COMMONWEALTH of LEARNING

Report of the Baseline Study on Technology-Enabled Learning at Kibabii University

Report of the Baseline Study on Technology-Enabled Learning at Kibabii University

COMMONWEALTH of LEARNING

The Commonwealth of Learning (COL) is an intergovernmental organisation formed by Commonwealth Heads of Government to promote the development and sharing of open learning and distance education knowledge, resources and technologies.

This report was prepared by Mr. Peter Wawire Barasa, Dr. Anselimo Ikoha Peters, Dr. Alice Nambiro and Mr. Macdonald Wekesa on behalf of Kibabii University. This team worked under the guidance of Dr Sanjaya Mishra, Education Specialist: eLearning, Commonwealth of Learning, Canada.

Acknowledgements

The compilation of this report would not have been possible without the valuable contributions of Professor Isaac Ipara Odeo (Vice Chancellor), Professor Julius Maiyo (Ag. Deputy Vice Chancellor- Academic, Students' Affairs, Professor Dr.-Ing. Benedict M. Mutua, PhD, Rerum Naturalium, (Deputy Vice-Chancellor Planning, Partnerships, Research and Innovation), Deans of faculty and academic schools, Chair of Departments, academic staff and students who participated in the study. We also acknowledge Mr. Jackson Ng'etich Kimurgor (Computer Science Technologist) and Mr. Dennis Karugu Gichuki (Technologist, Information Technology) for assisting in data analysis.

Published by:
Commonwealth of Learning
4710 Kingsway, Suite 2500
Burnaby, British Columbia
Canada V5H 4M2
Telephone: +1 604 775 8200
Fax: +1 604 775 8210
Web: www.col.org
Email: info@col.org

Table of Contents

Acknowledgements ..... **ii**
List of Tables ..... **iv**
Acronyms ..... **vi**
Executive Summary ..... **vii**
Chapter One: Introduction and Background **1**
1.1 Introduction 1
1.2 Methodology 2
Chapter Two: The TEL Environment at KIBU **3**
2.1 Hardware and Software at KIBU 3
2.2 Internet Connectivity 3
2.3 Social Media 3
2.4 Learning Management System 3
2.5 Library Resources 4
2.6 Educational e-Content and Open Educational Resources 4
2.7 ICT Policy 4
2.8 Support 4
2.9 TEL Preparedness 4
2.10 Overall Score for TEL Preparedness 4
Chapter Three: Faculty Survey at KIBU **6**
3.1 Introduction 6
3.2 Background Information 6
3.3 Access to and use of ICT 9
3.4 Using ICTs for Teaching and Learning 15
3.5 Policy Issues for Technology-Enabled Learning 19
3.6 Using ICTS for Research and Scholarship 19
3.7 Perceptions of Use of Technology-Enabled Learning 20
3.8 Motivators for using Technology-Enabled Learning 21
3.9 Barriers for using Technology-Enabled Learning 22
3.10 Summary 22
Chapter Four: Student Survey at KIBU **24**
4.1 Student Profile 24
4.2 Access to ICT 26
4.3 Use of ICT 30
4.4 TEL at KIBU 33
4.5 Perceptions of the Use of TEL 34
4.6 Summary 36
Chapter Five: Conclusions and Recommendations **38**
References **39**

