturers. The researcher found challenges in finding time out of their schedules for interviews.

4.2 Pilot Test Results

Sincero (2012) describes a pilot study as the usage of a small sample to measure questionnaires' reliability and validity. In a similar study of assessing teachers' perceptions towards school-based assessment, a mini, replica and rehearsal of the main survey is carried out to measure data tools' reliability and validity. In this study, piloting helps tune and deliver a highly reliable tool by eliminating irrelevant items (Ghazali, 2016).

The pilot study was done at the University of Eldoret in Uasin Gishu County which was not among sampled universities. The survey targeted three strata of participants: fifty 3rd-year BED students, 20 lecturers, and 5 administrators (deans and CoDs) in the faculty of education. The selected university (University of Eldoret) was used for piloting because it is a public university and shared similar conditions with other public universities. The piloting of the tools helped detect mistakes and inform improvement of the tools' reliability. Pilot test results are findings on items of tools used in the initial mini-study carried out among 50 students and 15 lectures at the University of Eldoret.

The results are meant to inform the researcher on feasibility and show corrections required in making the main study reliable and valid.

4.2.1 Reliability Tests

The reliability test of students' Blended Learning Experience Questionnaire (SBLEQ) was computed from three sections (C, D, and E) that were under the Likert scale as shown in Table 4.2.

Table 4.2: Reliability Results of Students' Blended Learning Experience Questionnaire

Description of	No. of items	Mean	Standard deviation	Cronbach alpha
Students' perception of using blended learning	15	62.09	22	0.904
Students' self-efficacy in using blended learning	5	23.06	8.859	0.863
Students' previous experience in using blended learning	3	13.43	4.916	0.648
Average				0.805

Source: Pilot data (2023)

On average the reliability was 0.8; above the Cronbach alpha threshold of 0.7 and closer to 1; meaning that reliability was good (Oluwatayo, 2012 & Balan, 2013). Hajjar (2018) applauded such results that demonstrated high internal instrument consistency and covariance. The reliability test of the lecturers' Blended Learning Experience Questionnaire was not tested because of the poor response rate. However, lessons from the SBLEQ informed the construction of the questionnaires for the main study.

4.2.2 Validity Tests

To address the validity of research instruments, the researcher sought lecturers' opinions, discussions, and suggestions about items on students' and lecturers' capabilities to use blended learning in public universities. The university supervisors and experts helped to examine whether data-gathering instruments resonated well with the lecturers, students, and university management. Evidence from different data sources were triangulated; including divergent or contradictory evidence to the themes. The researcher also used a 'rich, thick description' of the study settings and spent a longer time in the field for in-depth information on the manifestation of BL in public universities.

Content validity was observed by the researcher identifying and outlining the domain of interest in the adoption of blended learning in institutions of higher learning. The study focused on developing adequate items of the instrument that taped the domain of interest guided by the research objectives. Secondly, the researcher subjected the instrument to the guidance of the domain experts. The experts were supervisors from Moi University. Judgment of experts, reviewers, and assessors in the field helped the researcher correct uncertain and incomprehensible questions and discard ineffective questions in the instrument. Thirdly, the researcher observed consistency and matched methodology to the study objectives. Finally, the researcher matched the analysis of findings to address the set objectives.

The construct validity of research instruments was checked by the use of correlation analysis. This established whether the hypothesized relationship existed between the constructs of interest. The study also used scale in the instruments that were context and population-dependent. This was informed by a review of previous related studies.

For example, a similar study at the University of Central Florida (UCF) revealed that binary scale and regression analysis gave credible findings on students' perception of blended learning as a 'new traditional model' for teaching and learning (Dziuban, Graham, Moskal, Norberg, & Sicilia, 2018). At the University of Trinidad & Tobago, a mixed method; Student Blended Learning Experience Questionnaire (SBLEQ) for students as well Teacher Blended Learning Experience Questionnaire (TBLEQ) for lecturers were effectively used to gather evidence on students' and lecturers' experiences of switching to blended learning from traditional learning method (Jackman, 2018).

Semi-structured questionnaires were used to measure the attitudes of 4th-grade mathematics teaching students at Kocaeli University on the role and responsibilities of instructors and learners in BL course content delivery (Gecer, 2013). Building the data gathering instruments informed by the numerous evidence of specific tools and methods from studies measuring perceptions and experiences of lecturers and students was a test for construct validity. In a behavioral science study focusing on students in public schools in California, content and construct support tests based on evidence elsewhere were found to be critical in curing culture and gender biases that were likely to occur in the instruments (Cermak & Bissell, 2014).

4.2.3 Lessons learned from Pilot Study

1. Low or poor reliability on students' previous ICT experience variable. This was due to fewer items in the questionnaire covering the variable. In the main survey, the researcher increased the items to a minimum of five.
2. Restructuring of questionnaire. The questionnaire for students lambed together items of effective learning and teaching, and institutional influences under

students' perception. This caused challenges during analysis. The main study sorted out items under each variable in the conceptual framework.

3. Observed ambiguous questions and irrelevant sections. Section B of the students' questionnaire served no purpose in the study objective. Therefore, questions on the program and faculty needed clear framing in the next main survey.
4. Deficiency of literature review on the development of education, institutional influences, students' previous experience, and effective teaching and learning variables. For example, at the compiling of this pilot report, the Munavu report, the newest presidential working party on education was not yet out. This became part of the main study. Institutional dimensions of blended learning like values (vision and philosophy), curriculum, infrastructure, governance structures, policy, partnerships, research, and development have to be captured in the next phase.
5. Difficulties in interviewing faculty members and heads of department. It was easier to interview students than lecturers and deans. The universities were just opening and not all staff were on campus, others feared the management would victimize them. The strategy for the main study has to change. The research scheduled data collection during sessions and pass through university management to collect data from the faculty members and heads.

4.3 Analysis of Learners' Characteristics and Use of Blended Learning

The purpose of this section was to determine the influence of learners' characteristics on the use of blended learning for teaching and learning among B. ED students in public universities in Kenya. The learners' characteristics entailed demographics, perceptions, self-efficacy, and previous experiences. Demographic analysis was about their gender,

age, county, high school grade, other previous studies, form of schooling, employment status, use of computer, and availability of internet at home.

Gender of respondents

The social construct and gender roles in society determined how people of different sex perceived blended learning. Therefore, the researcher inquired to know the respondents' gender by asking, "What is your sex?" The majority of the respondents were male n=86(53.3%) as shown in Fig. 4.1

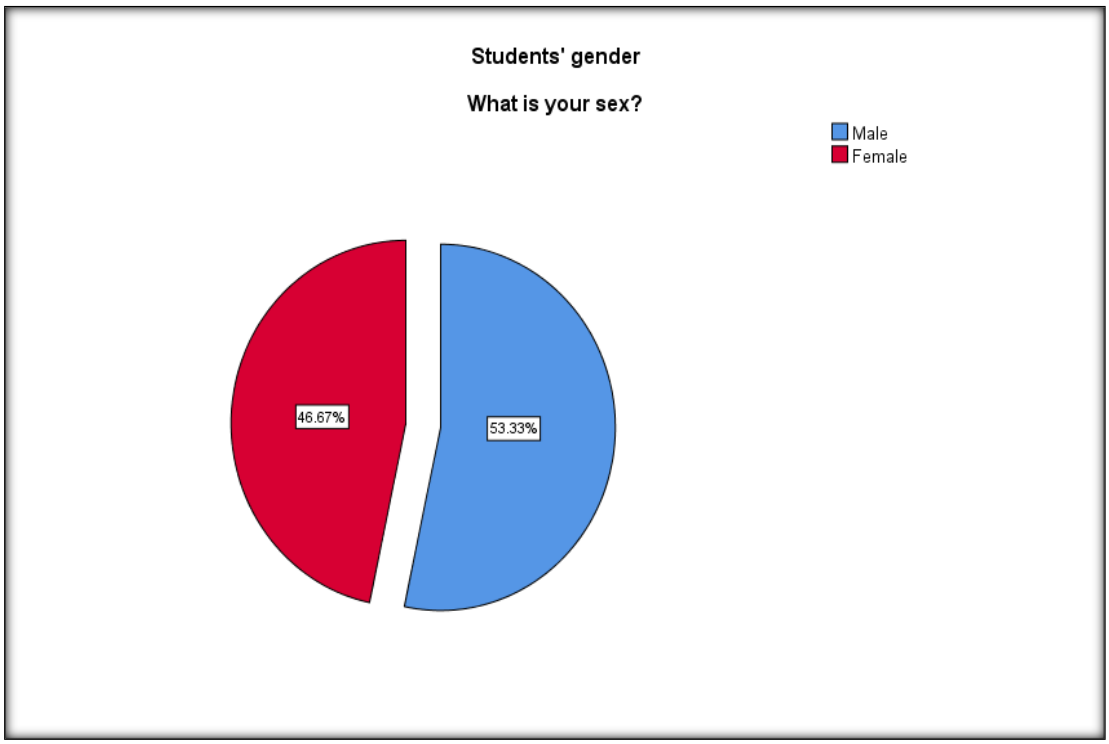

Fig. 4.1: Respondent's Sex

The results show that female students were less n=84(46.67%) compared to their male counterparts. Hence the gender imbalance. Gender imbalance is vivid right from enrolment to usage of BL for learning in public universities in Kenya. At the University of Ljubljana, Slovenia, findings of a similar study among public administration students revealed that some e-courses were easier for female students than their male counterparts (Aristovnik, Tomazevic, Kerzic, & Umek, 2017). In Canada, gender did

not matter (Khechine, Lakhal, Pascot, & Bytha, 2014). In the spirit of no one being left behind, there is a need to bridge the gender gap in the usage of BL for learning and teaching.

Respondent's age

The investigator also sought to know the respondents' age. The findings as per Fig. 4.2 revealed that n=150(83.3%) of the students were aged between 18 and 35 years old.

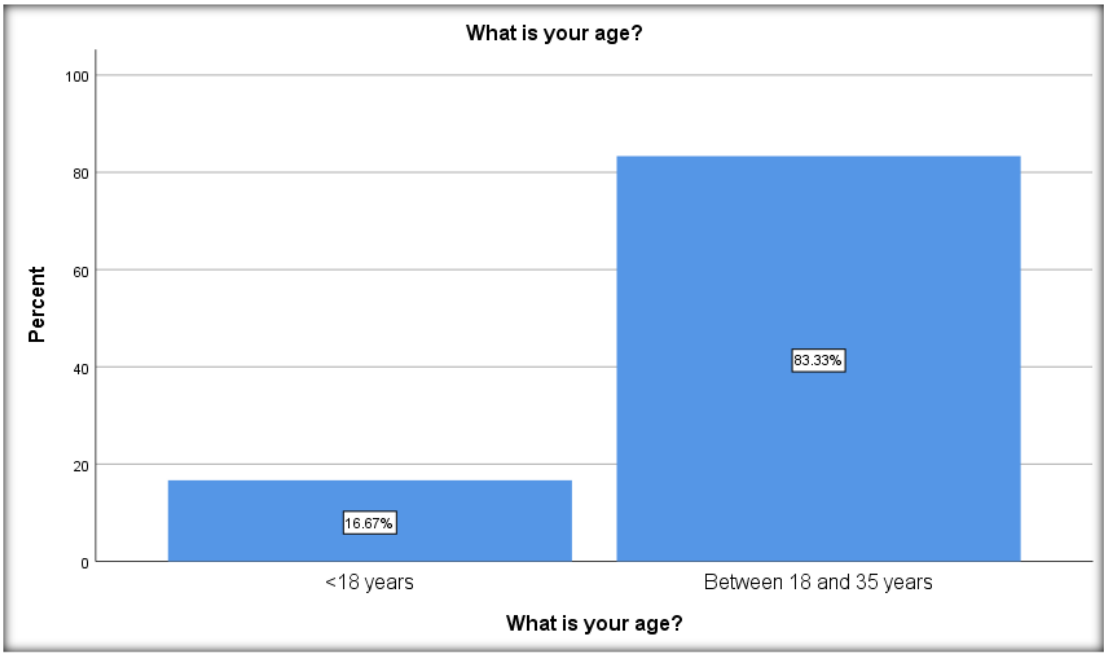

Fig 4.2: Age of Respondents

According to Fig 4.2, very few students were below 18 years old n=30(16.67%). The appropriate age for students in the third year, according to the Kenyan education system is about 21 years. Similar study among students doing a course in information systems at the Laval University in Quebec -Canada, age was found to be of significant interactive effect on the learners' intention to use a webinar system for learning (Khechine, et al, 2014). Therefore, most of the respondents were appropriate in terms of age and year of study. Secondly, the study showed that the students were youthful.

Youthfulness and usage of new products have proved to be highly correlated. This factor predisposed the correspondents well towards the adoption of BL as a new normal.

Respondent's county of residence

When asked about their county of residence, the majority of the respondents were from Bungoma, Kiambu, Nairobi, and Nakuru as shown in Fig. 4.3.

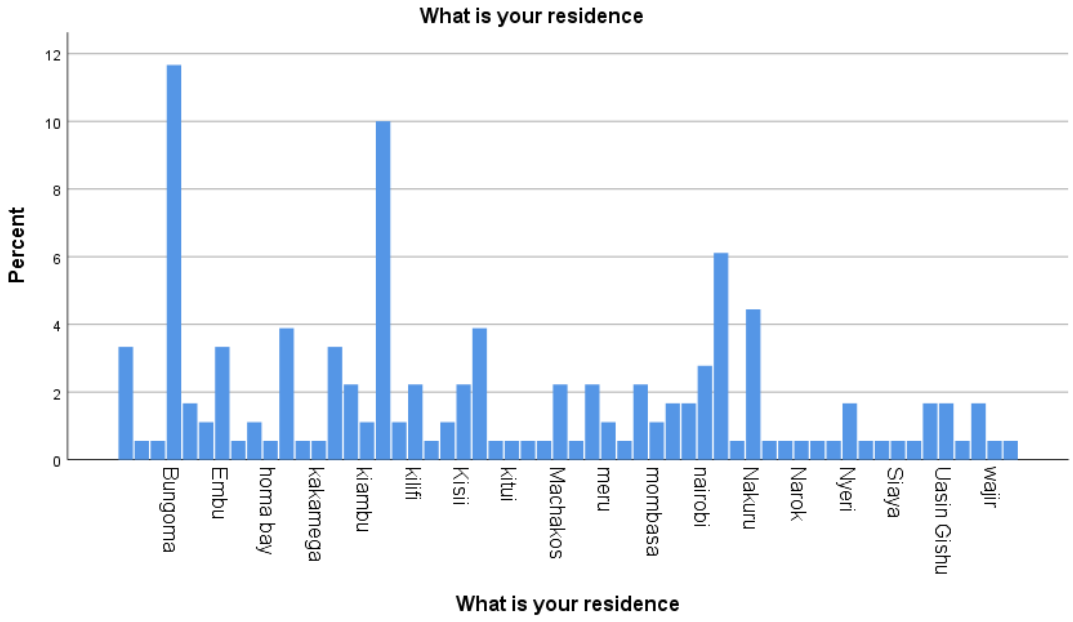

Fig. 4.3: Respondents' County of Residence

Geographically, third-year students enrolled for B-ED are disproportionately distributed. This shows that some counties such as Kitui, Narok, Siaya and Wajir were lagging behind in teacher education against their counter parts such as Bungoma, Kiambu and Nairobi.

High school grade

Borrowing lessons from Slovenia, high school grades determined the perception of students towards blended learning. Consequently, the researcher sought to know the

previous scores of the respondents by asking them to state their high school grades. The majority answered they scored B n=66(36.67%) as Fig. 4.4 shows.

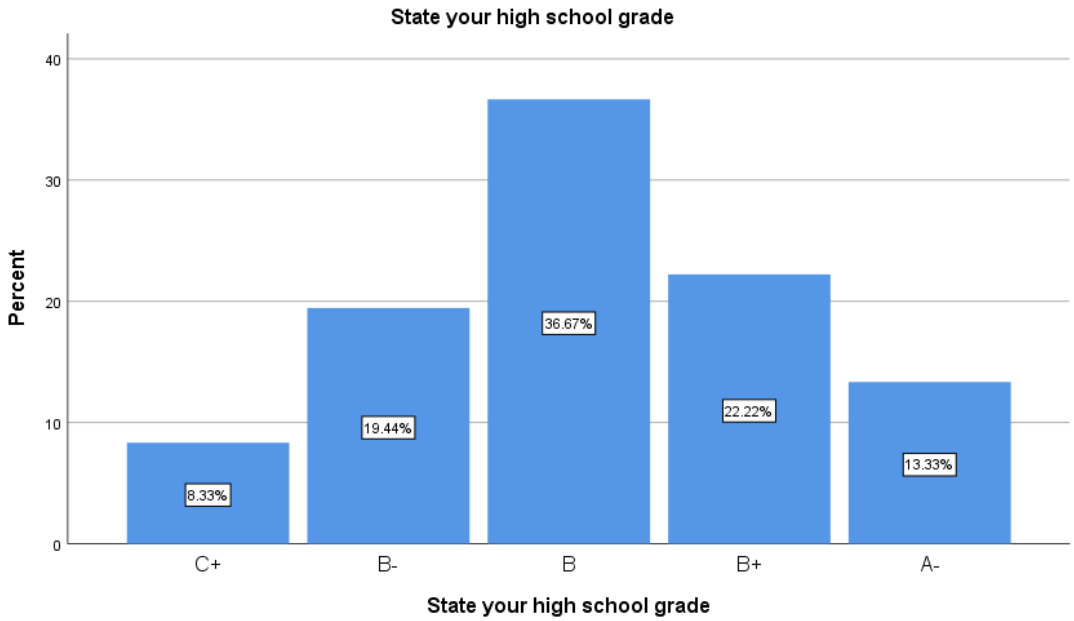

Fig. 4.4: Respondents' High School Grade

The students interviewed according to Fig 4.4 qualified; they scored between C+ and A-. In other words, most students pursuing the BED program have their scores ranging mostly between B- and B+. These are students who have passed well and are capable of adopting blended learning. According to Aristovnik, Kerzic, Tomazevic, and Umek, (2016), such better high school grades of B.ED students anticipated more positive regard for blended learning. This agreed with the Slovenian study that found best high school grade students describing blended learning to be more useful than low high school grade students.

Other previous studies

Apart from having passed well in high school, the study also found that the majority n=137(76%) had undergone other studies previously. Comparatively, a few n=43(24%) only had high school grades. The results indicated that the majority of the students

engaged in other studies such as computer literacy skills training before joining the university.

Form of schooling enrolled for

The investigator also wanted to know the form of schooling enrolled for. As shown in Fig. 4.5, many students were still using face-to-face learning n= 76(43%), even though the majority were enrolled in blended learning n=104(57%).

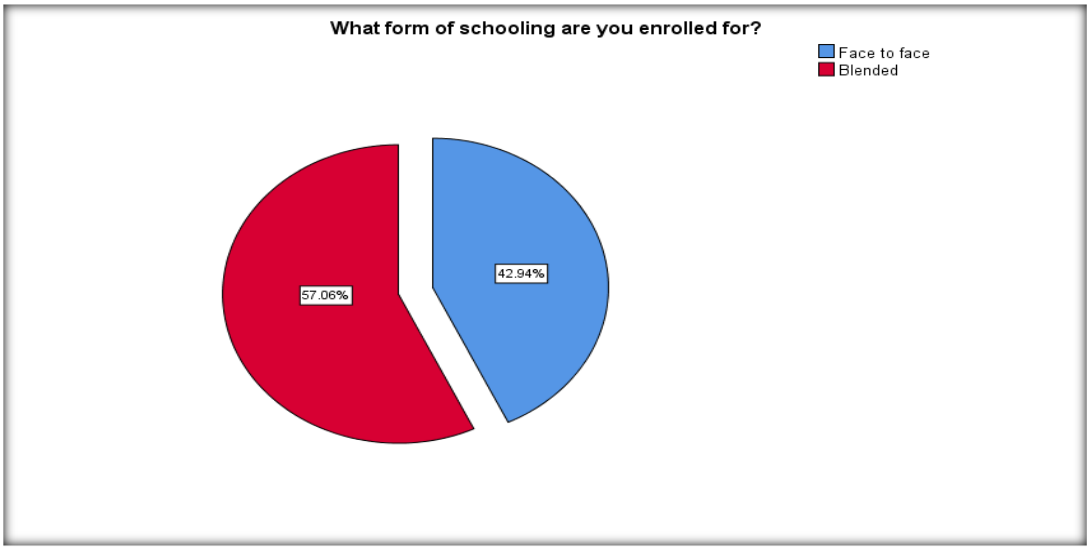

Fig. 4.5: Form of Schooling Respondents Enrolled For

The results confirm the concerns that many public universities still used classroom-based learning, slowly withdrew from traditional face-to-face and relapsed to old-era instructional methods after COVID-19; hence a significant fraction of students still preferred face-to-face schooling (Marunic & Glazar, 2015; Dziuban, et al., 2018; Hawi, Heinrich, & Lal, 2021). For those who still preferred face-to-face schooling to blended learning, Alsalhi, Eltahir, and Al-Qatawneh (2019) warned that they are more likely to achieve less academically compared to their counterparts who used the blended learning approach. This is because BL conveniently addressed the learners' interests and

challenges through the use of readily available technologies without losing on the benefits of face-to-face.

Employment status

Half of the teaching and learning in class and half virtual provided flexible opportunity suitable for working and learning. When asked about employment status, the majority answered no n=149(82.39%) against n=31(17.81%) that worked and studied as shown in Fig 4.6.

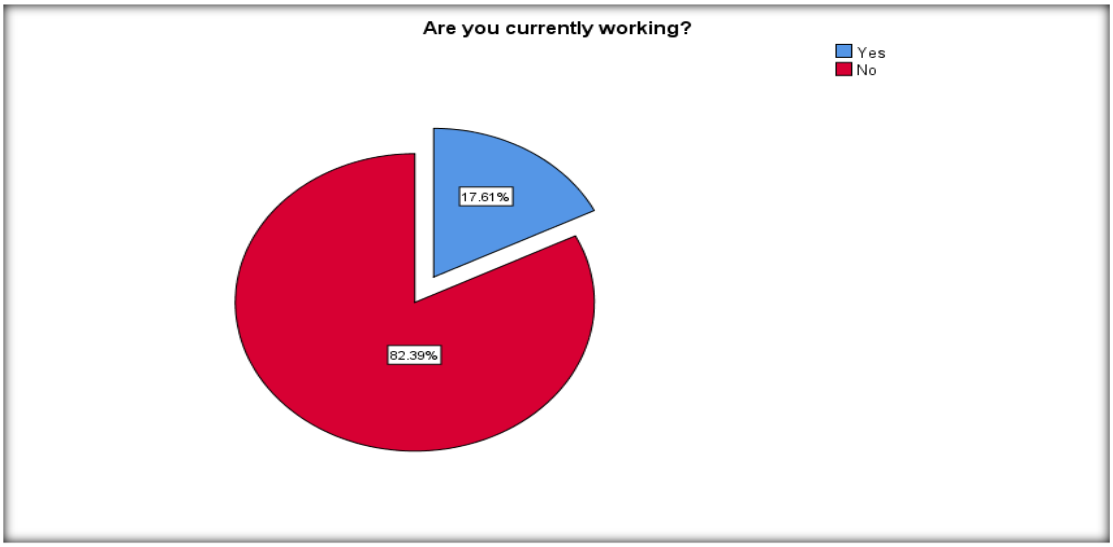

Fig 4.6: Employment Status of the Respondents

According to the findings displayed in Fig. 4.6, most of the students have not tapped into the benefit of work-study opportunities availed by blended learning. This is because most of the respondents were youthful and had not been employed yet. Few universities had work-study programs. Garissa University, for example, had work study programs internally for needy students and also school-based programs for teachers. Teachers attended physical class during holidays and virtual learning during school days.

Hours worked per week

Further, the researcher sought to understand the hours worked by the respondents by asking, “How many hours do you work per week?” Students that worked less than 10 hours per week were the majority 70%, followed by those who worked 10 to 20 hours per week 20%. Below 10% worked beyond 21 hours per week. The study findings on this item confirmed the previous response that working and studying was dismal among public university students enrolled in B. ED program.

Access to computer at home

Blended learning required that the learner had access to a working personal computer device and the internet. Therefore, the researcher asked, “Do you have a computer at home?” half of the students n=90(50%) said “no,” meaning they did not have access to personal computers as fig.4.7 shows.

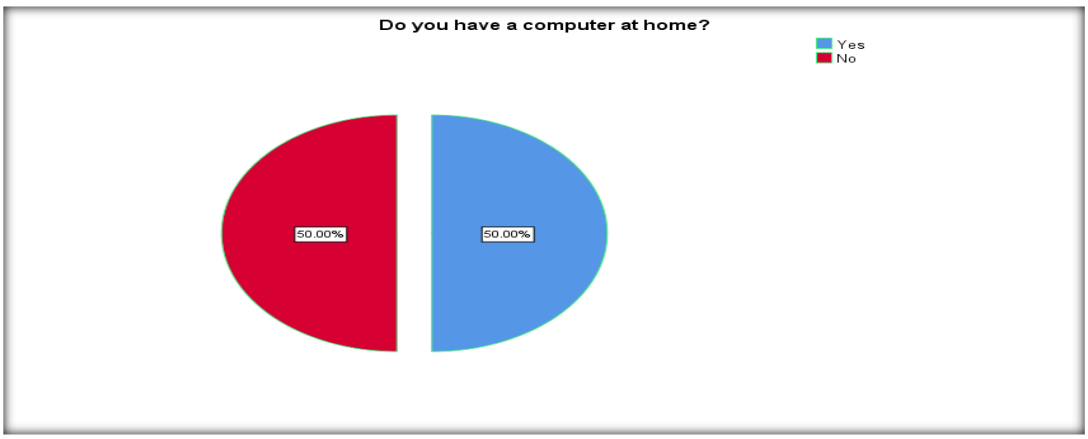

Fig. 4.7: Respondents’ Ownership of Computer

Despite majority not having computers, the researcher observed that almost all had smartphones which they used for learning.

Access to the internet at home

A similar question was asked about the internet. Almost the same proportion of respondents had no internet available at home 50.31%. Inadequate computers and the internet point to a digital divide problem whose consequence is inequality in education in public universities; the ‘haves” access better and quality education than the “have nots.” As observed by Alsalhi, Al-Qatawneh, Eltahir, and Aqel, (2021) among undergraduate Maths students at Ajman University in the United Arab Emirates, students that used blended learning had greater academic achievement than those who did not.

Lack of internet access further denied the students in public universities the opportunity and benefits of using BL as an instruction method. The missed benefits for the students included creativity, critical thinking, and computer and internet skills (Nazara, 2016). Evidence from Philipines, Kalinga State University demonstrated that lack of students’ access to the internet psychologically inhibited learners from learning (Abbaca-Tuguic, 2021). According to the study students who did not access internet felt stigmatised and excluded. They believed they are not good enough to match their counterparts. In addition, the students couldn't access learning material conveniently; anytime, anywhere and uninterrupted (Ughade & Badre, 2020). Ndayisenga, et al., (2022) observed that students who did not access the internet at home did not enjoy the flexibility inherent in blended learning, ie; from the comfort of their homes, they could not access reading materials and books and had to incur an extra cost of a fare to campus for learning to take place.

Blended course information

The interviewer also asked the participants to mention the title of the blended courses they enrolled in. Most of the B.Ed. students mentioned Semantics and pragmatics, followed by English morphology and literature. These are courses in language department in the B.Ed program. Very few mentioned science-related subjects such as physics, chemistry, and mathematics. When the researcher investigated further the program of study, most students mentioned Bachelor of Education (B.Ed.) n=60 (33%). It showed that blended learning had been adopted more for teaching languages and art-related courses than science-related subjects in public universities in Kenya. The results agrees with the evidence from Nigeria and Rwanda where Chukwuemeka, Anekwe, and Ochuma (2020) who found BL was more approved by students for English and disapproved for science-related subjects due to lab practicals, respectively (Ndayisenga, et al., 2022).

In the year of study, students that had enrolled for the third year were the majority n=124 (68.42%); led by Maseno and the University of Nairobi n=46(21%) and n=44 (21%), respectively.

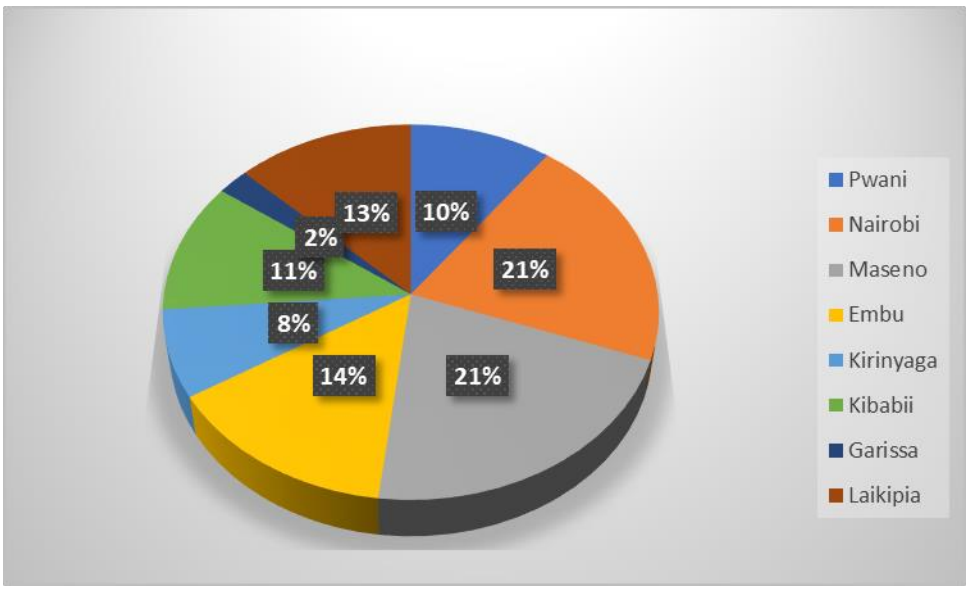

Fig. 4.8: University of Respondents

The least enrolled universities with B. ED students were Garissa University n=5(2%) and Kirinyaga University n=17(8%) as shown in Fig. 4.8. Such universities would increase enrolment by targeting adult learners if they adopted blended learning instruction methods. Further investigations revealed that the majority of the respondents were from the faculty or school of education. n=112 (63%); meaning that B.ED programs in public universities were mostly housed by faculty of education.

Usage of Blended learning

The researcher wanted to know what B. ED students in public universities used blended learning for. By asking if students were taught via blended learning, the majority agreed strongly *M=5.27, SD=1.90*. When asked if they got learning material by blended learning, the B. ED students slightly agreed M=4.91, SD=2.13 that they got learning material via BL. The investigator also asked if the students got the schedule announcement. The B. ED students slightly agreed M=4.89, SD=2.15. This meant that BL has not been explored maximumly on sharing learning material and class schedules, respectively. On class attendance and examination of students, most of the students strongly agreed that the lecturers were able to notice their class attendance M=5.17, SD=2.02 and students did quizzes and exams through blended learning M=5.61, SD=2.18.

Table 4.3: B. ED Student Use of Blended Learning

	N	Minimum	Maximum	Mean	Std. Deviation
Through blended learning, I am taught by lecturers	171	1	7	5.27	1.897
I get learning material by blended learning	171	1	7	4.91	2.133
I get schedule announcements in blended learning	168	1	7	4.89	2.153
My lecturer can notice my class attendance in BL	170	1	7	5.17	2.015
Through blended learning, I do quizzes and exams	171	1	7	5.61	2.181
Average	168			5.17	2.07594244

Overall, the students agreed that they used a blended learning approach to learn *M=5.17, SD=2.08*. These findings confirm evidence that universities in Kenya had to some extent practiced blended learning (Mwendwa & Syomwene, 2019; Kathula, 2021).

Use of blended learning in Public Universities

The respondents were asked, "Is blended learning used in your university?" Most of the respondents revealed that BL was partly implemented n=105(58%) as shown in Fig. 4.9. Very few respondents observed that Blended learning was implemented fully. Generally, it is agreeable that most universities had not embraced blended learning optimally. Antecedent studies likened this evidence with 'sidelining' blended learning and Kenyan universities still largely use classroom-based approaches in delivering courses (Matheos & Cleveland-Innes, 2018; Hawi, Heinrich, & Lal, 2021).

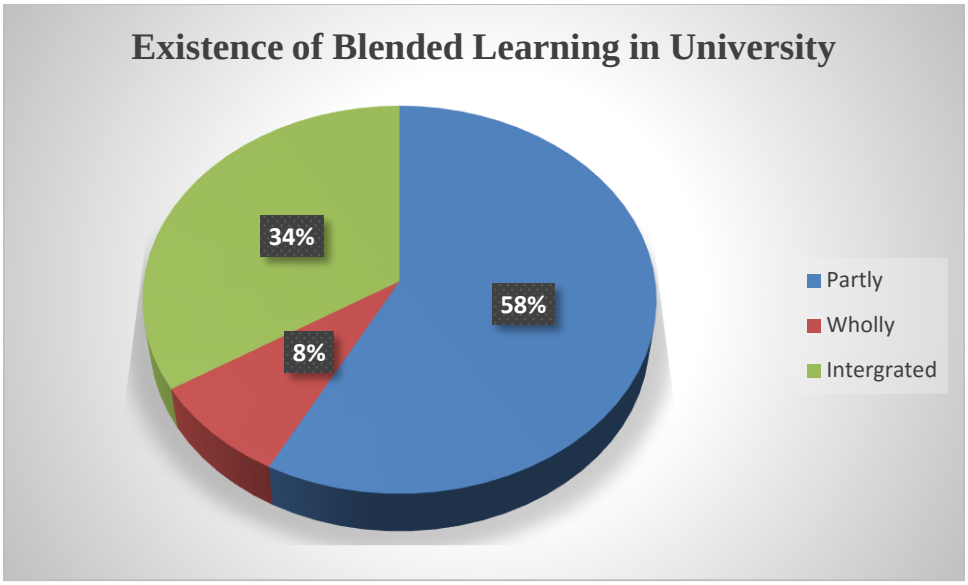

Fig. 4.9: Implementation of Blended Learning in Public Universities

Whereas few Kenyan public universities fully implemented blended learning, evidence from universities in the UK, Canada, New Zealand, Australia, and the USA show that blended learning was implemented between 85% and 87% (Marah, 2010; Power, 2020). If blended learning improved learning outcomes, then Kenyan universities were comparatively disadvantaged.

4.3.1 Perceptions of Learners Towards Blended Learning

Learners in B. ED program were asked to rate how they perceive blended learning on a scale of 7; where 1 – Strongly disagree; 2 – disagree; 3 – Slightly disagree; 4 - Neither agree nor disagree; 5 - Slightly agree; 6 – Agree; 7 – Strongly agree. Averagely, the student weakly approved blended learning *M*= 4.87, *SD*=2.09. Specifically, they agreed that blended learning was easy to use M=5.01, SD=1.94; useful M=5.51, SD=1.88 and interesting M=5.34, SD=1.95 as shown in table 4.4.

Table 4.4: Learners' Perceptions of Blended Learning

	N	Minimum	Maximum	Mean	Std. Deviation
It is easy to use blended learning	169	1	7	5.01	1.935
Blended learning is useful for learning	171	1	7	5.51	1.880
I choose to use blended learning for my learning	169	1	7	4.73	2.190
Blended learning is appropriate in self-regulated learning	167	1	7	4.83	2.122
Timeliness. In blended learning, lecturers respond to my learning concerns promptly	172	1	7	4.67	2.130
I get to learn by interacting with classmates under blended learning	167	1	7	4.54	2.208
In blended learning, I get to interact with lecturers easily	170	1	7	4.46	2.184
My grades have improved because of blended learning	170	1	7	4.75	2.230
Blended learning courses are interesting	170	1	7	5.34	1.946
Average learners' characteristics	153			4.8712314	2.09160396

When asked about choice, self-relation, timely response to concerns, interactiveness with students and lecturers, and improvement of grades; the respondents were neutral (neither agreed nor disagreed). The students neither agreed nor disagreed that they would choose blended learning for studies M=4.73, SD=2.19.

The Kenyan B. ED students were uncertain that BL was appropriate for self-regulation M=4.83, SD=2.12. On whether the students received prompt responses from lecturers, courtesy of blended learning, they were indifferent M=4.67, SD=2.13. Most students

neither agreed nor disagreed on whether they promptly received answers from lecturers. It showed a lot of doubt and uncertainty about whether the lecturers used BL to respond to their concerns. They were also uncertain that blended learning enabled them to interact with classmates and lecturers M=4.54, SD=2.21 and M=4.46, SD=2.18, respectively. Equally, the students were almost indifferent on whether BL improved their grades M=4.75, SD=2.23.

The positive approval, though weak, was an affirmation of the cognitive presence of learners. Learners were able to project their mental and perceptual understanding of the BL, hence confirming the suitability of Bandura's SLT. Similar findings were seen among English students at Al-Balqa Applied University in Jordan. The study set out to assess cognitive presence in the BL environment. After interviewing and analyzing data from 100 students, it was found that BL created an active environment for cognitive presence and highly approved BL for language learning (Harb & Krish, 2020).

Students' Personal Views of Blended Learning

The researcher asked the B.ED. students' personal views of blended learning by asking, "What are your personal views about blended learning?" In response, most of the respondents were satisfied n=108 (60%) with blended learning as shown in Fig. 4.10.