List of Tables

Table 2.1: Institutional preparedness for TEL 5
Table 3.1: Gender of Respondents - Teachers 6
Table 3.2: Teachers' Age Group 6
Table 3.3: Teachers' Position at KIBU 7
Table 3.4: Highest Qualification of Teachers 7
Table 3.5: Level of Teaching 8
Table 3.6: Teaching Experience 8
Table 3.7: Faculty Discipline 8
Table 3.8: Device ownership by Teacehrs 9
Table 3.9: Device Access by Teacehrs 9
Table 3.10: Internet Access Location of Teachers 10
Table 3.11: Mode of Internet connection 10
Table 3.12: Device used to access Internet 10
Table 3.13: Campus Broadband Connectivity 11
Table 3.14: Broadband access location of Teachers 11
Table 3.15: Campus Wi-Fi/Wireless Internet 11
Table 3.16: Internet Use Frequency 12
Table 3.17: Skills level (self-rating) of Teachers 12
Table 3.18: Social Media Profile of Teachers 13
Table 3.19: Social media use by Teachers 13
Table 3.20: Social Media Update Frequency 13
Table 3.21: Member of Mailing List or Discussion Forum 14
Table 3.22: Number of Mailing Lists Subscriptions 14
Table 3.23: Moderate Discussion Forum/Mailing List 14
Table 3.24: Post to Discussion Forum/Mailing List 14
Table 3.25: Teachers' Perceptions of Technology-Enabled Learning Environment 15
Table 3.26: Mode of Teaching 15
Table 3.27: Types of Resources Used 16
Table 3.28: Creating and sharing of teaching and learning resources/materials 16
Table 3.29: Awareness of Open Educational Resources 17
Table 3.30: Frequency of using OER platforms for teaching and learning 17
Table 3.31: Skills in the use of the Technologies 18
Table 3.32: Training on use of ICTs for teaching 18
Table 3.33: University provision of regular training on new technologies 18
Table 3.34: Participated in Online Training 18
Table 3.35: Attended MOOCs 19
Table 3.36: Online learning platform awareness 19
Table 3.37: Policy issue awareness 19
Table 3.38: Library Provide Access to e-Resources 20
Table 3.39: Frequency of Access to e-Resources in the Library 20
Table 3.40: Experience on Research Support 20
Table 3.41: Perception towards TEL 21
Table 3.42: Motivations for technology-enabled learning 21
Table 3.43: Barriers to the use of Technology 22
Table 4.1: Gender of Respondents (Learners) 24

Table 4.2: Age of Respondents (Learners) 24
Table 4.3: Level of Study 24
Table 4.4: Year of Study 25
Table 4.5: Distribution of Students across various Disciplines 25
Table 4.6: Physical Disability 26
Table 4.7: Study Mode 26
Table 4.8: Device Ownership by Learners 27
Table 4.9: Learner Access to Devices at KIBU 27
Table 4.10: Internet Access Location 27
Table 4.11: Internet access mode 28
Table 4.12: Frequently used Device 28
Table 4.13: Broadband Internet Connectivity 28
Table 4.14: University Broadband Connectivity 29
Table 4.15: University Wi-Fi/Wireless Internet Connectivity 29
Table 4.16: Internet use 29
Table 4.17: Internet use Duration 29
Table 4.18: Skills for Computer-Related Activities 30
Table 4.19: Social Media Accounts 31
Table 4.20: Social Media Platforms 31
Table 4.21: Social Media Use 31
Table 4.22: Social Media use Duration 32
Table 4.23: Membership of Mailing lists and Discussion Forums 32
Table 4.24: Discussion Forums Subscription 32
Table 4.25: Discussion Forums Moderation 32
Table 4.26: Mailing Lists Post Frequency 33
Table 4.27: Learners' Pereptions of Technology-Enabled Learning Environment 33
Table 4.28: Online Courses Use 34
Table 4.29: Technology Importance 35
Table 4.30: Technology Usefulness 36
Table 4.31: Technology Issues 37

Acronyms

BYOD	Bring Your Own Device
COL	Commonwealth of Learning
CUE	Commission for University Education
ICT	Information and Communication Technology
KIBU	Kibabii University
LMS	Learning Management System
MOOC	Massive Open Online Course
ODeL	Open, Distance and eLearning
OER	Open Educational Resources
TEL	Technology-Enabled Learning
Rer. Nat.	Rerum Naturalium

Executive Summary

This document reports the findings of a baseline survey conducted between 1st June 2020 and 30th July 2020 at Kibabii University (KIBU). The objective of the study was to establish Technology-Enabled Learning (TEL) preparedness at KIBU and implement TEL systematically with support from the Commonwealth of Learning (COL). It reports the findings of a self-review of the institutional facilities related to technology, policies, and the preparedness of faculty and students to use technology for teaching and learning at KIBU. The following is a summary of the findings and recommendations based on the study.