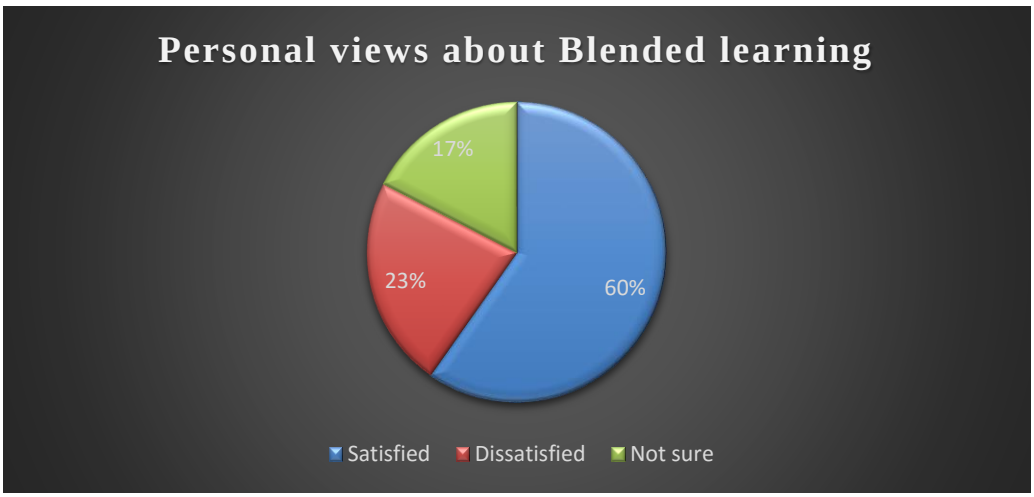

Fig. 4.10: Students' Personal View on Blended Learning

According to the results in Fig. 4.10, n=31(17%) respondents were not sure n=42(23%) and were dissatisfied, meaning that though most of the students were satisfied, still a big number was not positive about blended learning. This means that awareness and subsequent demand for blended among B.ED students still remains low despite positive learning outcomes.

4.3.2 Students' Self-Efficacy in Using Blended Learning

The study also sought to establish the self-efficacy of students in the use of blended learning. Using a Likert scale of 1-7; 1 – Strongly disagree, 2 – disagree, 3 – Slightly disagree, 4 - Neither agree nor disagree, 5 - Slightly agree, 6 – Agree, 7 – Strongly agree, the researcher asked if on their own they could set up LMS on their computers. Most of them neither agreed nor disagreed M=4.88, SD-2.09. Again, they were asked if they could download and organize learning materials on their own. The respondents slightly agreed M=5.551, SD=1.77; meaning that B. ED students were more competent in downloading and organizing material than setting up LMS on their computers.

Participants were also asked if BL enabled them to do group work and assignments. They agreed *M*= 5.41, *SD*= 1.95 and *M*=5.56, *SD*=1.86, respectively. When asked about access and use of LMS, they generally agreed *M*=5.12, *SD*=2.01 as shown in Table 4.5

Table 4.5: Respondents' Self-Efficacy in Using Blended Learning

	N	Minimum	Maximum	Mean	Std. Deviation
On my own, I can effectively set up an LMS system on my computer for learning	170	1	7	4.88	2.09
On my own, I can download and organize learning material	169	1	7	5.51	1.77
On my own, I can participate in group work with classmates using a virtual platform	170	1	7	5.41	1.95
On my own, I can do and upload my assignments online	167	1	7	5.56	1.86
My ability to access and use the LMS for learning is excellent	171	1	7	5.12	2.01
My access to and use of digital tools (e.g. laptop and smartphone)	170	1	7	5.71	1.84
Average learners' self-efficacy in using BL	162			5.37	1.92

About access and use of digital laptops and smartphones, the respondents agreed M=5.71, SD=1.84 that they accessed and used digital tools. Overall, the participants agreed that they had self-efficacy in using blended learning M= 5.37, SD=1.92; meaning that there was still a lot to be done on improving the confidence of B. ED students in public universities.

Self-efficacy as a key component of SLT was equally proved to be a valid correlate to greater learning outcomes in programs implemented in BL environments in Indonesian public universities. Specifically, students at Makassar University who had high self-efficacy in computer skills recorded better grades in BL courses. The study mixed methods with experimental methods design. This made Makassar University approve blended learning (Nurhikmah, Saman, Pattaufi, Sujarwa, & Mawarni, 2023).

Most needed support to make students competent in BL

The researcher also asked students about the most preferred support. The most preferred support was the internet n=93(51.67%) followed by personal computer devices n=37(20.56%) and tutors as shown in Fig. 4.11.

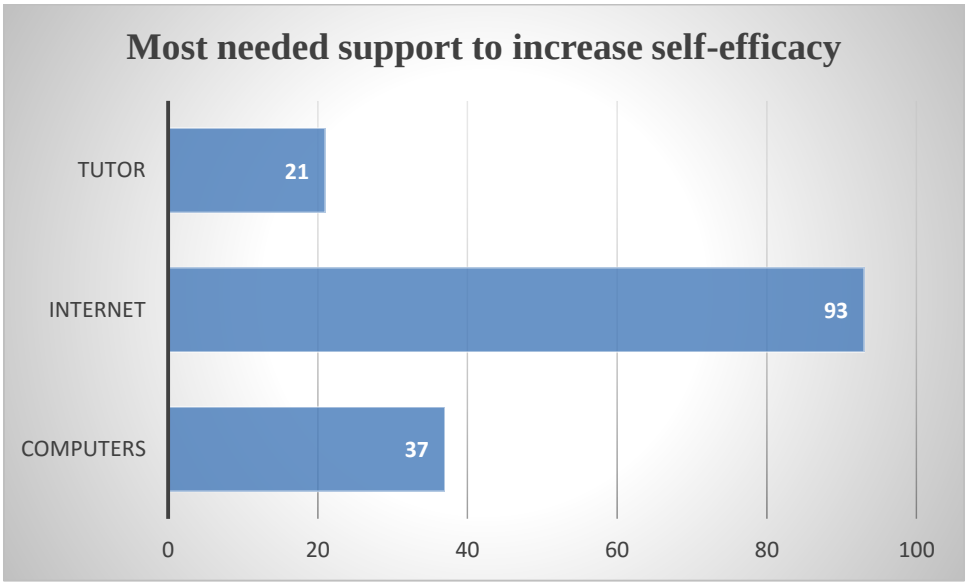

Fig. 4.11: Student's Most Needed Support for Self-Efficacy

The results showed that public universities needed to invest in Internet and PC devices for them to succeed in implementing blended learning. Unlike in Central Luzon, Philippines, where internet connectivity and learning devices especially smartphones were not a problem. The descriptive cross-sectional study on 2894 learners in higher education institutions in Central Luzon revealed that 70% of the students had access to internet and learning devices (Asio, Gadia, Abarintos, Paguio, & Balce, 2021). It is worth noting that flexibility in learning embodied in blended learning can only be achieved if internet and learning devices are available to the students.

4.3.3 Students' Previous ICT Experience

Previous experience of students determined their attitude towards blended learning. The investigator, therefore, sought information on students' previous acquaintances with

MS Office, the Internet, PC, and BL. The participants were neutral on having previously used MS Office, BL, and BL having helped them in their learning M=4.83, SD=2.19; M=4.21, SD=2.40 and M=4.91, SD=2.31, respectively as shown in table 4.6.

Table 4.6: Students' Previous Experience

	N	Minimum	Maximum	Mean	Std. Deviation
I had known to use MS Office before joining the university	172	1	7	4.83	2.194
I had known to browse the internet before joining the university	172	1	7	5.73	1.647
Previously, I have used a computer and smartphone to work and/or study	172	1	7	5.42	2.017
In previous studies, I used Blended Learning	172	1	7	4.21	2.404
My previous experience has helped me effectively enjoy blended learning	172	1	7	4.91	2.313
Average learners' previous experience	171			5.02	2.12

However, when asked about previous experience with internet and PCs, the participants slightly agreed (M=5.02, SD=2.12) that they had previous experience in blended. This showed that before joining the university, most of the B. ED students had used the internet. The students had either used a smartphone or personal computer, before.

Previous experience is equivalent to vicarious experience in Bandura's SLT. In Australia, the variable was found to be of value in improving learning outcomes among health professional students. Though in the context of this study, it meant students' previous courses in IT and access to the internet and PCs for tapping information; in a broader outlook, it meant learning by observing others. If harnessed properly, it actualized the benefits of learning with and from others and built in the students' high self-efficacy (Forbes, 2022).

Previous experience and blended learning

Previous studies prepared one for the next challenges in life. For this reason, the participants were asked. "How do you rate your previous experience in preparing you to use blended learning at the university?" Most of the responses approved the experience n=112 (62%) as shown in Fig. 4.12

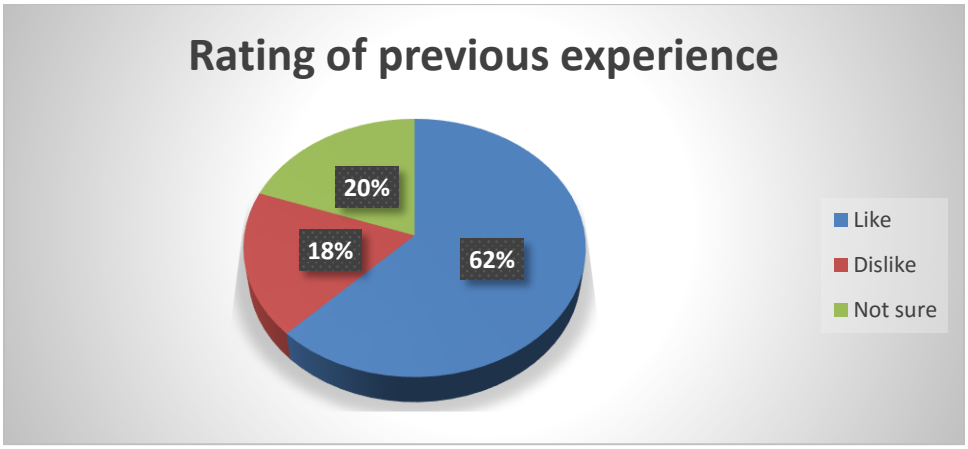

Fig. 4.12: Students' Rating of Previous Experience

However, a considerable number disliked and "not sure," n=33(18%) and n=36 (20%), respectively. Implications of the latter indicated that a critical mass of B.Ed. students did not find previous experiences preparing them to use BL for learning. It is therefore important the Ministry of Education offers MS Office and IT literacy to students at high schools and universities making ICT courses common and mandatory for all students not necessarily for examination, but for computer literacy.

Challenges encountered by the students

Respondents were asked, "In order of priority give three challenges you encounter when using blended learning." They prioritized the lack of internet, computers, and electricity as shown in Fig. 4.13.

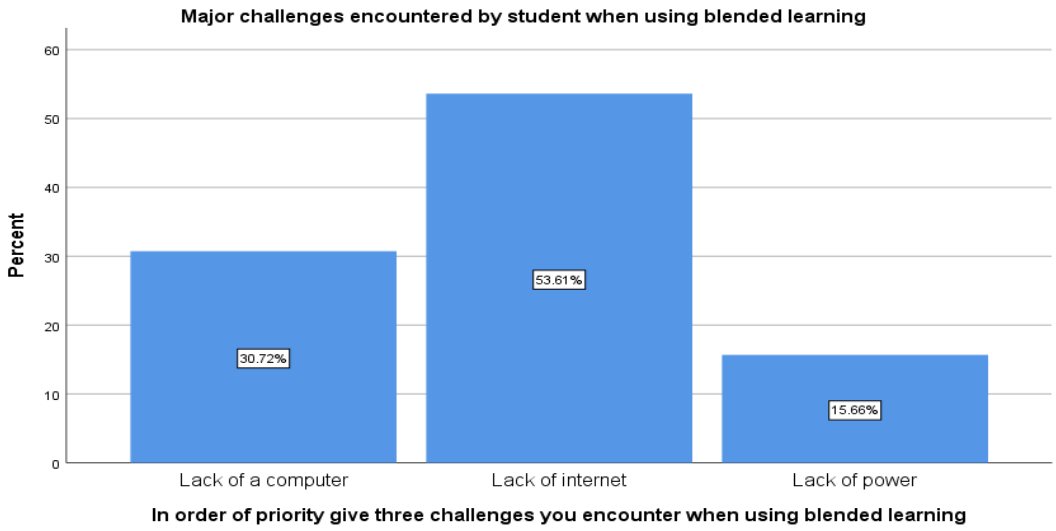

Fig.4.13: Challenges Encountered by Respondents

The results conform with the preferred support students need to increase self-efficacy. Implications are that strengthening of internet bandwidth and provision of PCs to students needed to be prioritized if the students have to make BL a success. Probably, financiers of university education need to incorporate the provision of PC and internet to promote computer use and consequently promote blended learning.

Interventions to accelerate the adoption of blended learning

Finally, participants were asked to suggest strategies to accelerate BL adoption. Most of the participants suggested the provision of Internet n= 106(59%).

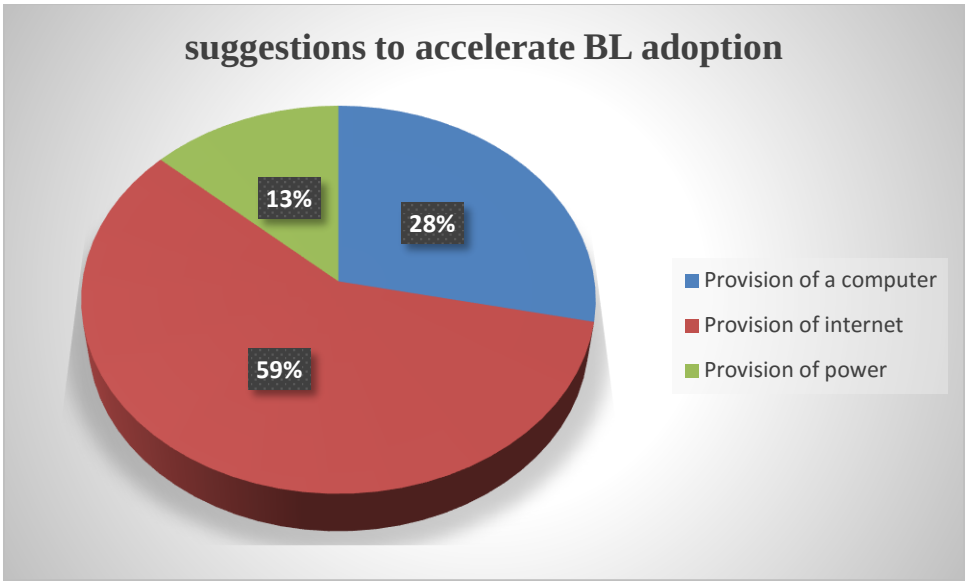

Fig. 4.14: Interventions to Accelerate BL Adoption in Public Universities

Other interventions suggested by the learners were: the provision of computers n=51(28%) and power n=24 (13%). It shows that internet was a critical intervention for blended learning. Recently, the government has been promoting internet hotspots in constituencies. Before constituencies, it should consider hot spotting universities which are currently cash-trapped to provide internet.

4.4 Analysis of Lecturers' Characteristics on the Use of Blended Learning

This section examined the influence of lecturers' characteristics on the use of blended learning for teaching and learning among B. ED students in public universities in Kenya. Therefore, discussions of answers to questions on lecturers' demographics, perceptions, motivation, and techno-pedagogical skills formed components of this section.

Sex

Gender and gender roles played an important role in how one perceived blended learning. Therefore, the researcher asked for the gender of respondents. According to

Fig. 4.15, most of the respondents were male n=23 (82%) compared to their female n=5 (18%) counterparts.

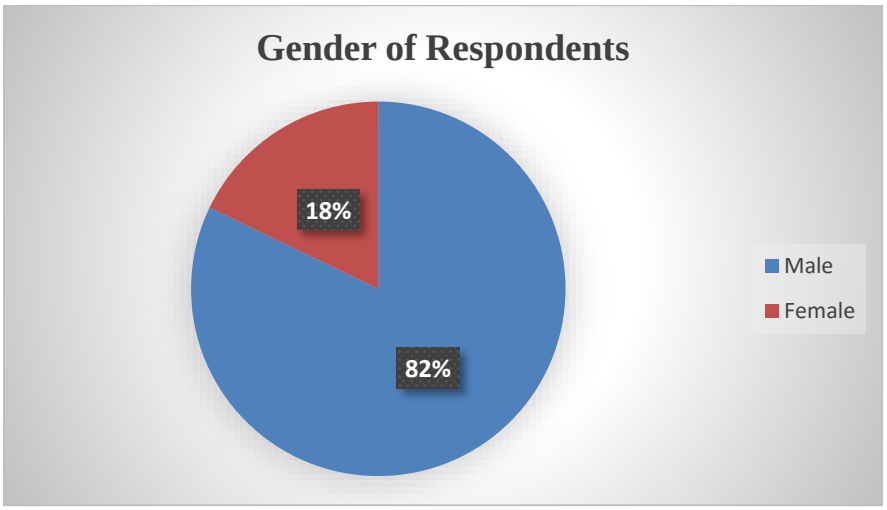

Fig. 4.15. Respondents Gender

According to the findings, there was a gender imbalance in faculty members in public universities in Kenya. The imbalance favored men against females. Although some studies in developed economies like Malaysia observed no significant effect gender had on the adoption of BL among academic staff (Bokolo, 2021), in developing nations it was different. It was therefore important that universities strike gender balance when recruiting staff because women perceived different qualities better and differently from men.

Age of respondents

Age influenced lecturers' performance in the use of blended learning. The researcher wanted information on the age of respondents. Results as shown in Fig. 4.16 were that most of the faculty members were between 18 and 55 years old. Few were aged, between 56- and 75 years old n=4(12%). Unlike the study by Paula, Hana, and Jan (2015) who found a big share of dons aging and found it difficult to cope with new computer-based strategies. The study found most faculty members were youthful. This

placed faculty members at an advantageous point of coping and adapting to new methods of teaching, and blended learning as evident in Fig. 4.16.

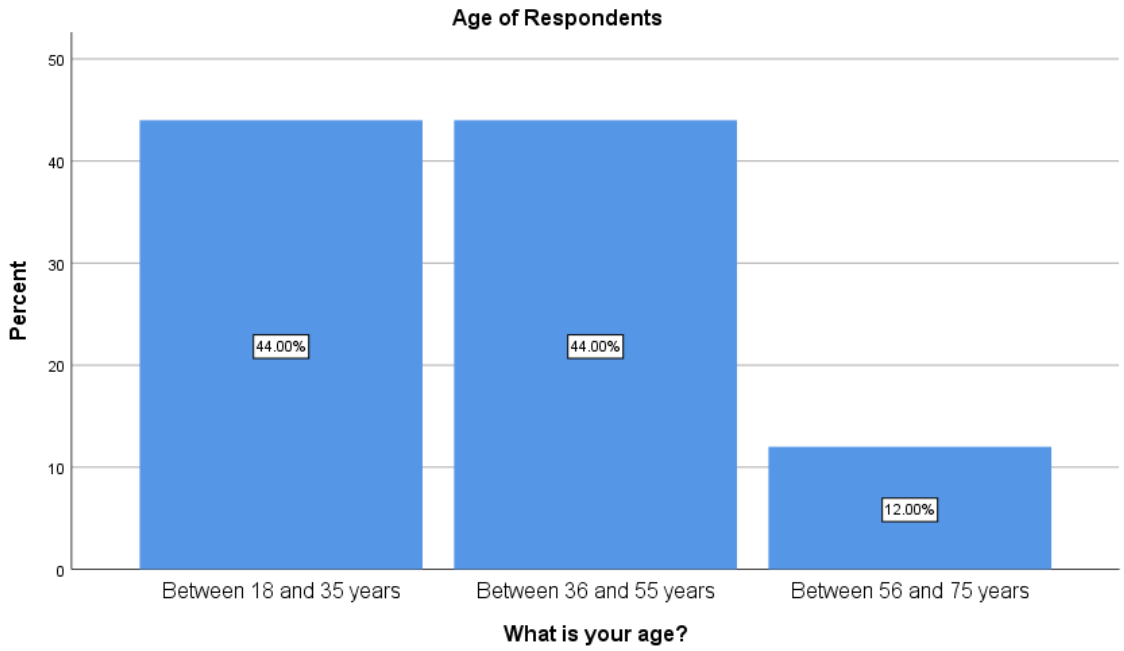

Fig. 4.16: Age of Respondents

In Kabale University, Uganda. Besigomwe (2016) discovered that lecturers aged below 40 years old, more easily integrated ICT into teaching than their counterparts above 40 years. In Indonesia, Putri, Adha, and Pitoewas (2020) found that old staff were the majority at the University of Lampung and had difficulties in operating technology. It is therefore important that public universities in Kenya leverage their youthful academic staff to introduce blended learning.

Ranks

The study also sought to understand the rank of the respondents. The findings showed that most of the respondents were lecturers and assistant lecturers n=23(80%) as shown in Fig. 4.17.

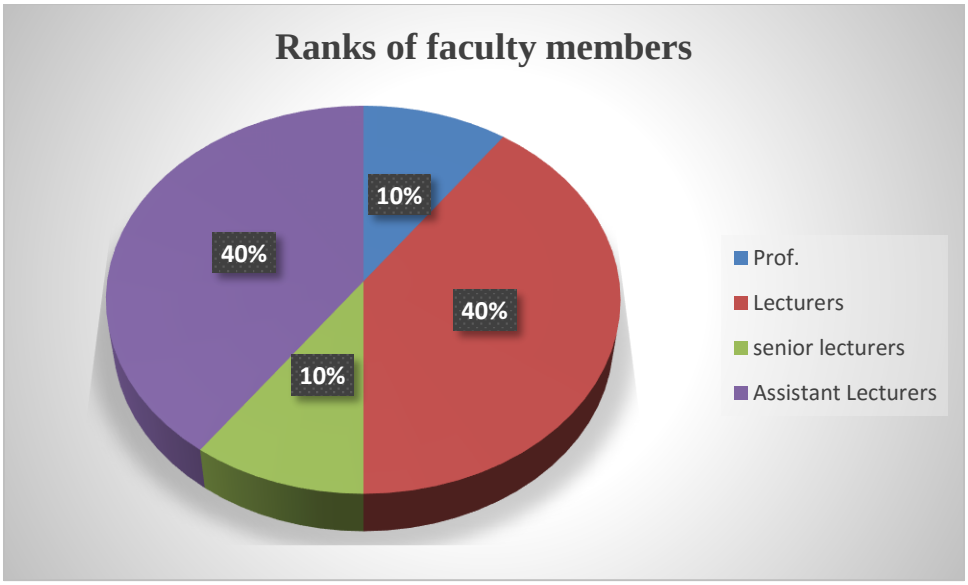

Fig.4.17: Ranks of Faculty Members

The study also found that very few were professors and senior lecturers. The implications were that the majority of the faculty members were at a lower scale.

Experience of the respondents

The researcher also wanted to know the period the faculty members had worked. The study results revealed that most of the respondents worked for less than 5 years n=11(50%) followed by those who worked for between 6- and 10 years n=6(27%) as shown in Fig. 4.18

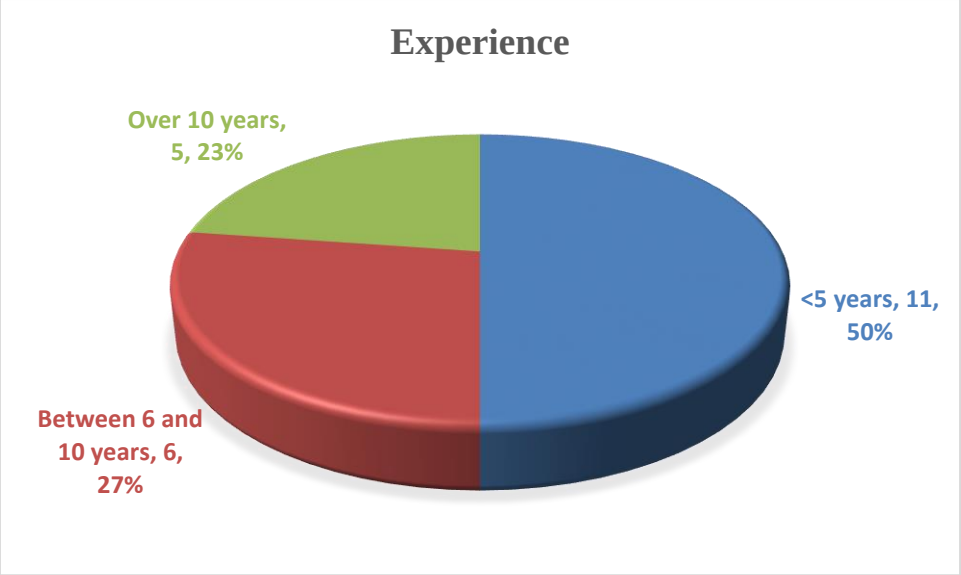

Fig. 4.18: Experience of Respondents

As per the results in Fig. 4.18, very few had worked for over 10 years n=5(23%). This meant that most of the faculty members were new on the job. The young lecturers could have encountered blended learning during masters and PhD studies and may not require much training. However, there is need for more training to help the staff blend face-to-face teaching with technology.

Highest level of education

The researcher sought information on the respondents' uppermost level of education. The findings in Fig. 4.19 showed that they were either master's or PhD holders.

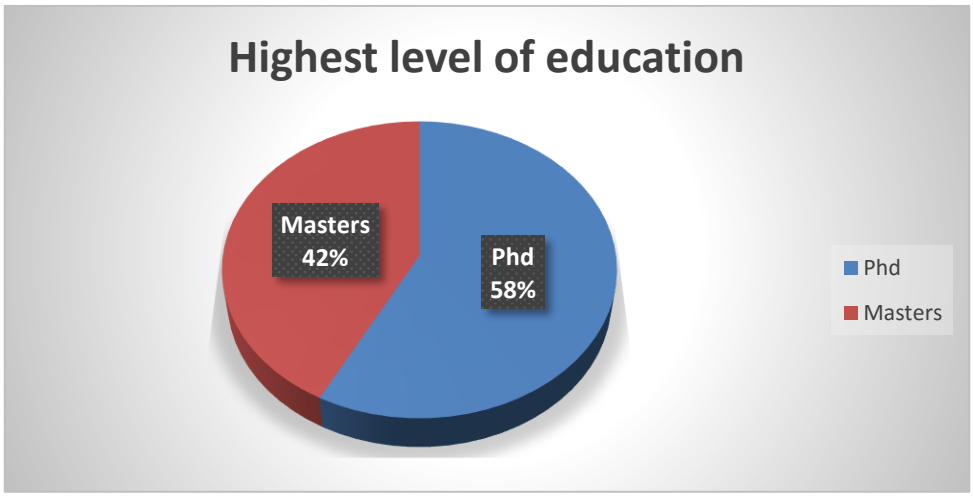

Fig. 4.19: Respondents Level of Education

The findings showed that most of the teaching staff were PhD holders n=17(58%). It meant that faculty members were qualified enough to adapt and shift to new methods of instruction from the old face-to-face learning.

Type of Learning Management System (LMS) used for course delivery

The most common LMS identified by literature are Moodle, Edmodo, Unirazak Online Experience (UROX), CANVAS, and Massive Open Online Course (MOOC) (Bokolo, 2021; Balan & Saeed, 2020; Ekayati, 2019). This prompted the researcher to seek information on the type of LMS used by public universities' faculty members. The researcher asked, "What type of LMS are you using for course delivery?" The respondents mentioned Moodle, ODEL, PowerPoint, blended learning, e-learning, Google Meet, and lectures as shown in Fig. 4.20.

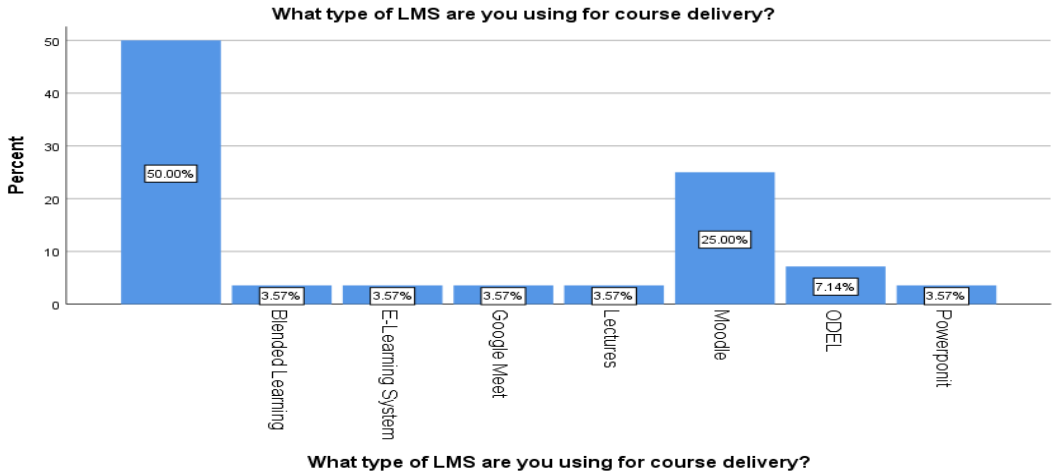

Fig. 4.20: Types of LMS Used for Course Delivery

According to the results, half of the respondents did not mention any type and only a quarter got right the type of LMS n=7 (25%). This implied that most of the teaching staff neither knew nor used any form of LMS in their teaching. For the few lecturers that used LMS, they used Moodle; meaning that Edmodo, UROX, CANVAS, and MOOC were still alien among public universities in Kenya.

The CoDs were also asked to identify the type of LMS that was used. They identified Moodle, Kenet, Google Meet, class, zoom, mtihani, and Microsoft Teams as types of LMS used for BL in the universities. When asked to identify the most preferred LMS and why. The CoDs found Moodle and Kenet because "students themselves organized class and sent a link to lecturers for them to join," and "easy to interact with students." "Learners are motivated to attend due to marks given for attendance." "Easy to upload notes." "Combines teaching and exams." "Cheap." "Easy to customize." They are customer-friendly for teachers and students." "Easy to set classes." Easy to communicate class schedule." "Logging in is fast." "Simple and straightforward procedure."

Type of device used to carry out BL

Further, the researcher asked, "What type of devices do you use to carry out BL teaching and learning activities?" The results are shown in Fig. 4.21 below.

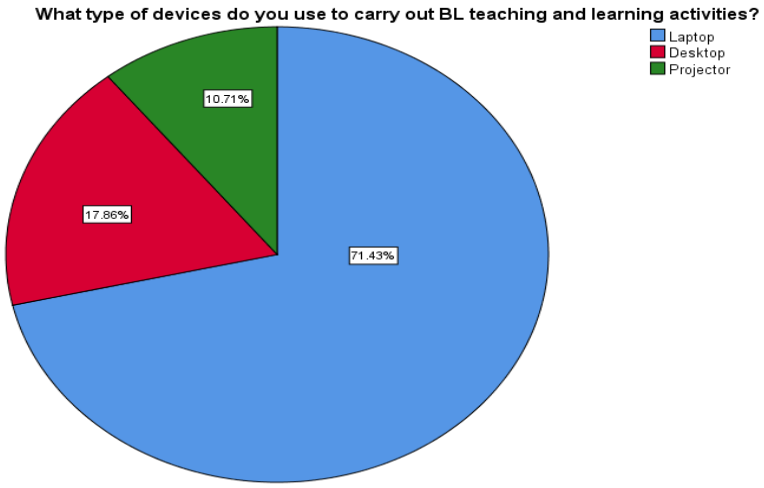

Fig. 4.21: Types of Devices Used by Respondents for BL

Laptops were the most used n=20 (71.43%), followed by desktops and projectors. Faculty members preferred laptops to desktops for blended learning. According to observation, desktops were limited. The desktops were found in offices.

Source of internet

When asked about where they accessed the internet, the responses were as shown in Fig. 4.22.

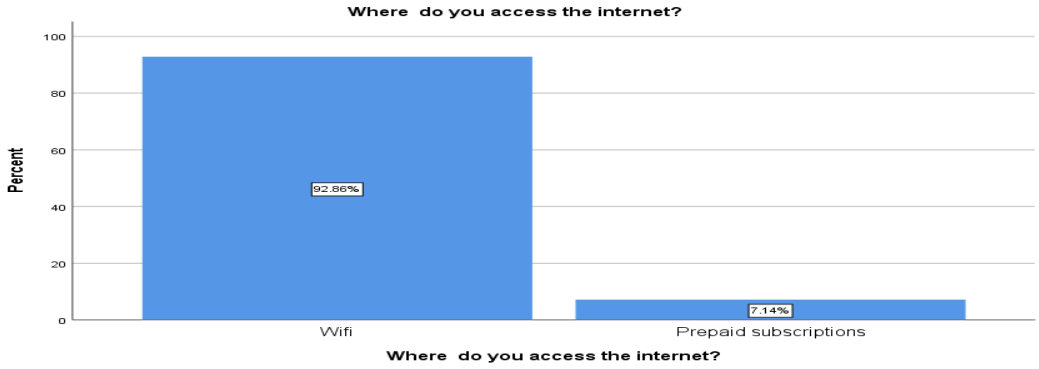

Fig. 4.22: Source of Internet

The respondents accessed the internet via Wi-Fi n=26 (92.86%) and prepaid subscriptions n=2(7.14%). The results showed that lecturers got the internet through Wi-Fi, which most of the lecturers bought on their gadgets from their pockets.

Lecturers' Use of blended learning

On a scale of 1 to 7, where 1 – Strongly disagree, 2 – disagree, 3 – Slightly disagree, 4 - Neither agree nor disagree, 5 - Slightly agree, 6 – Agree, 7 – Strongly agree; participants were asked to grade statements in table 4.7 on use of blended learning in universities. On average lecturers neither agreed nor disagreed that they used blended learning *M*=4.66, *SD*=1.90; implying that they did not use it fully.

Table 4.7: Respondents' Use of Blended Learning

	N	Minimum	Maximum	Mean	Std. Deviation
I use BL to deliver course content	28	1	7	5.07	1.65
I share learning material with students through blended learning	28	1	7	5.04	1.64
I schedule classes and share announcements with students	28	1	7	5.21	1.55
I take class attendance records using blended learning	28	1	7	4.21	2.25
Blended learning helps me administer quizzes and exams	28	1	7	4.21	2.17
I use blended learning to conduct class discussions	28	1	7	4.21	2.17
Average				4.66	1.90

Particularly, the respondents were asked if they used BL to deliver course content, share learning material with students, and schedule classes. They slightly agreed that they used BL to deliver course content *M*=5.07, *SD*=1.65, share learning material with students *M*=5.04, *SD*=1.64, and schedule classes and share announcements with students *M*=5.21, *SD*=1.55. The respondents were neutral on using blended learning for taking class attendance M=4.21, SD=2.25; administer quizzes and exams M=4.21, SD=2.17 and conduct class discussions. According to the results, faculty members did not optimally use a blended learning system. Further probing revealed that the negative perspective was due to workload involved. These findings were like the ones by Magasu et al. (2022) who found out that in Zambia lecturers did not approve of blended learning Rizvi et al. (2017) found a similar negative perspective of lecturers in East African universities. It is therefore important that lecturers need capacity strengthening

in using it to record class attendance, administer quizzes and exams as well as conduct class discussions.

Other uses of BL by respondents

The respondents were also asked, "How else do you use Blended learning?" They answered that they used it for one-to-one classes n=10(36%), soft copy notes n=9(32%) and online classes n=9(32%) as shown in fig4.23.

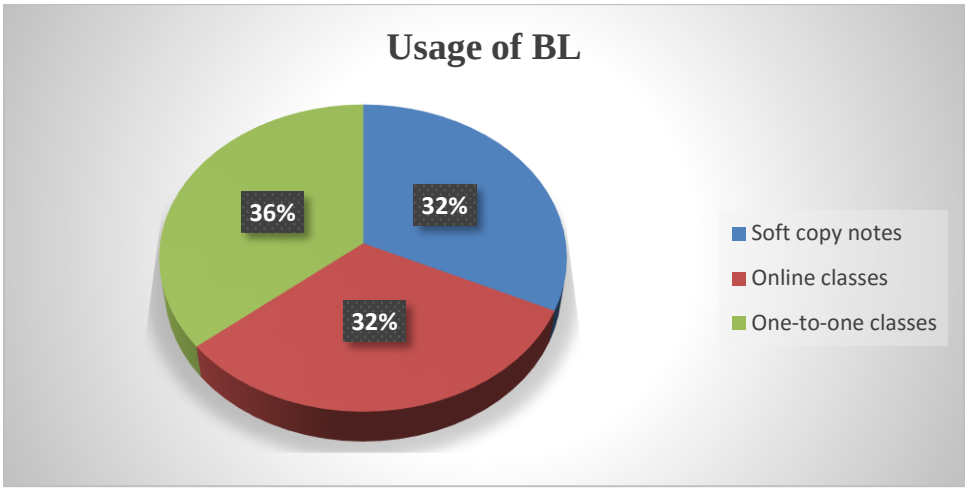

Fig. 4.23: Respondents' Other Use of Blended Learning

The results revealed that most lecturers also used BL for one-to-one classes.

4.4.1 Lecturers' Perception of Blended Learning

The researchers also sought to understand the perception of lecturers on blended learning. Averagely they slightly approved BL *M*=5.11, *SD*=1.70. As shown in table 4.8. The participants were neutral on finding BL easy M=4.96, SD=1.84, interacting with students M=4.93, SD=1.68, and interacting with peers in the discipline *M*=4.81, *SD*=1.92. Evidence from a qualitative study by Uzorka, Namara, and Olanilyan (2022) were similar to these results. The qualitative study revealed that the dons did not approve BL when it failed to address their needs and the time taken to prepare course content.

However, they slightly approved BL as useful *M*=5.21, *SD*=1.83 and an appropriate choice for teaching and learning *M*=5.21, *SD*=1.64. The respondents were also asked to rate timeliness; if blended learning enhanced the timely preparation and delivery of lesson material. The respondents slightly agreed that BL helped them prepare and deliver lesson material M=5.07, SD=1.57. They were also asked if BL addressed the problem of overcrowded classes. The respondents believed that BL was useful for mass teaching M=5.61, SD=1.42. This was contrary to responses from Zambian Lecturers who found out that BL did not support them manage the problem of overcrowded classes (Magasu et al., 2022).

When CoDs were asked if BL assisted ease lecturers' workload, a majority said BL did not reduce the workload because lecturers remained with a normal workload of 3 units to teach per semester. Some said it eased workload because it enabled the combining of classes and engaging learners online reducing physical class teaching. In most cases, lecturers live far away from university campuses. Blended learning reduces the travel costs and time for lecturers, enabling lecturers to offer classes from the comfort of their homes, despite the fact that they buy data bundles for use.

Table 4.8: Perception of Lecturers on Blended Learning

	N	Minimum	Maximum	Mean	Std. Deviation
It is easy for me to use blended learning approaches	28	1	7	4.96	1.84
I find blended learning useful in teaching	28	1	7	5.21	1.83
I choose blended learning for teaching and learning	28	1	7	5.21	1.64
Blended learning helps me interact with students easy	28	1	7	4.93	1.68
Timeliness. Blended learning enhances the timely preparation and delivery of lesson material	27	1	7	5.07	1.57
Overcrowded classes. The learning is useful in mass teaching	28	2	7	5.61	1.42
Blended learning enables me to interact with peers in the discipline	27	1	7	4.81	1.92
Average				5.11	1.70

The results pointed to the need for public universities to train lecturers on BL usefulness; on using BL to interact with students and peers, teaching and learning, preparing and delivering learning material. Like findings on the students, positive approval of BL by lecturers was a demonstration of teachers' cognitive presence in the BL environment and a confirmation of Bandura's SLT fit framework.