Findings

KIBU has a status of developing preparedness with regard to its overall infrastructure, policy and capacities to implement TEL. The institution has put in place some aspects of TEL, policies and infrastructure. The University is in the process of developing a robust system. However, the infrastructure should be improved for successful TEL implementation to take place. KIBU should formulate a TEL policy.

Both students and teachers have reasonably good access to technology (computer, smartphone, and Internet access). However, both faculty and students have intermediate skills on use of ICTs for teaching and learning. But the number of skilled faculty diminishes in areas of graphic editing, digital audio, video editing, webpage design and use of learning management system (LMS). Meanwhile, the number of skilled students diminishes in areas of web tools, LMS, multimedia authoring, graphic editing, video editing, use of learning management system and Web tools. However, the quality of services related to technology, including WiFi access needs improvement.

There is consensus by both faculty and students that TEL increases the quality of learning due to the richness of content that can be integrated in the learning experience. Students acknowledge that TEL is important in achievement of better results, deep understanding of knowledge and exploration of many topics.

Recommendation

The study recommends that KIBU management should commit to improve the hardware and software related to TEL at KIBU, especially improve Internet connectivity points and bandwidth. It further recommends that management of KIBU should maintain and train faculty and students in the use of LMS. It should provide library resources and train users on how to use the available library resources besides encouraging educational e-content and open educational resources. Further, KIBU should provide support for TEL by adopting a comprehensive policy framework. Moreover, the report further recommends that KIBU organizes regular training in various areas of TEL, including the use of open educational resources as massive open online courses to build a robust environment for TEL.

Chapter One: Introduction and Background

1.1 Introduction

Kibabii University is a public university in the republic of Kenya. The University is committed to provision of high-quality teaching, research and extension services to students and other clients. The University considers Information and Communication Technology (ICT) as one of its flagship programmes. Kibabii University aspires to become a Computing Research and Innovation Centre (CRIC) hub in East and Central Africa by the end of the implementation of 2016-2022 strategic plan. The vision of the University is to be a global and dynamic university of excellence in science, technology and innovation. Its mission is to achieve excellence in generation, transmission and enhancement of new knowledge in science, technology and innovation through quality teaching, research, training, scholarship, consultancy and outreach programmes. The University engages in the discovery of new knowledge and skills for addressing scientific, socio-economic and technological concerns nationally, regionally and internationally. KIBU's strategic objectives are to:

i. Promote and maintain excellence in teaching and learning;
ii. Support and sustain advancement in research, consultancy and extension;
iii. Enhance administrative, financial and human resource management systems;
iv. Invest in marketing, public relations and linkages;
v. Expand, maintain and improve physical facilities and infrastructure; and
vi. Provide quality health care services

1.1.1 Establishment of the Directorate of ODeL

The Directorate of ODeL was established in October 2017 in the university. The aim was to provide flexible and innovative approaches to learning and training through utilization of technology and provision of effective learner support. The Directorate of ODeL at Kibabii University though new, has established itself as one of the emerging Centers in offering blended learning. It is in formative stage of putting in place all necessary human resource and infrastructure needed to enhance quality blended learning, research and innovation, aimed at producing well-trained graduates that can compete not only at national or regional levels but also internationally. Kibabii University offers several programmes at different levels ranging from certificate to doctorate levels. Kibabii University has currently (in Sept 2020) 7,026 students enrolled in different programmes.

The emerging global challenges resulting from the COVID-19 pandemic that come with social distancing have made the University to re-look at how teaching and learning can be carried out virtually using e-learning platforms. KIBU has had to re-engineer itself in the use of technology-enabled learning. Just at the right time in the midst of the COVID19 pandemic, KIBU signed an agreement with COL to undertake a systematic approach to institutionalise TEL through research, consultation, capacity building, and monitoring and evaluation. The activities to be undertaken included conducting a baseline survey to establish the level of preparedness in the University, understanding lecturers and students access to, developing and adopting a TEL policy, and building capacity of faculty in use of technology for teaching and learning. This

report presents the findings of the baseline survey conducted to assess the TEL preparedness at KIBU prior to developing a TEL policy.