Personal view on the adoption of Blended learning

Further, the researcher asked, "What are your personal views on the adoption of blended learning for instruction and learning in the university?" Save a few who were uncertain, but most of the respondents liked the adoption of BL n=25(87%) as shown in Fig. 4.24.

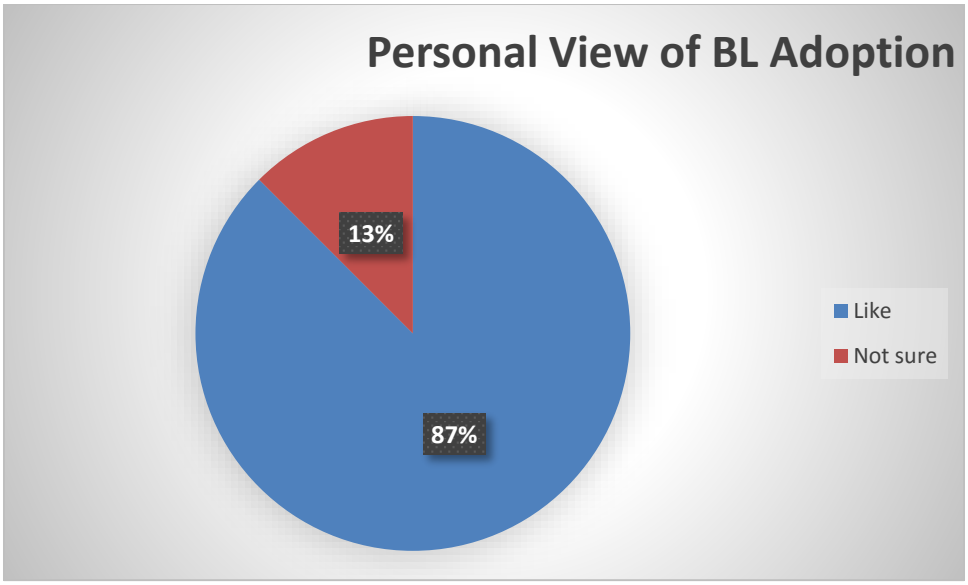

Fig. 4.24: Personal Views of Respondents on BL Adoption

Even though most lecturers did not use BL effectively, they had a great desire to adopt it. This made the researcher investigate motivational factors that ignited lecturers' desires.

4.4.2 Motivation of Dons to Use BL

Motivation is the drive and push that made lecturers adopt the use of BL. On this ground, the investigator inquired if the respondents were motivated to use BL. On average they slightly disagreed that they were motivated to use BL *M*=3.81, *SD*=2.20. Bandura's behaviorism theoretical framework was used to investigate students' motivation and learning outcomes among Nogopuro public elementary school students in Indonesia. Quantitative research and quasi-experimental methods helped in collecting data from 53 students. The results showed that Bandura's theory was a fit model to determine learning and motivation outcomes in a blended learning environment. The study also stressed that teachers needed to understand the theory to motivate students (Hardiyana & Maemonah, 2023).

Table 4.9: Respondents Motivation to Use Blended Learning

	N	Minimum	Maximum	Mean	Std. Deviation
Reward. I am rewarded for using BL by the university	28	1	7	3.21	2.22
Personal fulfillment. I get personal goals fulfilled when using BL in teaching	28	1	7	4.93	2.02
Teaching BL is a requirement for career progression	28	1	7	4.46	2.19
I am given lesser teaching and other task burdens because of using blended learning	28	1	7	3.36	2.20
Special recognition is given to lecturers who adopt blended teaching and learning	28	1	7	3.07	2.37
Average motivation				3.81	2.20

Specifically, the researcher asked if the university rewarded lecturers for using BL. The respondents slightly disagreed *M*=3.21, *SD*=2.22 as shown in table 4.9. They also slightly disagreed on the fact that they got special recognition for adopting BL *M*=3.07, *SD*=2.37 and that they got a lesser workload because of using BL *M*=3.36, *SD*=2.20. In other words, the dons were not rewarded, not recognized, and not given a lesser workload for using BL.

On personal fulfillment, the respondents were neutral on whether BL got their personal goals fulfilled *M*=4.93, *SD*=2.02. Equally, the respondents were neutral on whether BL earned them career progression *M*=4.46, *SD*=2.19. The same question on Don's motivation was asked CoDs. The CoDs observed that the universities did not motivate the dons, apart from encouraging them to use ICT, training, and provision of the internet. The results were contrary to Fathema, Shannon, and Ross's (2015) study finding that when self-efficacy and facilitation conditions missed, then faculty members' attitudes towards would be negative. In this respect, dons still had a high

desire for BL. This prompted the researcher to further investigate what else made them like BL.

Description of motivation

The respondents were asked, “Please describe what motivates you to use blended learning.” They said “blended learning can be used anywhere.” n=12(43%). “Blended learning was efficient” n=7(25%). “Blended learning was faster than face-to-face” n=4(14%). Again, the researcher asked CoDs how lecturers’ fears were controlled and managed. The CoDs indicated that the lecturers were trained to help them change their attitude and had contacts with ICT e-learning officers. In addition, they were encouraged to rehearse before going to class.

4.4.3 Lecturers’ Techno-Pedagogy Skills

Techno-pedagogical skills were about digital literacy, proficiency in BL, skills in preparing learning material by BL, uploading and downloading learning material, administering tests and exams, and grading and uploading grades. Overall, the participants slightly agreed that they were techno-pedagogically skilled for blended learning *M*=5.19, *SD*=1.67. Regarding Bandura’s framework, this correlation has no bearing. It needed expansion to address teachers’ competencies in blended learning.

The researcher wanted to know if the respondents were excellently skilled in digital skills, comfortable when using blended learning, and competent in preparing learning material and loading and uploading learning material. On a scale of 1 to 7, the respondents slightly agreed that they had excellent digital literacy skills M=5.50, SD=1.32; comfortable when using blended learning M=5.39, SD=1.52; competent in preparing learning material M=5.29, SD=1.68 and able to upload and download learning material using BL M=5.44, SD=1.69.

Table 4.10: Participants' Techno-Pedagogical Skills

	N	Minimum	Maximum	Mean	Std. Deviation
My digital literacy skills are excellent	28	1	7	5.50	1.32
I am comfortable when using blended learning for teaching	28	1	7	5.39	1.52
I am competent in preparing learning material for BL	28	1	7	5.29	1.68
I can upload and download learning material using BL	27	1	7	5.44	1.69
I can give assignments and administer exams using the BL	28	1	7	4.61	1.97
I can grade and upload students' marks using BL programs	28	1	7	4.89	1.83
Average				5.19	1.67

However, they were indifferent to using BL for assignments and exams M=4.61, SD=1.97; and indifferent to grading and uploading students grades M=4.89, SD=1.83 as shown in table 4.10. The universities were to invest in building dons' capacities in using BL for preparing assignments and exams as well as grading and uploading students' grades.

Heads of the department were also asked to compliment on pedagogical and technical support the universities provided for lecturers. The CoDs replied that the dons were supported with CBC training and ICT training. They were also supported with training on using Moodle platforms to grade learners, uploading content on LMS, and reviewing broken links and Mtihani. In addition, the CoDs indicated that they received continuous in-service training and technical support from the university's ODEL, commonwealth, and International Institute of Online Learning.

Proficiency in ICT

ICT skills are requisite for lecturers to effectively use blended learning as a method of instruction. The researcher, therefore, made the respondents rate themselves in ICT skills by asking, "How would you describe your Proficiency in ICT?" Most of the participants considered themselves average n= 13(45%) and above average n= 14(48%) as shown in Fig. 4.25.

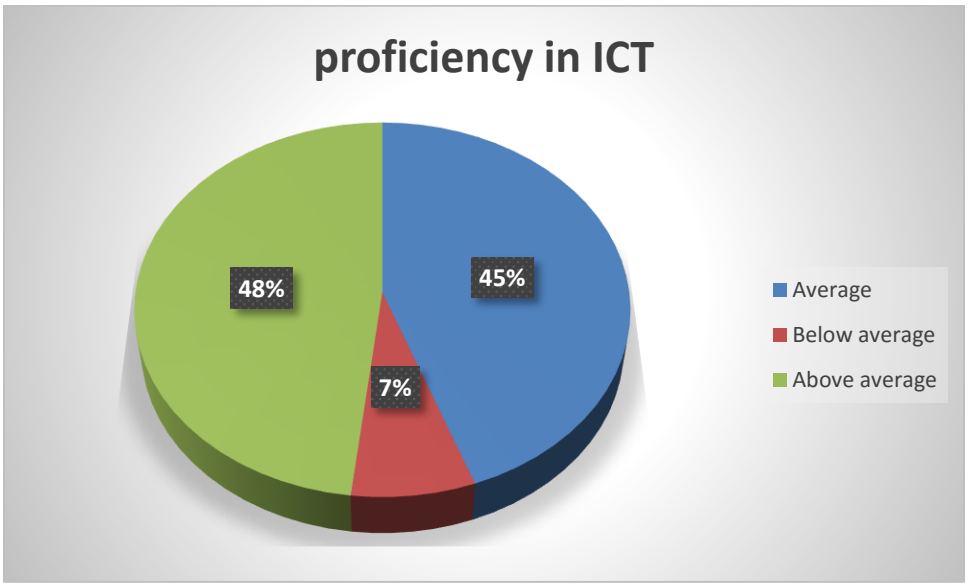

Fig. 4.25: Proficiency in ICT

Very few of the respondents regarded themselves as below average in terms of ICT skills n=2(7%).

Teaching skills

The investigator also asked, "How would you describe your teaching skills regarding blended learning?" Majority rated as above average n=16(56%) and average were n=10 (37%).

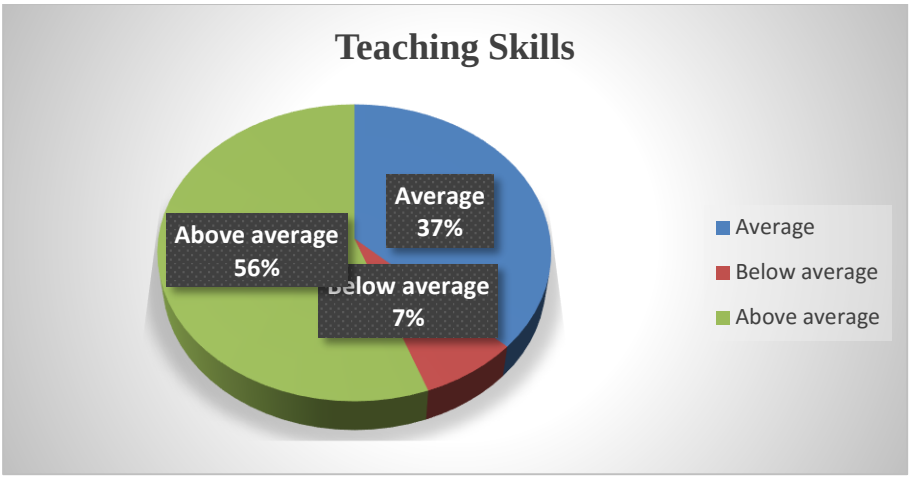

Fig. 4.26: Respondents' Proficiency in Teaching Skills

A very small percentage regarded themselves as below average in teaching n=2(7%); meaning that the teaching staff in public universities were well equipped in teaching and ICT. They just needed training in blending ICT with face-to-face teaching.

The CoDs were asked if the lecturers were skilled in managing time and expectations. On-time management, lectures used timetabling and asynchronous learning techniques. On managing students' expectations, the CoDs replied that the lecturers had no other strategy other than assuring students of the importance of e-learning, group discussions, consultations, students' coffee courses online, and meetings. Apart from ICT training, lecturers were also to be retooled in managing time and students' expectations using BL.

CHALLENGES

The researcher sought information on the bottlenecks teaching staff encountered by asking, "In order of priority give three challenges you encounter in when using blended learning for teaching and learning." In response, most participants identified Internet n =13(48%) and computers n =13(48%) as shown in Fig. 4.27.

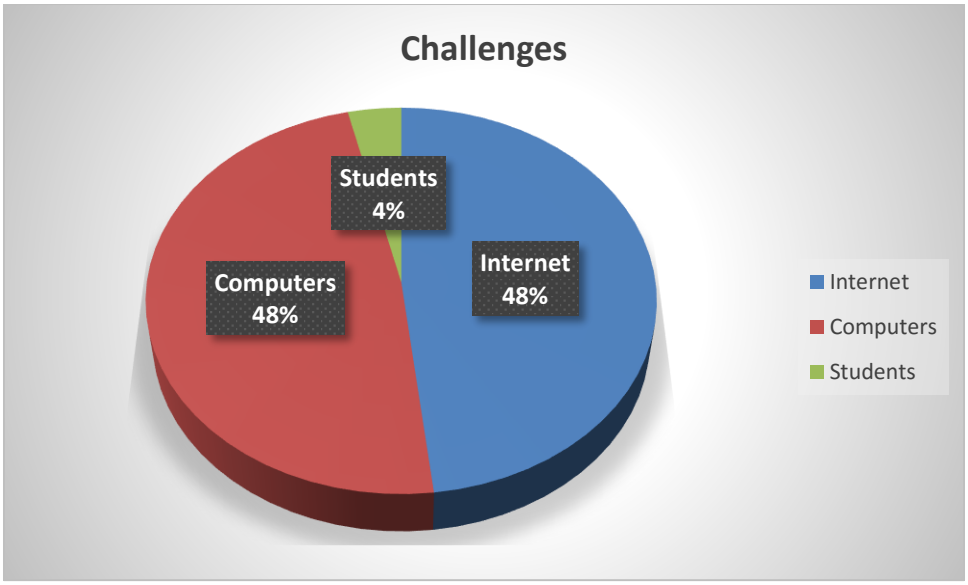

Fig: 4.27: Blended Learning Challenges Facing Participants

According to Fig. 4.27, students were the third challenge lecturers faced while using blended learning. Public universities, therefore, needed to prioritize the provision of PCs and internet to lecturers as requisite tools for blended learning. Higher Education Loans Board (HELB) could improve the situation by financing the students to buy PCs.

In equal measure, the CoDs felt that learning devices and equipment were inadequate, some lecturers were not conversant with BL activities, unstable internet connectivity, managing so many students online, impersonation, professors nearing retirement age were not bothered with e-learning, power failures, occasional lapses in airtime support, poor funding of ICT department and non-replicability of audience effect were key challenges that faced implementation of BL in public universities in Kenya.

SUGGESTIONS

Finally, the respondents were made to suggest interventions to accelerate the adoption of blended learning in teaching and learning in public universities. Majority suggested provision of computers n= 13(45%), followed by internet n= 10(33%) and skills n=5(22%).

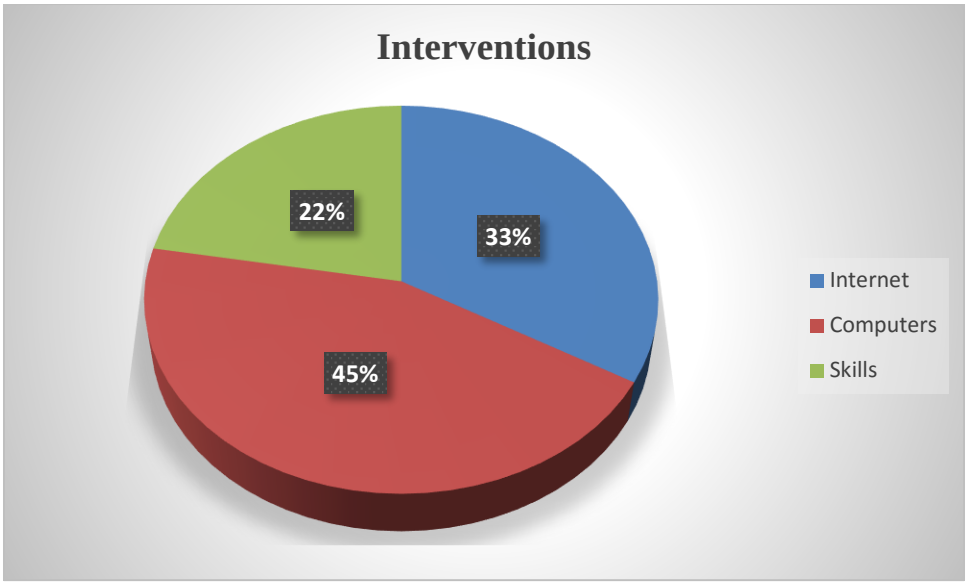

Fig. 4.28: Respondents' Suggestions to Improve Adoption of BL

According to fig.4.28 universities needed to prioritize computers, internet, and skills training if blended learning has to work effectively. Specific internet package should be set aside for universities, through the Ministry of ICT.

Besides the provision of computers, internet, and skills, the CoDs in public universities suggested buying more teaching and learning gadgets for e-learning, breaking large class populations into between 40 and 60 students, employing more staff, winning commitment, frequently retooling lecturers, evaluating load implications, making BL platforms user-friendly, training lecturers in innovative assessments and managing large classes as ways to improve adoption of BL.

4.5 Analysis of Institutional preparedness of the Use of Blended Learning

Another objective of concern was to analyze the effect of institutional preparedness on the use of blended learning for teaching and learning among B. ED students in public universities in Kenya.

In Bandura's SLT lens, institutional preparedness was the social environment that facilitated learning. In this context, it was measured as institutions' efforts to build faculty members' and students' competencies, policies, and infrastructure.

The researcher first examined students' views on institutional preparedness relating to blended learning. On a scale of 1-7; where 1 – Strongly disagree, 2 – disagree, 3 – Slightly disagree, 4 - Neither agree nor disagree, 5 - Slightly agree, 6 – Agree, 7 – Strongly agree; the students were asked the following items as shown in table 4.11. Overall, they slightly agreed that public universities had prepared for blended learning M=5.00, SD=2.21. According to students' responses, the public universities had done very little related to supporting blended learning.

Students' induction on blended learning

When asked if they were inducted into blended learning upon joining the university, they slightly agreed M=5.01, SD=2.30. Showing that they were somehow introduced to blended learning, which was not enough. The CoDs were asked if they prepared students for BL. They replied, "Orientation was done at the beginning of the semester," and students were encouraged to buy e-learning devices. Other universities organized 2-weeks of training for 1st years before starting classes. Some universities merely sensitized students to BL courses at the beginning of the semester. According to Tong, Uyen, and Ngan (2022), pre-entry guidance and counseling on self-study skills and learning attitudes minimized the negative impact on students. Therefore, universities needed to seriously invest in 'self-study skills' and 'learning attitudes.'

4.5.1 Staff Competencies

Training imparted the right knowledge, skills, and attitude towards blended learning. Regarding training, the participants were asked if they underwent any training on BL technologies. Most of them were not sure if they were trained M=4.77, SD=2.31. It implied that they either were not trained or had forgotten the skills they learned, hence the need for newer knowledge, skills, and attitudes on blended learning. When CoDs were asked how they addressed students' expectations, they replied, "assuring them on the importance of e-learning," "group discussions and lecturers' interactions," "continuous help," "departmental meetings," "faculty meetings," "individual course lecturers," "group discussions and students' coffee course online."