1.2 Methodology

The baseline survey of TEL at KIBU consisted of survey instruments administered to students, faculty, and one institutional questionnaire whose main aim was to do a self-assessment of the facilities and policies that support TEL. The sample size for the baseline study was determined using the small sample formula from the table by Krejcie and Morgan (1970). The table recommended a sample size of 364 for a population of 7,026 for the students' survey and a sample size of 86 for a population of 111 for the faculty. The questionnaires, which were provided by COL were filled online. Due to COVID-19 pandemic, face-to-face learning had been suspended therefore, the students filled the questionnaire off campus. Faculty working from home filled the questionnaires online. Support for filling the questionnaires by students was provided by research assistants. After closure of the online forms, the students, faculty and institutional data was sent to KIBU research team by COL for analysis and report writing. The actual number of filled questionnaires for students was 575 while faculty submitted 71 filled questionnaires. The questionnaires filled by faculty yielded a response rate of 64%.

Chapter Two: The TEL Environment at KIBU

The institutional questionnaire was filled by the head of the institution with support from other members of staff. Kibabii University has an enrollment of 7,026 students and 276 non-teaching and support staff. One hundred and eleven (111) members of faculty provide teaching services at undergraduate, graduate and postgraduate levels, including doctoral research. The institutional survey was used to elicit information about the current provision of hardware, software and the digital infrastructure that is available for teaching and learning.

2.1 Hardware and Software at KIBU

Kibabii University has 460 desktop computers, 160 tablets and 50 laptops connected to the Internet. The desktop computers are available in the computer laboratory, library and offices. To mitigate device shortage, KIBU encourages bring your own device (BYOD), that allows students and staff to bring their devices to the University and perform work-related tasks using these personal devices. Six (6) computer laboratories are available to students for Internet access and practical sessions. Different applications are installed in the computers, depending on the courses on offer at any given time. KIBU also has public address systems, 6 LCD Projectors and three SMART Boards. Hardware and software facilities at KIBU are not adequate given the high number of students and staff.

2.2 Internet Connectivity

Kibabii University has a broadband Internet connectivity on the premise. The current level of Internet bandwidth available in the University is 300Mbps. The broadband Internet connectivity is available to administrative staff, members of faculty, students, stakeholders and visitors. Access to broadband is provided in lecture rooms, library, hostels, faculty rooms, laboratories, reception lounges, seminar halls, students' common rooms and open areas. KIBU broadband connectivity is provided through a government sponsored internet provider. There is also WiFi connectivity on campus. KIBU has no access control in place for restricting any particular kind of online content from being accessed or downloaded.

2.3 Social Media

The University has an official profile/institutional group on social media platforms through the website. The official profile/institutional group on social media platforms is also available on Facebook, Twitter, Google+, YouTube, Blog, Email-based discussion forums, LinkedIn, Institutional Wikipages and Instagram. Members of staff manage KIBU Facebook and Twitter accounts.

2.4 Learning Management System

KIBU has a learning management system (Moodle) which is managed by the Directorate of ODeL. The system is designed for use by both distance and on-campus students. There are 417 online learners.

2.5 Library Resources

KIBU's library provides several electronic resources. It has a bibliographic database, electronic theses and dissertations, and e-proceedings of conferences. These are available to users who have login credentials. All academic staff are required to have Google Scholar accounts associated with KIBU and their university email addresses. KIBU has a shared repository, a digital service to collect, preserve and distribute digital materials, including those related to the University's legacy and scholarly communication.

2.6 Educational e-Content and Open Educational Resources

KIBU currently has 3 e-classrooms in the institution. An educational e-content and audio-visual production studio is available at the University. The number of e-content materials produced in the last year are: 7 audio lessons, 7 video lessons, 7 multimedia lessons and 52 online courses. KIBU also created the Directorate of ODeL, which coordinates the use of ICT in teaching and learning. The University has introduced blended learning and has trained faculty on creating interactive e-content.