Technical support

Hands-on support to students, helped them navigate with ease and use BL effectively. According to CUE (2014), technical support was meant to minimize the negative impact on the students. In the same regard, respondents were asked if they received technical support. Again, they scored M=4.88, SD=2.26 as shown in table 4.11; meaning they neither agreed nor disagreed that they got technical support.

Table 4.11: Institutional preparedness According to Students

	N	Minimum	Maximum	Mean	Std. Deviation
I was inducted into blended learning at joining the university	168	1	7	5.01	2.30
I received training on how to use BL technologies for learning from the university	167	1	7	4.77	2.31
I get technical support from the university whenever I have difficulties	165	1	7	4.88	2.26
I am aware of a system where we place our questions and get answers on blended Learning	166	1	7	5.11	2.02
The university has strong internet supporting BL	167	1	7	5.22	2.17
Average	161			5.00	2.21

Technical support, therefore, was nonexistent. Public universities needed to enhance technical support for students' learning. The findings were below the CUE (2014) recommendations that required universities implementing BL to have a 24-hour help desk to reduce negative regard among students.

Question and Answer (Q&A) system

Question and Answer (Q&A) system is a feedback mechanism that helps blended learning students find answers to their problems at convenience. The respondents were asked if they were aware of the Q&A system. The slightly agreed M=5.11, SD=2.17. It meant that students somehow enjoyed the Q&A system embedded in blended learning, but not to the fullest. This needed to be enhanced. The study results did not meet the CUE (2014), which required universities to establish a framework that dealt with

Frequently Asked Questions (FAQ) for both students and staff. Such systems fed regional learning centers with the subject matter to train lecturers using BL.

Internet

"The university has strong internet supporting BL," the researcher posed. The respondents scored *M*=5.22, *SD*=2.17; meaning they slightly agreed with the statement. Students experienced some internet at the campus but not the desired speed and strength. Still, some efforts were required to increase the internet bandwidth.

Finally, they were asked to describe the effectiveness of university infrastructure in supporting Blended Learning. They replied, "Poor internet connectivity." "Lack appropriate infrastructure and equipment." "Unavailability of computers in labs." "Lack of well-equipped library." "Unavailability of study villas and school cyber." "Erratic internet and power supply."

On a scale of 1-7; where 1 stood for strongly disagree, 2 for disagree, 3 for slightly disagree, 4 for neither agree nor disagree, 5 for slightly agree, 6 for agree, and 7 for strongly agree; lecturers were interviewed on policies, structures, technical support, training, infrastructure and feedback system as shown in table 4.12.

Table: 4.12: Institutional preparedness According to Lecturers

	N	Minimum	Maximum	Mean	Std. Deviation
The university has policies on blended learning	24	1	7	4.92	1.44
I understand the university has structures to manage blended learning	28	1	7	4.68	1.72
I get technical support when I encounter difficulties	27	2	7	5.30	1.20
I got training to use blended learning	26	1	7	5.31	1.59
My university has adequate infrastructure supporting blended learning	27	1	7	4.67	1.86
The university has a feedback system for blended learning	27	1	7	4.07	2.25
Average				4.82	1.68

Overall, the lecturers scored *M*=4.82, *SD*=2.25; meaning that they weekly agreed that universities had conducive characteristics for blended learning. This connotes that the social learning environment for blended learning was weak; predicting minimal or poor-quality learning outcomes among B. ED students in public universities in Kenya. Even though the government of Kenya had an elaborate institutional and policy framework to accelerate the adoption of BL in institutions of higher learning, most public universities experienced inadequacy in ICT infrastructure, finance, policies, and technical skills among others (Tarus, Gichoya & Muumbo, 2015).

4.5.2 Policies

Policies are commitment statements and broad guidelines on how to implement blended learning in universities. Among 'innovation universities' policies upscaled new approaches to teaching and learning (Juma, 2018). The interviewer asked respondents if the university they served had BL policies. They neither agreed nor disagreed

M=4.92, *SD*=1.4; meaning that many universities had no policies on blended learning. According to Heads of Departments (CoDs), some universities had an e-learning policy supported by the Nuffic project. Other universities used general academic policies of 50-50, CUE guidelines, ODEL policy, and management directives following quality assurance reports to manage blended learning. The majority had no specific blended learning policy and lecturers were at liberty to choose and use any method of instruction. In a public institution, the absence of policies resulted in haphazard implementation with no uniformity, and plan for improvement. Perris and Mohee (2021) looked at such a scenario as a compromise on quality in education. According to McCowan(2018) such state strangled education quality. Hence the a need for universities to come up with BL-specific policies to guide BL's implementation.

Structures

Structures referred to clear governance and administration framework that facilitate the use of blended learning approach for teaching and learning in public universities. Structures help manage policies and programs in an organization. It defines the line of command and coordination. The interviewer, therefore were asked if the respondents believed that the university had structures to manage blended learning. They scored *M*=4.68, *SD*=1.72; meaning that they neither agreed nor disagreed that there were structures. When CoDs were asked if there were BL structures in place, a few identified "structured timetable" and "e-campus", but the majority denied that there were no policies governing blended learning. Again, the implications were that many universities had not put in place structures to manage blended learning.

According to CUE (2014) standards, the public universities did not have clear governance and administration structures that steered the development, coordination, management, and monitoring of the implementation of blended learning. McCowan (2018) emphasized that the absence of structures and policy created a lack of pedagogical culture that critically roadblocked the achievement of quality education within public universities in Kenya. Unless policy and practice addressed the conditions of public universities and embraced the modern pedagogical culture, quality was likely to drift further into a sorry state.

Technical support

Technical support to teaching staff is meant to make the class proceed smoothly by untangling technical problems. The interviewer asked if they received technical support. The respondents slightly agreed that they received technical support *M*=5.30, *SD*=1.20. The findings showed that the lecturer sometimes received technical support, but not all the time. When CoDs were asked, they identified training as key technical support universities offered the faculty members. Like among Indonesian academic staff, insufficient technical support immensely contributed to low enthusiasm toward blended learning (Putri, Adha & Pitoewas, 2020). According to CUE (2014) standards, technical support is supposed to be a 24-hour help desk preoccupied with communication; handling feedback and questions as well as technical support to learners and staff.

Training

The training was meant to form a positive attitude as well as equip lecturers with knowledge and skills in BL. The investigator asked respondents if they had training in using blended learning. Most of them slightly agreed that they were trained *M*=5.31, *SD*=1.59. Responses from CoDs revealed that most universities have continuous in-

service training for faculty members and champions as part of motivating and developing capacity. The trainings were about CBC, ICT, using Moodle platforms, mtihani LMS, grading learners, interactive tools, and e-learning skills. The trainings were done by the directorates of quality assurance and ICT. Most of the training was financed by university-wide funding, Commonwealth and International Institute of Online Learning. It implied that some universities trained lecturers. Beyond recruitment, CUE (2014) recommended that training lecturers on LMS skills and strategies to develop material was paramount. Kara, Tanui, and Kalai (2020) added that the adoption of BL required capacity building for lecturers as core agents. Therefore, there were many lecturers still untrained in blended learning who needed the right attitudes, skills, and knowledge.

4.5.3 Infrastructure

The infrastructure provided a physical media and framework through which blended learning could be implemented. The researcher asked if the respondents believed that the universities provided adequate infrastructure. They scored M=4.67, SD=1.86; meaning that they neither agreed nor disagreed that they had adequate infrastructure. It implied that most universities did not have working infrastructures for blended learning. Stable and adequate telecommunication networks, electricity, server space, loading space, technical help desk, and technical backup services were critical for universities that wanted to adopt Blended learning (CUE, 2014). Masadeh (2022), observed that infrastructure and technological tools promoted positive attitudes among learners and lecturers. Based on the same premise, public universities needed to invest in infrastructure to accelerate the diffusion of Blended Learning in communities of learners and faculty members.

Feedback system

The researcher also asked the respondents if the university had a feedback system on blended learning. They neither agreed nor disagreed that the university had a feedback mechanism for blended learning *M*=4.07, *SD*=2.25. When asked how they integrated students' feedback, CoDs replied, "Feedback is received by the director of quality assurance and we are not privy to content." Others answered that they integrated through "course reviews," "class representative reports," "discussion forums and notice boards," "quality assurance survey at the end of the semester," "senate on recommendation from quality assurance report," "online training," and "use of e-portfolio of evidence." This showed that most universities had no specific feedback system for blended learning. Burns (2011) observed that feedback systems for students and staff deepened instructors' knowledge, skills, and attitudes on BL. The feedback information would be best aggregated at a regional learning center established for the training of staff on appropriate models (Burns, 2011).

University preparedness

University preparedness predisposed universities to accept and allow blended learning to diffuse. Therefore, the researcher asked the interviewees, "Describe how prepared the university is to embrace blended learning for teaching and learning?" The answers are shown in Fig. 4.29.

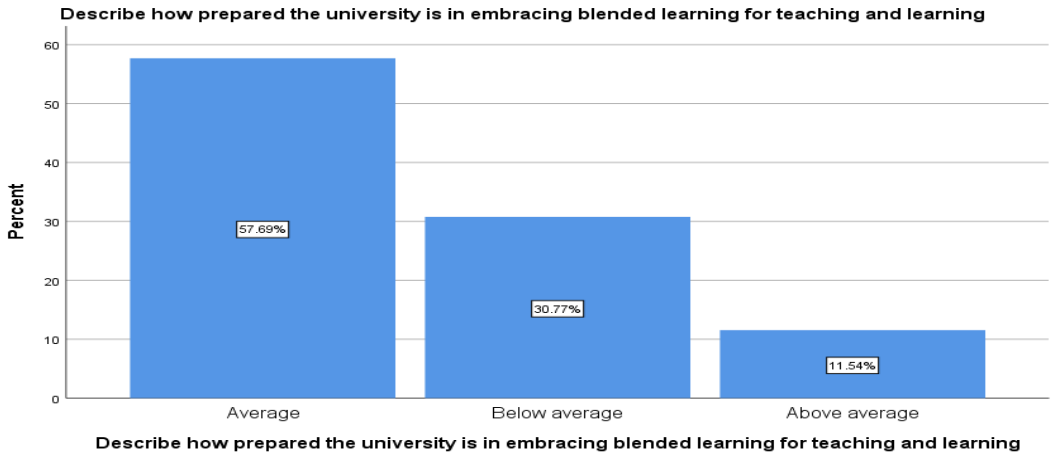

Fig. 4.29: University Preparedness

According to Fig. 4.29, most of the respondents indicated that very few universities were above average n=3(11.54%) in terms of preparedness. In other words, most universities were not fit for blended learning. The findings are in tandem with those of Porter, Graham, Spring, and Welch (2014) who found that most universities were unprepared for blended learning. The study was done on 11 US institutions that participated in the Next Generation Learning Challenge (NGLC). Using the 3-stage blended learning adoption framework (1-awareness/exploration, 2-adoption/early implementation and 3 – mature implementation/growth). According to the study most institutions were at early implementation with unfavorable structures, support systems, strategies, and human resources (Porter, Graham, Spring & Welch, 2014).

4.6 Analysis of a Pedagogical Model for Usage of Blended Learning

Finally, the study developed a pedagogical model that explained institutional characteristics that influenced the usage of blended learning for teaching and learning among B. ED students in public universities in Kenya. The development of a pedagogical model explaining institutional influences on the use of blended learning was done using structural equation modeling with the aid of AMOS version 24 software loaded on SPSS. The results are as per the unstandardized and standardized models below. The unstandardized model gave the covariates of exogenous variables and factorial loading of all the variables in the model.

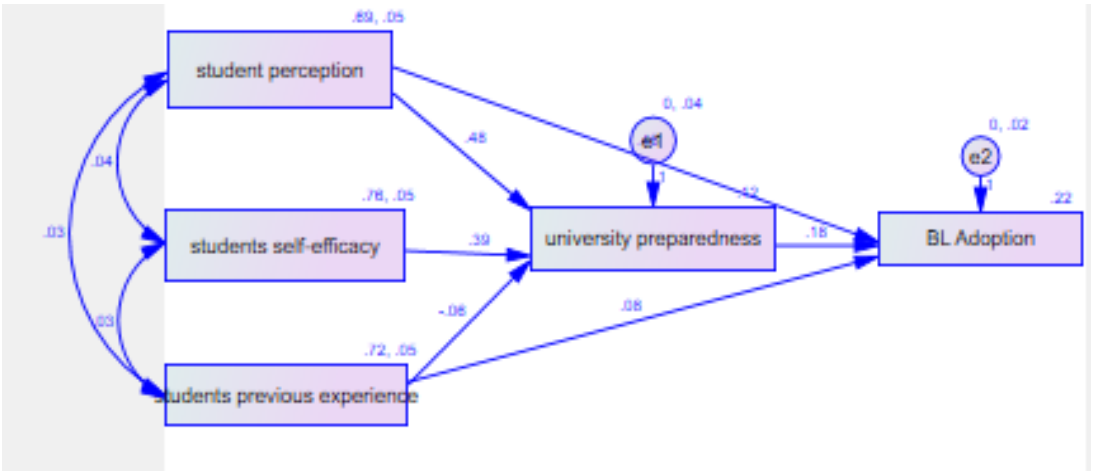

Fig. 4.30: Model 1: Unstandardized

According to model 1, and table 4.13, there was a significantly strong correlation between student perception and previous ICT experience, student perception and their self-efficacy, and previous ICT experience and Self-efficacy. The correlation between students' perception and self-efficacy was the strongest 0.036. The correlation between self-efficacy and previous experience, students' perception, and previous perception were the same 0.034.

Table 4.13: Covariance of Exogenous Variables

			Estimate	S.E.	C.R.	P	Label
SELF_EFFICACY_X2	<-->	PREVIOUS_EXPERIENCE_X3	.034	.005	7.121	***	
PERCEPTIONS_X1	<-->	SELF_EFFICACY_X2	.036	.005	7.341	***	
PERCEPTIONS_X1	<-->	PREVIOUS_EXPERIENCE_X3	.034	.005	7.082	***	

Covariances: (Group number 1 - Default model)

According to the findings in Table 4.13, one unit change in previous experience resulted in 0.034 change in the student's self-efficacy; one unit variance in self-efficacy resulted in 0.036 positive change in student perception; and one unit change in previous ICT experience affected change in 0.34 in students' perception. Implied by the result was that self-efficacy components influenced BED students' positive perception towards BL than previous experience Therefore public universities needed to invest more in training students on setting up LMS, downloading and organizing learning materials, using LMS for group work, doing and uploading assignments. In addition, the university management needed to train the students on using digital devices to access and use LMS.

A standardized model was used to establish the regression estimates or estimate predictor relations. The model established six (6) predictor pathways. They include self-efficacy predicting university preparedness; students' perception influencing university preparedness; previous ICT experience influencing university preparedness; university preparedness influencing predicting BL adoption; student perception influencing BL adoption and previous ICT experience influencing BL adoption.

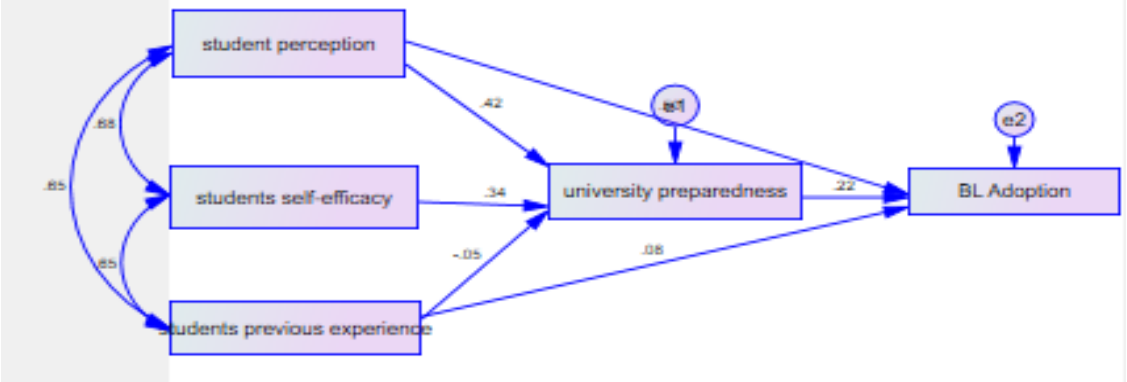

Fig. 4.31: Model 2: Standardized Model

Apart from university preparedness having an inverse relationship with previous experience, the rest of the pathways had positive variances; meaning that one unit change in exogenous variables caused a positive change in Blended learning adoption as shown in Table 4.14.

Table 4.14: Regression Weights

			Estimate	S.E.	C.R.	P	Label
University preparedness	<---	Students' perception	.476	.097	4.912	***	
University preparedness	<---	Students' self-efficacy	.389	.098	3.951	***	
University preparedness	<---	Previous experience	-.060	.094	-.641	.521	
BL Adoption	<---	University preparedness	.182	.058	3.153	.002	
BL Adoption	<---	Previous experience	.077	.069	1.126	.260	
BL Adoption	<---	Students' perception	.482	.077	6.218	***	

Regression Weights: (Group number 1 - Default model)

This implied that, to maximize learning outcomes among B. ED students using Blended learning, public universities needed to focus more on students' perception, self-efficacy, and preparedness. Fig 4.32 shows the best model with the three critical paths identified in Table 4.14.

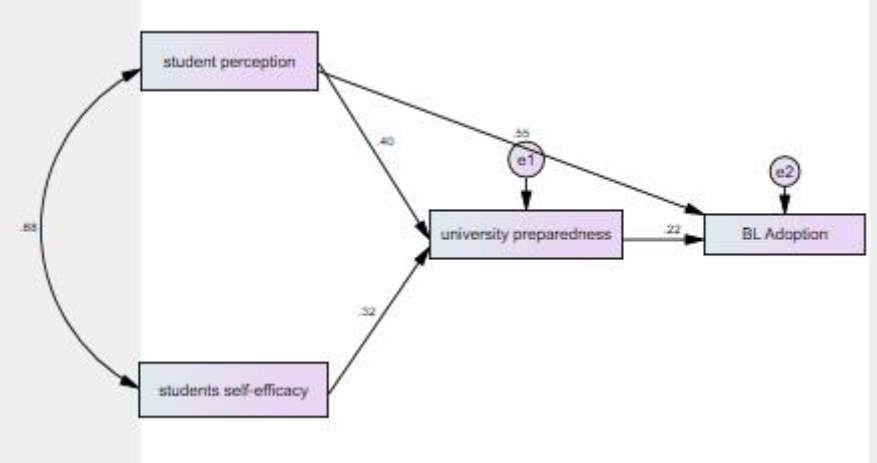

Fig. 4.32: Best Students' Pedagogical Model (Standardized Model)

According to the model in Fig. 4.32, there was a significantly strong correlation between student perception and Self-efficacy. The correlation between students' perception and self-efficacy improved from 0.036 to a coefficient of 0.68. Based on the standardized regression weights, students' perception and adoption of blended learning(0.550) was the strongest path, followed by university preparedness and BL adoption(0.399).

The researcher also determined the intercept value. As an intercept, university preparedness significantly influenced BE Students' adoption of blended learning as shown p= 0.04 in Table 4.15.