2.7 ICT Policy

KIBU has an ICT policy that covers what technologies are to be used and those not for teaching and learning. KIBU ICT Directorate also developed procedures that are aligned to ISO 9001:2015 Standard that clearly elaborates workflow and escalation procedure for repair and maintenance. Currently, KIBU has ICT policy and ODeL policy in place.

2.8 Support

KIBU has an ICT Directorate that comprises a team of qualified personnel who are responsible for procurement, installation and maintenance of all ICT devices within the University. The University also has an ODeL Directorate that has a technologist who manages the Learning Management System (LMS). The ODeL Directorate also provides support to faculty in the creation of interactive digital content and assists learners when interacting with content online.

2.9 TEL Preparedness

The institutional survey required the University to rate its TEL preparedness in a number of areas, including; policy and strategic planning, support availability, content creation, leadership and organisational culture, availability of technology and human resource. Table 2.1 presents information on institutional preparedness for TEL at KIBU. In this survey, each item in the institutional preparedness for TEL section was scored with a value ranging from 1 to 5, where 1 = strongly disagree or does not exist, 2 = disagree or only marginally demonstrates existence, 3 = neither agree nor disagree/existence or otherwise is difficult to explain, 4 = agree or it does exist, and 5 = strongly agree or it definitely exists and is well established.

2.10 Overall Score for TEL Preparedness

The scores for KIBU preparedness tallied are 129. Based on the score sheet provided in the TEL Implementation Handbook (Kirkwood & Price, 2016) this was in the 95-129 range: Developing preparedness. The institution has put in place some of the aspects of TEL policies and infrastructure. It is in the process of developing a robust system.

Table 2.1: Institutional preparedness for TEL

C1	**Policy**	
	There is a well-documented Technology-Enabled Learning policy.	**1**
	The vision and mission of the Technology-Enabled Learning policy are aligned with the mission of the organisation.	**1**
	The vision and mission of the Technology-Enabled Learning are well understood across the organisation.	**1**
	There is commitment on the part of institutional leaders to use technology to achieve strategic academic goals.	**4**
C2	**Strategic plan**	
	There is a strategic plan for implementation of TEL.	**2**
	The strategic plan for TEL has measurable goals.	**2**
	The strategic plan for TEL is approved by the senior management of the University and is supported by adequate financial provisions	**2**
C3	**IT Support Department**	
	KIBU has an IT department that handles procurement, installation and maintenance of technologies for teaching and learning.	**4**
	There is an ICT policy in place, which is implemented by a high-powered committee in the organisation.	**4**
	The head of IT support department reports to senior management and is responsible for overall functioning of the technology in the organisation.	**5**
	The head of IT support department is well qualified and is up to date in order to manage the technological requirements of the organisation.	**5**
C4	**Technology**	
	There is adequate hardware infrastructure for teaching and learning.	**2**
	There is adequate applications and software for teaching and learning.	**3**
	There is adequate networking infrastructure in the organisation.	**4**
	There is adequate policies and procedures in place to protect privacy and organisation data.	**5**
C5	**Content**	
	There is support available for the creation of digital multimedia content in the organisation.	**3**
	There are instructional designers in the organisation or faculty members who are trained to organise learning content appropriately.	**4**
	Teachers have adequate access to the online systems to develop courses for Technology-Enabled Learning.	**4**
C6	**Documentation**	
	There is a variety of help available to support teachers and students in using technology effectively.	**4**
	Lessons learned in the implementation of TEL are stored and shared within the organisation for others to access and learn from them.	**4**
	The workflow processes and responsibilities to implement TEL are well documented in the organisation.	**4**
C7	**Organisation Culture**	
	Faculty members are willing to learn about new technology in the organisation.	**4**
	Faculty and staff members support each other easily.	**4**
	There is a culture of knowledge creation and sharing in the organisation.	**4**
C8	**Leadership**	
	Leaders in the organisation are involved in the implementation of TEL.	**4**
	Senior management in the organisation regularly review, monitor and evaluate the progress of TEL.	**4**
	The top leadership of the organisation is supportive of TEL and provides encouragement and motivation to the faculty and staff to achieve the academic goals.	**4**
C9	**Human Resources and Training**	
	Faculty members are trained and qualified to use technology for teaching and learning.	**4**
	Faculty and staff members receive regular training to update them in the use of TEL	**3**
	There are adequate staff to support Technology-Enabled Learning.	**1**
	The organisation has a structure in place to create teams for content development and delivery of Technology-Enabled Learning.	**4**
	Faculty members trust the support they receive from instructional designers and technology support staff while developing and delivering the courses.	**4**
	The IT staff members are highly skilled and trained to provide the needed support.	**5**
C10	**TEL Champions**	
	There are early adopters of TEL in KIBU.	**4**
	There are TEL champions in the organisation who support the care about pedagogical innovations.	**4**
	There are faculty members who can take leadership roles in developing appropriate policies and a TEL strategy for the organisation.	**4**
	There are TEL champions to research and disseminate good practices in TEL.	**4**
	TOTAL	**129**

Chapter Three: Faculty Survey at KIBU

3.1 Introduction

This section presents and analyses data that was collected from 71 faculty members of Kibabii University from two (2) Schools and two (2) Faculties. This represents 63.96% of the entire faculty population of KIBU.

The section further analyses data collection instruments, response rate, demographic information of respondents; access to and use of information and communication technologies (ICTs) and using ICTS for Teaching and Learning. The analyzed results are presented in tables and figures. Finally, the report provides the findings and implications that are presented and represented as indicated in the sections that follow.

3.2 Background Information

The study sought to obtain background information of faulty members so that it could be used to assess their influence on access to and use of information and communication technologies and their use of ICTs for teaching and learning. This section presents and discusses gender factors, faculty age group, and faculty teaching position, experience and discipline.

3.2.1 Gender of Respondents

To understand the nature of the respondents, the study collected data on their gender. Table 3.1 provides a summary of the findings.

Table 3.1: **Gender of Respondents- Teachers**

		Frequency	Percent (%)
Valid	Female	26	36.6
	Male	45	63.4
	Total	71	100.0

Table 3.1 shows that male respondents accounted for 63.4% while their female counter parts accounted for 36.6% of the total respondents. Gender distribution suggests that majority of the staff are male.

3.2.2 Age of Respondents

The age of respondents was collected based on age groups as indicated in the table 3.2. below.

Table 3.2: Teachers' Age Group

		Frequency	Percent (%)
Valid	26-30	1	1.4
	31-35	12	16.9
	36-40	8	11.3
	41-45	13	18.3
	46-50	14	19.7
	51-55	13	18.3
	56-60	9	12.7
	61-65	1	1.4
	Total	71	100.0

Table 3.2 shows that respondents between the age of 26-30 years accounted for 1.4%, between 31-35 years accounted for 16.9%, between 36-40 years accounted for 11.3%, between 41-45 years accounted for 18.3%, between 46-50 years accounted for 19.7%, between 51-55 years accounted for 18.3%, between 56-60 years accounted for 12.7% while 61-65 years of age accounted for 1.4%. This suggests that majority of the lectures who are within the age bracket of 41- 65 years old (70.4%) are mature adults as compared to young adults (29.6%) between age 26- 40 years old. Nevertheless, KIBU has a good number of young faculty members which is an advantage for adoption of TEL.

3.2.3 Teaching Position

The respondents' teaching position was collected as shown in table 3.3 below.