Table 4.15: Intercepts for Predicting Endogenous Variables

	Estimate	S.E.	C.R.	P	Label
University preparedness	.112	.055	2.053	.040	
BL adoption	.241	.040	6.081	***	

It meant that university preparedness significantly moderated students' perception and self-efficacy in adopting BL. The results of the study in Table 4.15 implied that public universities needed to foster institutional measures to mediate the use of blended learning. Examples of measures included anchoring BL on policies, structures, and good infrastructure. In addition, the universities should establish good technical support

systems, Q & A systems, and strong bandwidth internet and train students and lecturers thoroughly on BL.

4.7 Model Tests of Fit

The researcher used the Chi-square (CMIN test), Tucker-Lewis Index (TLI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA) to determine if the data fit well in the model. The chi-square results were less than 0.05, p=0.011 as shown in table 4.16.

Table 4.16: Chi-square Test of Model Fit

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	13	6.447	1	.011	6.447
Saturated model	14	.000	0		
Independence model	8	328.019	6	.000	54.670

The chi-square results indicated that the data did not fit well in the model because $p < 0.05$. The second and third tests were TLI and CFI as in Table 4.17.

Table 4.17: Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI)

Model	NFI Delta1	RFI rho1	IFI Delta2	TLI rho2	CFI
Default model	.980	.882	.983	.899	.983
Saturated model	1.000		1.000		1.000
Independence model	.000	.000	.000	.000	.000

Again, TLI was 0.899 which was less than the threshold of 0.95. However, CFI was 1.00, greater than the 0.90 threshold; which meant that data fitted well in the model. Finally, the researcher carried out the RMSEA test as shown in Table 4.18.

Table 4.18: Root Mean Square Error of Approximation (RMSEA)

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.180	.069	.322	.030
Independence model	.564	.513	.616	.000

According to the rule of thumb, data fitted well the model if the RMSEA was less or equal to 0.8. In this case, the RMSEA readings are 0.18, far below the threshold; implying data fitted well with the model. Conclusively, out of the four model fit tests, two proved that data fitted well in the model as shown in Table 4.19.

Table 4.19 Summary of the Model Fit Tests

Test	**Chi-square**	**TLI**	**CFI**	**RMSEA**
Threshold	*P* ≥0.05	TLI ≥0.95	CFI≥0.90	RMSEA ≤0.8
Actual	P =0.011	TLI =0.899	CF1=1.00	RMSEA=0.18
Conclusion	Not fit to the data	Not fit to the data	Good fit to the data	Good fit to the data

Though Chi-square and TLI in Table 4.19 did not find a good fit, the rest of the tests found the data fit well in the model. This is an indication that the exogenous variable predicted university preparedness and adoption of blended learning among B. ED students in the public Universities.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The main aim of the study was to examine the institutional influences on the use of blended learning approaches among Bachelor of Education (B. ED) students in selected public universities in Kenya. This chapter summarized key findings on specific objectives, that is; 1) to determine the influence of learners' characteristics on the use of blended learning, 2) to examine the influence of lecturers' characteristics on the use of blended learning, 3) to analyze the effect of institutional preparedness on the use of blended learning, 4) to develop a pedagogical model that explained institutional characteristics that influenced the usage of blended learning. The chapter concluded with a conclusion alongside recommendations for policy, practice, and further studies. To lay the ground for the key findings, the chapter started with the background information.

5.1.1 Background Information

Before addressing research objectives, the researcher sought background information on students, lecturers, and the B. ED program. An inquiry on gender revealed that the majority of the students in B.Ed. program were males aged between 18 and 35 years old. Blended learning was mostly used for Semantics and pragmatics, English morphology, and literature courses. Very few students used BL for science-related subjects such as physics, chemistry, and mathematics. The study also sought to understand if the students were employed. The majority were not employed. Those who worked were engaged for less than 10 hours per week at the campus as cleaners, library attendants, messengers and administrative assistants. The researcher also discovered

that half of the students had no personal computers. Almost the same proportion of respondents did not have internet.

The study also investigated on Lecturers' background information. It was found that most of the lecturers were male compared to their female counterparts. The study also discovered that most of the faculty members were young, aged between 1 and 35 years old, and were at the rank of lecturers and assistant lecturers. Most of the lecturers were PhD holders and had worked for less than 5 years. Laptops, desktops, and projectors were the most used devices used by the lecturers. The dons in public universities use wi-fi for internet connectivity and Moodle delivers course content to students.

5.1.2 Learners' Characteristics and Use of Blended Learning

The study found that the learners approved blended learning (*M*=5.08, *SD*=2.05). The B. ED students slightly agreed that blended learning was easy to use, useful, and interesting. The learners in public universities slightly agreed that they had self-efficacy in using blended learning and that the most needed support with the internet. The learners slightly agreed that they had previous experience in BL and approved of previous experience as having supported them in using blended learning as shown in Table 5.1

Table 5.1: Summary of Learner's Characteristics Influences on Blended Learning

Learners' characteristics	Mean(*M*)	Standard Deviation (*SD*)
Attitude/perception of learners	4.87	2.09
Self-efficacy	5.37	1.92
Previous experience	5.02	2.15
Average	5.08	2.05

According to the results learners' self-efficacy was the most voted, followed by previous experience. Universities in Kenya should invest in building self-confidence in students by supporting them at entry with ICT skills. The selection criteria of B.ED students should also include ICT proficiency.

5.1.3 Lecturers' Characteristics on the Use of Blended Learning

Generally, lecturers weakly approved BL (*M*=4.70, *SD*=1.85) as shown in Table 5.2. On a scale of 1 to 7, the perception of lecturers on blended learning was slightly positive. Lecturers slightly agreed that they had positive experiences and regard for BL. They found BL useful, a better option, timely preparation of learning material, and handling overcrowded classes. On motivation, the lecturers had very low motivation. The study found that lecturers in public universities lecturers were not motivated to use blended learning for teaching.

Table 5.2: Lecturers' Characteristics Influence on Blended Learning

Lecturers' characteristics	Mean(M)	Standard Deviation (SD)
Lecturers' perception	5.11	1.70
Motivation	3.81	2.2
Pedagogical skills	5.19	1.67
Average	4.70	1.85

Further, an investigation on techno-pedagogy skills found that lecturers had basic skills in BL. The lecturers slightly agreed that they had appropriate techno-pedagogical skills. Specifically, they slightly agreed that they had digital skills, and they were comfortable using BL to download and prepare learning materials. They denied having used blended learning to give assignments, and grade and upload learners' grades. The faculty members felt unmotivated to use blended learning. In summary, pedagogical skills ranked top *M*=5.19, *SD*=1.67 followed by lecturers' perception *M*=5.11, *SD*=1.70.

5.1.4 Institutional preparedness on the Use of Blended Learning

The third objective was to analyze the effect of institutional preparedness on the use of blended learning for teaching and learning among B. ED students in public universities in Kenya. The study found that institution characteristics were inadequate in facilitating blended learning (*M*=4.97, *SD*=1.63). B. ED students slightly agreed that public universities had prepared for blended learning. They slightly approved induction, question and answer systems, and internet presence. However, they did not know of any training and technical support universities provided to students for blended learning.

Table 5.3: Summary of Institutional preparedness Influence on Blended Learning

Institutional preparedness	Mean(M)	Standard Deviation (SD)
Competencies development	5.31	1.59
Policy	4.92	1.44
Infrastructure	4.67	1.86
Average	4.97	1.63

Lecturers overall, weakly agreed that universities had conducive characteristics for blended learning. They did not acknowledge universities having policies, structures, infrastructure, and feedback systems on blended learning. Unlike students, they slightly agreed that they got training and technical support on using blended learning. According to Table 5.3, competencies development, followed by policy was the leading in supporting BL in public universities. Infrastructure was trailing.

5.1.5 Pedagogical Model, Institutional Characteristics and Usage of Blended Learning

Out of the six pathways, three had significant influence. They are 1) University preparedness and students' perception; 2) university preparedness and students' self-efficacy; and 3) BL adoption and students' perception as shown in Fig. 5.1

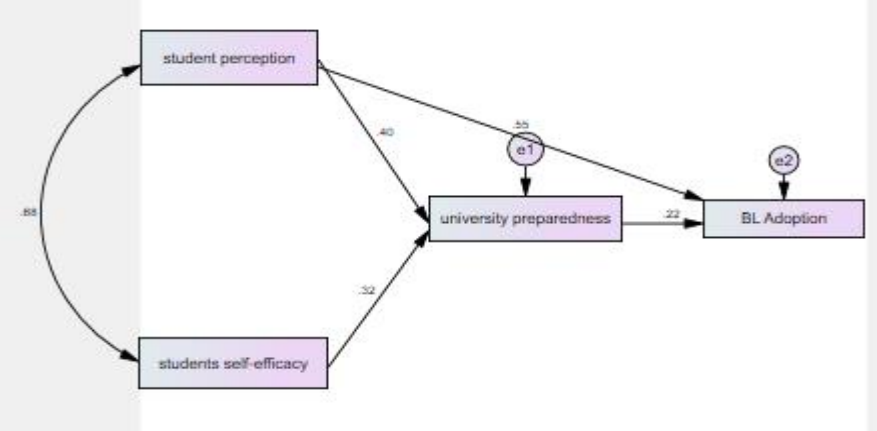

Fig. 5.1: Pedagogical Model on Students' Usage of Blended Learning

Based on the standardized regression weights, students' perception and adoption of blended learning(0.550) was the strongest path, followed by university preparedness and BL adoption(0.399). The researcher also determined the intercept value. As an intercept, university preparedness significantly moderated the relationships between students' perception, self-efficacy, and BE Students' adoption of blended learning.

5.2 Conclusion of the Study

This study investigated the institutional influences on the use of blended learning approaches among 6655 Bachelor of Education (B. ED) students doing a third year in 8 public universities in the 2023/2024 academic year in Kenya. Using Albert Bandura's social learning theoretical framework, the study collected and analyzed data on students', lecturers', and institutions'' characteristics to establish the extent of implementing BL in public universities in Kenya.

5.2.1 The Extent to which Learners' Characteristics Influenced the Use of Blended Learning

The finding showed that students lightly approved of blended learning. Of the three attributes of students' characteristics, students' self-efficacy (*M*=5.37, *SD*=1.92) and previous experience (*M*=5.02, *SD*=2.15) were highly considered by B.ED in public universities. Students' perception was dismally considered. The students found blended learning easy to use, useful, and interesting. However, they needed stronger internet bandwidth to reap more from BL. When there is a direct impact of predictor variable to use of BL then previous experience matters but when there is a consideration of institutional preparedness (infrastructure, capacity development) hen previous experience did not matter.

5.2.2 The Extent to which Lecturers' Characteristics Influenced the Use of Blended Learning

The second set of results addressed the question, 'To what extent do lecturers' characteristics influence the use of blended learning for teaching and learning among B. ED students in public universities in Kenya?' The results demonstrated that lecturers weakly favored blended learning implementation *M*= 4.70, *SD*= 1.85. Out of the three lecturers' characteristics examined, pedagogical skills rated highly (M=5.19, SD=1.67) followed by attitude (M=5.11, SD=2.2) in the positive influence of BL use. Lecturers were poorly motivated and inadequately skilled in BL functions. The lecturers demonstrated that BL was a useful, better option and helped them to timely prepare learning material and handle overcrowded classes. The dons had acquired some appropriate techno-pedagogical skills which helped them use BL for delivering course content. They had deficiencies in giving assignments, grading, and uploading learners'

grades. The research also discovered that the instructors were poorly motivated to use BL. Like students, their biggest challenges were inadequate internet and digital devices.

5.2.3 The Extent to which Institutional preparedness Influenced the Use of Blended Learning

The third set of results concerned 'To what extent do institutional preparedness influence the use of blended learning for teaching and learning among B. ED students in public universities in Kenya?' The results of the study indicated that institutional preparedness weakly supported blended learning implementation in public universities (M=4.82, SD=1.65). Universities' efforts to build faculty members' competencies were ranked highly followed by the development of blended learning policies. Infrastructure was the least ranked showing that universities were doing very poorly in infrastructure that facilitated blended learning. The study also found out that the university did well in inducting B. ED students at entry and trained lecturers on using blended learning, but poorly in training students, providing technical support and feedback systems.

5.2.4 Pedagogical Model that Best Explained institutional influences on the Use of Blended Learning

The last set of findings addressed, 'What pedagogical model best explains institutional characteristics that influence the use of blended learning for teaching and learning among B. ED students in public universities in Kenya?' The study found significant pathways in the model; 1) University preparedness and students' perception (regression estimate = .399; P<.05; 2) university preparedness and students' self-efficacy (regression estimates = .389; P<.05); and 3) BL adoption and students' perception (regression estimates = .55; P<.05). Finally, the researcher observed that the implementation of blended learning suffered from the weak and high cost of internet

connectivity, poor scheduling of classes, breakdowns of ICT, difficulty in lecturer-student interaction, lack of digital devices and unsupportive environment.

5.3 Recommendations of the Research Study

5.3.1 Recommendations for Learners' Characteristics on the Use of Blended Learning

Recommendations for practice

a) Universities should shape students' attributes towards BL by proper induction and;
b) Universities should make ICT skills a compulsory and common course for all learners to enable them to use computers, download learning materials, and upload assignments;
c) Universities should have a 24/7 call and support center to help students with hiccups, and handle feedback and commonly asked questions.
d) Universities should strengthen internet bandwidth and speed on their campus and equip coffee shops, labs, libraries, and strong internet networks.

Recommendations for policy

a) The government of Kenya should reduce taxes on the internet, PCs, and accessories, to ease access to learning tools and equipment among students and lecturers.
b) The Ministry of Education should ensure MS Office and IT literacy to be provided to students at high schools and universities making ICT courses common.

c) Universities to create BL and ICT policies to manage the balance between face-to-face and virtual learning as well as mitigate abuse of ICT by the students as detractors during learning.

Recommendations for further studies

This study recommends further study to be done on the effect of learners' characteristics and use of BL for learning and teaching in public universities.

5.3.2 Recommendations for Lecturers' Characteristics on the Use of Blended Learning

Recommendations for practice

a) On lecturers' characteristics, the study considered pedagogical skills and attitude to be key antecedents of blended learning. Therefore, recommends retooling of lecturers for the 21st century classroom. Universities should invest in teacher education programs that change their mindset, improve their adaptation and technical skills like online discussion skills, how to navigate and operate LMS functions such as scheduling classes, loading learning materials, and testing and grading learners. This can be achieved through refresher courses in-service training and coaching from champions. The universities can prospect and borrow tested programs such as Opening, Analyzing, Stimulating, and Achieving (OASA), that build faculty members' capabilities systematically from lower level to higher capability levels in using technology for teaching.

b) The teacher education programs for enhancing the use of blended learning in universities should be assessed by a Technology, Pedagogy, and Content (TPACK) framework pre- and post-training. The framework helps establish

self-efficacy levels of lecturers in teaching strategies, content, and technological skills.

c) To improve lecturers' characteristics, public universities' management should form reward and recognition programs to incentivize faculty members who excelled in implementing BL for teaching and learning. It should equally establish a minimum workload for faculty members using BL

Recommendations for policy

a) Universities should develop policies and frameworks for capacity development for lecturers. The policy should define the gaps it intends to address, strategies/programs, implementation and monitoring mechanisms, funding, and reward.

Recommendations for further studies

a) Despite, the lack of motivation among lectures being observed, it did not significantly influence their liking toward BL. Further studies are recommended on reward systems that enforce the implementation of BL in universities.

5.3.3 Recommendations for Institutional preparedness on the Use of Blended Learning

Recommendations for practice

a) On institutional preparedness, the Ministry of Education should support universities financially to build effective infrastructures

b) Public universities in Kenya should embrace collaboration and network with development partners such as KNET, the European Union, the African Development Bank, the World Bank, and other universities in the North to build their infrastructure, policies, and competencies.

c) Public universities should have clear governance and administration structures that steer the development, coordination, management, and monitoring of the implementation of blended learning.

d) For sustained adoption of blended learning, public universities should focus more on preparedness, students' perceptions, and self-efficacy.

e) public universities should buy more teaching and learning gadgets for e-learning, breaking large class populations into between 40 and 60 students, employing more staff, winning commitment, frequently retooling lecturers, evaluating load implications, making BL platforms user-friendly, training lecturers in innovative assessments and managing large classes as a way of improving the adoption of BL.

Recommendations for policy

a) Universities should entrench blended learning in their mission statements and organizational objectives

b) CUE should develop a policy guiding universities on developing and implementing Blended learning for public universities in Kenya.

c) The Treasury and the parliament of Kenya should increase allocation for university infrastructure to address class size barriers and other infrastructure-related problems

d) The MOE should technically support Universities in crafting effective policies that support the use of BL by students and lecturers.

Recommendations for further studies

a) Further studies should be done on the role of institutional preparedness in the use of blended learning for teaching and learning in TVET colleges in Kenya.

5.3.4 Recommendations for a Model Explaining the Use of Blended Learning

Recommendations for practice

a) Universities should focus on fostering an ecosystem that focuses on university preparedness, student self-efficacy, and perception/attitudes.

Recommendations for policy

b) Universities should develop policies that focus on improving students' proficiency, efficacy, and attitudes towards blended learning.
c) The GoK, through MOE, should develop policies and guidelines on BL use for curriculum delivery in universities

Recommendations for further studies

a) Further studies should be done on appropriate BL models for TVET and secondary schools in Kenya.

5.4 Contributions of the Study to New Knowledge

This study addressed multiple gaps in the empirical and theoretical literature. In doing so it made important contributions to the body of knowledge. First, the study extended the limited research on B. ED learners' characteristics in Kenya and their use of blended learning. The study is among the first to find out and consider learners' self-efficacy and previous experience as important predictors for effective learning in a blended learning environment. Second, the study evaluated the role of pedagogical skills and attitudes of faculty members as a cornerstone to implementing blended learning for effective learning in public universities in Kenya. Third, to the best of the researcher's knowledge and thorough review of knowledge, no antecedent study explored institutional characteristics and developed a model or a confluence of factors that best influenced the use of blended learning in Kenyan public universities in post-COVID-

19 time. This research shows that a mix of students' self-efficacy, perception, and university preparedness facilitated the quickest uptake of blended learning in public universities.

On the theoretical front, the study used Bandura's SLT which explained learning as a function of social environment, observation, imitation, and self-efficacy. Despite SLT providing a significant anchorage for this study, it has exhibited deficiencies in capturing policy, infrastructure, techno-pedagogical skills, and previous ICT experience which are key to the social learning environment for blended learning. This study expanded the theory to explain learning in the 21st century by including ICT skills for teachers and learners, infrastructure, and funding as key factors of learning in blended learning in university education.

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APPENDICES

Appendix A: Student Blended Learning Experience Questionnaire

Questionnaire for university students (third-year students taking education courses)

Dear Respondent,

The Researcher is a student at Moi University and requires some information about blended learning in public universities. He is therefore kindly requesting you to spare your time to respond to the items in this questionnaire. The information given will be strictly for academic purposes and will be treated with the utmost confidentiality. Your name won't be required and therefore it will not appear anywhere in this questionnaire.

Serial No:

Date:

University & Location:

INSTRUCTIONS

Kindly fill out the questionnaire by writing and or ticking it where necessary.