Table 3.3 Teachers' Position at KIBU

		Frequency	Percent (%)
Valid	Graduate Assistant	3	4.2
	Tutorial Fellow	34	47.9
	Lecturer	28	39.4
	Senior Lecturer	5	7.0
	Associate Professor	1	1.4
	Total	71	100.0

Table 3.3 shows that the total number of sampled respondents who are currently working as Graduate Assistants accounted for 3.2%, Tutorial Fellow accounted for 47.9%, Lecturer position accounted for 39.4%, Senior Lecture and Associate Professor positions accounted for 7.0% and 1.4% respectively. This is an indicator that although most of the lecturers are mature adults, only, very few (7.1 %) are at senior and associate professor levels.

3.2.4 Highest Qualification

Respondents were grouped into their highest academic qualification as shown in Table 3.4.

Table 3.4: Highest Qualification of Teachers

		Frequency	Percent (%)
Valid	Bachelors	2	2.8
	Masters	41	57.7
	MPhil or MTech	2	2.8
	PhD	26	36.6
	Total	71	100.0

Table 3.4 above shows that those with bachelor's degree accounted for 2.8% of the population, those with master's accounted for 57.7%, those with MPhil or MTech accounted for 2.8%, those with PhD accounted for 36.6% of the total population.

3.2.5 Level of Teaching

Table 3.5 shows that total number of respondents currently teaching diploma courses accounted for 2.8%, those teaching undergraduate courses accounted for 78.9%, those teaching graduate and post graduate studies accounted for 16.9% while those in doctoral research accounted for 1.4% of the total population. Only 18.3% of the respondents are involved in postgraduate and doctoral research. Most of the faculty teach undergraduate courses (78.9%). Very few lectures are involved in the teaching of diploma courses (2.8%).

Table 3.5: Level of Teaching

		Frequency	Percent (%)
Valid	Diploma	2	2.8
	Undergraduate	56	78.9
	Graduate or Postgraduate	12	16.9
	Doctoral Research	1	1.4
	Total	71	100.0

3.2.6 Teaching Experience

Respondents were grouped into their teaching experience in years as shown in table 3.6 below.

Table 3.6: Teaching Experience

		Frequency	Percent (%)
Valid	5 or <5	17	23.9
	6-10	28	39.4
	11-15	8	11.3
	16-20	5	7.0
	21-25	3	4.2
	26-30	6	8.5
	31-35	3	4.2
	Total	70	98.6
Missing	System	1	1.4
Total		71	100.0

Table 3.6 above shows that majority of faculty members have teaching experience of between 6-10 years accounting for 39.4% followed by less than or equal 5 years represented by 23.9% of the total respondents.

3.2.7 Faculty Discipline

The study collected data on the discipline areas of members of faculty. Table 3.7 displays the summary of the findings.

Table 3.7: Faculty Discipline

		Frequency	Percent (%)
Valid	Agriculture & Natural Sciences	6	8.5
	Commerce & Management	13	18.3
	Engineering & Technology	15	21.1
	Fine & Performing Arts	9	12.7
	Health & Medical Services	1	1.4
	Humanities	9	12.7
	Natural Sciences	6	8.5
	Social Sciences	12	16.9
	Total	71	100.0

From Table 3.7 faculty teaching Agriculture and Natural Sciences accounted for 8.5% of the sampled population. Those teaching Commerce and Management accounted for 18.8%, while those teaching in Engineering and Technology accounted for 21.1% of the population. Lecturers who teach Fine and Performing Arts accounted for 12.7%. Those who teach Health and Medical Services accounted for 1.4%, while those who teach Humanities accounted for 12.7%. Lecturers who teach Natural Sciences accounted for 8.5% and lecturers in Social science courses accounted for 16.9% of the total population.

3.3 Access to and use of ICT

In order to identify members of faculty's access to, and use of Information and Communication Technologies, the study collected statistics shown in the tables below.

3.3.1 Ownership of ICTs

The study collected data to know the ownership of ICTs and summarized in Table 3.8.