SECTION A: DEMOGRAPHICS

A1. What is your sex? _____Male _____Female _____Other

A2. What is your age? <18 years between 18 and 35year > 35 years

A3. What is your county of residence? _____

A4. State your high school grade _____

A5. What previous studies do you have? _____

A6. What form of schooling are you enrolled in?

_____ Face-to-face _____ Blended

A7. Are you currently working? _____ Yes _____No

A8. What kind of work/employment are you engaged?

A9. How many hours do you work per week?

_____Less than 10 hours _____between 10 and 20 hours

_____ Between 21 and 30 hours _____ Above 30 hours

A10. Do you have a computer somewhere that you occasionally use?

_____ Yes _____No

A11. Do you have the internet at home? _____ Yes _____No

SECTION B: BLENDED LEARNING COURSE INFORMATION

B1. Campus:_____

B2. Faculty: _____

B3. Program _____

B4. Year and semester of study:_____

B5. Course title: _____

SECTION C: PERCEPTION OF USING BLENDED LEARNING

Instruction: Select by ticking in the box provided against each question. 1 – Strongly disagree ; 2 – disagree; 3 – Slightly disagree; 4 - Neither agree nor disagree; 5 - Slightly agree; 6 – Agree; 7 – Strongly agree

S.No		1	2	3	4	5	6	7
C1.	I am clear on what BL is							
C2.	Blended learning is used in the teaching and learning							
C3.	I experience difficulties when using blended learning							
C4.	Blended learning is useful for learning							
C5.	My experience with blended learning is good							
C6.	Blended learning is appropriate in self-regulated learning							
C7.	Timeliness. In blended learning, lecturers respond to my learning concerns promptly							
C8.	I get an opportunity to learn by interacting with classmates under blended learning.							
C9.	In blended learning, I get to interact with lecturers easily							
C10.	Blended learning enables me to access learning material conveniently.							
C11.	My grades have improved because of Blended Learning.							

C12.	Blended learning courses are more interesting than those which are not.							
C13.	I was inducted into blended learning at joining the university.							
C14.	I received training on how to use BL technologies for learning from the university.							
C15.	I get technical support from the university whenever I have difficulties.							
C16.	I am aware of a system where we place our questions and get answers on Blended Learning.							
C17.	How willing are you to use blended learning in your academic work?							

SECTION D: SELF-EFFICACY IN USING BLENDED LEARNING

Instruction: Select by ticking in the box provided against each question. 1 – Strongly disagree; 2 – disagree; 3 – Slightly disagree; 4 - Neither agree nor disagree; 5 - Slightly agree; 6 – Agree; 7 – Strongly agree

S.No		1	2	3	4	5	6	7
D1.	On my own, I can effectively set up an LMS system on my computer for learning.							
D2.	On my own, I can download and organize learning material.							
D3.	On my own, I can participate in group work with classmates using a virtual platform.							
D4.	On my own, I can do and upload my assignments online							
D5.	My ability to access and use the LMS for learning is excellent.							

SECTION E: STUDENTS' PREVIOUS EXPERIENCE

Instruction: Select by ticking in the box provided against each question. 1 – Strongly disagree; 2 – disagree; 3 – Slightly disagree; 4 - Neither agree nor disagree; 5 - Slightly agree; 6 – Agree; 7 – Strongly agree

S.No		1	2	3	4	5	6	7
E1.	I had known to use MS Office and browse the internet before joining the university.							
E2.	My access to and use of digital tools (e.g. laptop and Smartphone) are excellent.							
E3.	Previously, I have used a computer and Smartphone to work and/or study.							

E4. Which of the following functional areas of your academics do you use blended learning for?

☐ Classwork ☐ assignments ☐ Exam

SECTION F: CHALLENGES

F1. In order of priority give three challenges you encounter when using blended learning:

i) _____
ii) _____
iii) _____

SECTION G: SUGGESTIONS

G1. Suggest interventions to accelerate the adoption of blended learning:

_____
_____
_____
_____

Appendix B: Lecturer Blended Learning Experience Questionnaire

Questionnaire for university lecturers

The Researcher is a student at Moi University and requires some information about blended learning in public universities. He is therefore kindly requesting you to spare your time to respond to the items in this questionnaire. The information given will be strictly for academic purposes and will be treated with the utmost confidentiality. Your name won't be required and therefore it will not appear anywhere in this questionnaire.

Serial No:

Date:

Location:

INSTRUCTIONS

Kindly fill out the questionnaire by writing and or ticking it where necessary.

SECTION A: DEMOGRAPHICS

A1. What is your sex? _____Male _____Female _____Other

A2. What is your age? _____between 18 and 35year _____between 36 and 55 years

_____ Between 56 and 75 years _____75 years old

A3. What is your rank/title? _____

A4.For how long have you been a lecturer/member of the faculty?

_____<5 years _____between 6 and 10 years _____over 10 years

A5. What is the highest degree you possess? _____

A6. What type of LMS are you using for course delivery? _____

A7. What type of devices do you use to carry out BL teaching and learning activities?

_____

_____

_____

A8. How do you access the internet? _____

_____

_____

SECTION B: PERCEPTIONS OF USING BLENDED LEARNING

Instruction: Select by ticking in the box provided against each question. 1 – Strongly disagree; 2 – disagree; 3 – Slightly disagree; 4 - Neither agree nor disagree; 5 - Slightly agree; 6 – Agree; 7 – Strongly agree

S.No		**1**	**2**	**3**	**4**	**5**	**6**	**7**
B1	I use blended learning for teaching							
B2	I am able to organize my classes using blended learning							
B3	I have difficulties using blended learning approaches							
B4	blended learning is useful in teaching							
B5	My experience with blended learning is good							
B6	Blended learning is appropriate for the current situation in public universities							
B7.	Timeliness. Blended learning enhances the time preparation and delivery of lesson material.							
B8.	Overcrowded classes. Learning is useful in mass teaching.							

B7. Which of the following functional areas of your work do you use blended learning for?

☐ Teaching ☐ Research supervisions ☐ Examining students

SECTION C: MOTIVATION TO USE BL

Instruction: Select by ticking in the box provided against each question. 1 – Strongly disagree ; 2 – disagree; 3 – Slightly disagree; 4 - Neither agree nor disagree; 5 - Slightly agree; 6 – Agree; 7 – Strongly agree

S.No		1	2	3	4	5	6	7
C1.	Reward. I am rewarded for using BL by the university							
C2.	Personal fulfillment. I get personal goals fulfilled when using BL in teaching							
C3.	Level of Acceptability. I highly accept the use of blended learning in teaching							
C4.	Intention to adopt blended learning. I am willing to use blended learning in teaching							

C5.	Level of support to implement blended learning. I get support to use blended learning for teaching and learning activities							
C6.	Blended learning provides an excellent opportunity for me to interact with students.							
C7.	I can interact with peers in academia courtesy of a virtual platform.							
C8.	I have received training on the use of LMS							

C9. Please describe some important highlights (positive and negative) of your experience.

_____

_____

_____

_____

SECTION D: TECHNO-PEDAGOGY SKILLS

Instruction: Select by ticking in the box provided against each question. 1 – Strongly disagree; 2 – disagree; 3 – Slightly disagree; 4 - Neither agree nor disagree; 5 - Slightly agree; 6 – Agree; 7 – Strongly agree

S.No		1	2	3	4	5	6	7
D1.	My digital literacy skills are excellent							
D2.	I am comfortable when using blended learning for teaching							
D3.	I find Blended learning effective for class management							

D4. How would you describe your Proficiency in ICT _____

_____

_____

D5. How would you describe your teaching skills regarding blended learning?

_____

_____

_____

SECTION E: CHALLENGES

E1. In order of priority give three challenges you encounter when using blended learning for teaching and learning:

i) _____
ii) _____
iii) _____

SECTION F: SUGGESTIONS

F1. Suggest interventions to accelerate the adoption of blended learning in teaching and learning:

_____
_____
_____
_____

Appendix C: Cods Blended Learning Experience Interview Guide

The Researcher is a student at Moi University and requires some information about blended learning in public universities. He is therefore kindly requesting you to spare your time to respond to the items in this questionnaire. The information given will be strictly for academic purposes and will be treated with the utmost confidentiality. Your name won't be required and therefore it will not appear anywhere in this questionnaire.

Serial No:

Date:

Location:

INSTRUCTIONS

Kindly fill out the questionnaire by writing and or ticking it where necessary.

A. BACKGROUND CHARACTERISTICS

A1. Name of the department/faculty _____

A2. The number of faculty members Male: _____ Female: _____

A3. The number of students: _____Male: _____ Female: _____

A4. Number of online learning labs _____

A5. For how long have you used BL _____

A6. What model/s of BL have you used? _____

A7. What LMS platforms is your department/faculty using? _____

A8. If many, which one is the most favorable and why? _____

i) ……
……

ii) ……
……

iii) ……
…….

iv) ……
……..

v) ……
……

B. INSTITUTIONAL FACTORS

B1. What faculty structures are in place to manage the implementation of blended learning courses?

B2. What institutional policy guidelines are in place supporting the use of BL for course delivery?

B3. How is the faculty/department funded to support transfer from traditional to BL protocols?

B4. How do you integrate students' feedback to improve BL course delivery?

B5. Explain the processes of approving BL courses in your department/faculty

B6. How does the university motivate faculty members to implement BL courses?

B7. Explain how the BL model/s you are using addresses the local community or university needs.

C. LECTURER/INSTRUCTOR FACTORS

C1. How does the faculty/department ensure professional development for members using BL for teaching?

C2. What ongoing pedagogical and technical support for lecturers is currently available?

C3. How do you deal with lecturers' fears of control and general uneasiness about the impact of BL?

C4. How do you address lecturers' workload under BL programs?

D. STUDENT FACTORS

D1. How do you prepare students for BL courses?

D2. How do you manage students' expectations?

D3. How is time managed in BL programs?

E. PEDAGOGICAL CONSIDERATIONS

E1. What challenges does the faculty face in using BL for teaching and learning?

E2. What best practices are available to inform BL design?

E3. Suggest what needs to be done to improve the BL approach to teaching and learning

Appendix D: Observation Checklist for Blended Learning

The checklist includes the use of blended learning, learners' characteristics, lecturers' characteristics, and institutional preparedness to consider in implementing a blended learning approach in public universities in Kenya

University: _____

Date: _____

Observer: _____

No.	Blended learning components	Yes	Partially	No	Notes
A	**USE OF BLENDED LEARNING**				
1.	Teaching and learning activities (*uploading notes, discussions, scheduling of classes, announcements, downloading learning materials*)				
2.	Evaluation (*CAT, Exams, grading, uploading of marks, accessing grades and transcripts, exam timetabling*)				
B	**LEARNERS' CHARACTERISTICS**				
1.	Perception towards Bl (*students' general moods about BL*)				
2.	Self-efficacy (*students' confidence in navigating LMS*)				
3.	Experience (*proof of previous experience e.g. certificates, recommendation letters, completed works*)				
C.	**LECTURERS' CHARACTERISTICS**				
1.	Perception (*general faculty members' moods about BL*)				
2.	Motivation (*rewards e.g. certificates, bonuses, appreciation, workload, etc*)				
3.	Techno-pedagogical skills (*training certificates, demonstrated skills, verbally mentioned skills by lecturers*)				
D.	**INSTITUTIONAL PREPAREDNESS**				
1.	Staff competencies (*training reports, schedules, plans, modules, etc*)				
2.	University policies (*mission, vision, policies, guidelines*)				
3.	Infrastructures (*power, Wi-Fi, internet, bandwidth, PC devices, lab, projectors, etc.)*				

Appendix E: Consent Form for Research Participants

RESEARCH TOPIC: INSTITUTIONAL INFLUENCES ON THE USE OF BLENDED LEARNING APPROACH AMONG BACHELOR OF EDUCATION STUDENTS IN SELECTED PUBLIC UNIVERSITIES IN KENYA

RESEARCHER'S NAME: Ndwiga Moses Murithi

INSTITUTION: Moi University

PROGRAMME ENROLLED: Doctor of philosophy in education communication and technology in the Department of Curriculum Instruction and Education Media

CONSENT:

I accept to participate in the above-mentioned study.

I understand and I have been assured that the names of the participants shall be anonymous and that the findings shall be treated with the utmost confidentiality.

I understand and have been assured that I can withdraw from the study anytime if need be and inform the researcher,

SIGNED:

RESEARCH PARTICIPANT……DATE……

RESEARCHER……..…….DATE……

Appendix F: Research Permit

REPUBLIC OF KENYA

NATIONAL COMMISSION FOR SCIENCE,TECHNOLOGY & INNOVATION

Ref No: 943930

Date of Issue: 20/December/2022

RESEARCH LICENSE

This is to Certify that Mr.. Moses Murithi Ndwiga of Moi University, has been licensed to conduct research as per the provision of the Science, Technology and Innovation Act, 2013 (Rev.2014) in Embu, Garissa, Kakamega, Kisumu, Mombasa, Nairobi, Nyeri, Uasin-Gishu on the topic: INSTITUTIONAL INFLUENCE ON THE USAGE OF BLENDED LEARNING APPROACH AMONG BACHELOR OF EDUCATION STUDENTS IN SELECTED UNIVERSITIES IN KENYA for the period ending : 20/December/2023.

License No: NACOSTI/P/22/22713

943930

Applicant Identification Number

Director General
NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION

Verification QR Code

NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.

See overleaf for conditions

Appendix G: Introductory Letter from the University

MOI UNIVERSITY
Office of the Dean School of Education
Tel: (053) 43001-8
(053) 43555
Fax: (053) 43555
P.O. Box 3900
Eldoret, Kenya

REF: EDU/D.Phil.CM/1005/2013 **DATE:** 7th December, 2022

The Executive Secretary
National Council for Science and Technology
P.O. Box 30623-00100
NAIROBI

Dear Sir/Madam,

RE: **RESEARCH PERMIT IN RESPECT OF NDWIGA MOSES MURITHI – EDU/D.PHIL.CM/1005/13**

The above named is a 2nd year PhD student at Moi University, School of Education, Department of Curriculum, Instruction and Educational Media, School of Education.

It is a requirement of his PhD Studies that he conducts research and produces a thesis. His research is entitled:

"Institutional Influences on the use of Blended Learning Approach among Bachelor of Education Students in Selected Public Universities in Kenya."

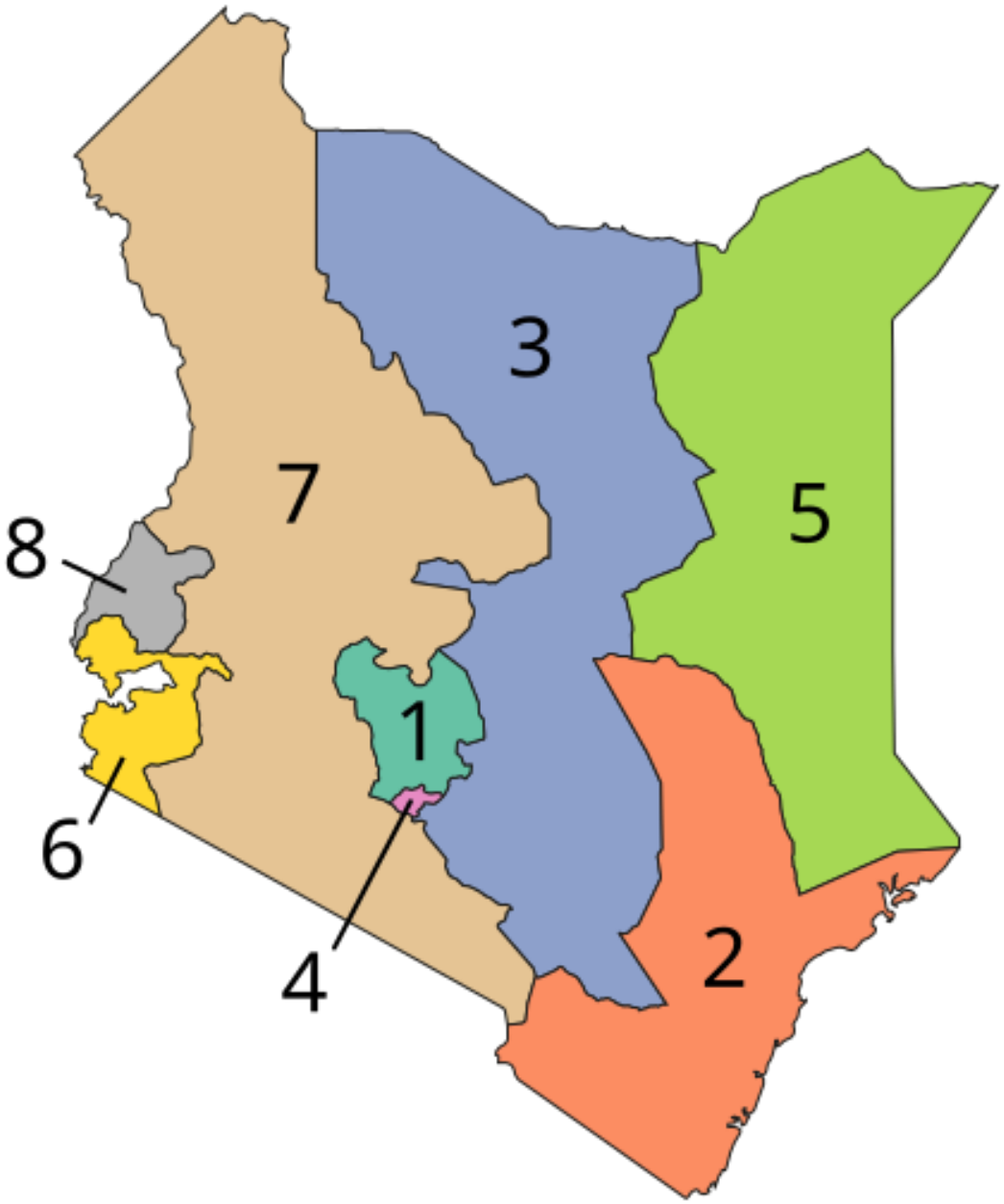
Any assistance given to enable him conduct research successfully will be highly appreciated.

Yours faithfully,

MOI UNIVERSITY
SCHOOL OF EDUCATION
07 DEC 2022
Sign.....
00, ELDORET

PROF. ANNE S. KISILU
DEAN, SCHOOL OF EDUCATION

Appendix H: Map of Kenya Showing the Eight Regions



Former Provinces of Kenya

1. Central
2. Coast
3. Eastern
4. Nairobi
5. North Eastern
6. Nyanza
7. Rift Valley
8. Western

Appendix I: Plagiarism Awareness Certificate

SR524

ISO 9001:2019 Certified Institution

THESIS WRITING COURSE

PLAGIARISM AWARENESS CERTIFICATE

This certificate is awarded to

NDWIGA MOSES MURITHI

EDU/DPHIL/CM/1005/13

In recognition for passing the University's plagiarism

Awareness test for Thesis **entitled: INSTITUTIONAL INFLUENCES ON THE USE OF BLENDED LEARNING APPROACH AMONG BACHELOR OF EDUCATION STUDENTS IN SELECTED PUBLIC UNIVERSITIES IN KENYA** with similarity index of 1% and striving to maintain academic integrity.

Word count: 50252

Awarded by

Prof. Anne Syomwene Kisilu
CERM-ESA Project Leader Date: 22/05/2024