Table 3.8: Device ownership by Teachers

		Desktop		Laptop		Smartphone		Tablet	
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Valid	Yes	26	36.6	62	87.3	67	94.4	15	21.1
	No, but I plan to buy one in the next 12 months	30	42.3	9	12.7	2	2.8	33	46.5
	No, and I do not plan to buy one in the next 12 months	9	12.7	0	0	0	0	18	25.4
	Total	**71**	**100.0**	71	100.0	71	100.0	71	100.0

Table 3.8 establishes that majority of staff represented by 42.3% do not own desktop computers but have plans to own one in the next 12 months while 36.6% own desktop computers. The data also indicates that 87.3% of the faculty own a laptop while 12.7% do not have but plan to buy one in the next 12 months. Majority of the faculty represented by 94.4% own a smartphone while only 2.8% do not own one, though they plan to buy one in 12 months' time. The study also shows that 46.5% do not own a tablet but plan to own one in 12 months' time while 25.4% neither have nor plan to own the device in the next 12 months. Overall, the access to personal computing devices is quite high at KIBU amongst teaching staff.

3.3.2 Access to ICTs

The study collected data to determine the access to ICTs by faculty staff. The results are summarised indicated in Table 3.9.

Table 3.9: Device Access by Teachers

		Desktop Computer		Laptop		Smartphone		Tablet	
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Valid	Yes, provided by the university	59	83.1	7	9.9	5	7.0	3	4.2
	Yes, I use my personal device in the university	6	8.5	53	74.6	59	83.1	16	22.5
	No, my university does not allow me to use these	4	5.6	8	11.3	3	4.2	37	52.1
	Total	**71**	**100.0**	**71**	**100.0**	**71**	**100.0**	**71**	**100.0**

Table 3.10 above shows that respondents in the study indicated 83.1%, 9.9%, 7.0% and 4.2% access desktop, laptop, smartphone or tablet respectively, provided by the university. The study

also shows that 8.5%, 74.6%, 83.1% and 22.5% use their own desktop computer, laptop computer, and Smartphone or tablet devices respectively. The responses indicate that teachers at KIBU use desktop device provided by the University and personal laptop and smartphone.

3.3.3 Internet access location

They study also collected data to find out the location where respondents access Internet. Table 3.10 above shows that majority of the faculty represented by 47.8% access the internet from the office followed by 31.3% who access it from home.

Table 3.10: Internet Access Location of Teachers

		Frequency	Percent
Internet Access Location	Home	42	31.3%
	Office	64	47.8%
	Cyber Cafe	28	20.9
	No internet Access	0	0%
Total		**134**	**100.0%**

3.3.4 Internet access mode

The study sought to determine the mode internet access of the respondents; Table 3.11 below provides the summary of the findings.

Table 3.11: Mode of Internet connection

		Frequency	Percent
Internet Access Mode	Dial-up connection	24	14.0%
	ADSL connection	15	8.8%
	Wireless	63	36.8%
	Mobile Device	60	35.1%
	Leased Line Mode	9	5.3%
Total		**171**	**100.00%**

Table 3.11 shows that most respondents represented by 36.8% accesses Internet through wireless connection followed closed by 35.1%% who use mobile devices for Internet access.

3.3.5 Device use frequency

The study sought to find out the frequency of respondents' access to internet. Table 3.12 displays the summary of the findings.

Table 3.12: Device used to access Internet

		Frequency	Percent
Valid	Smartphone	48	67.6
	Laptop	21	29.6
	Desktop computer	2	2.8
	Total	**71**	**100.0**

Table 3.12 above shows that 67.6% of the respondents uses smartphones, 29.6% of the accounted respondents uses laptop computers, while 2.8% of the total population uses desktop computers.

3.3.6 Broadband internet connectivity

The study collected data on where mostly broadband internet connectivity is used as summarized in Table 3.13.

Table 3.13: Campus Broadband Connectivity

		Frequency	Percent
Valid	Yes	66	93.0
	No	3	4.2
	N/A	2	2.8
	Total	71	100.0

Table 3.13 above shows that 93.0% of the respondent use campus broadband connectivity.

3.3.7 University Broadband connectivity

Table 3.14 gives a summary of where respondents access broadband connection within the University.

Table 3.14: Broadband access location of Teachers

		Frequency	Percent
Valid	Classroom Broadband Access	42	18.8
	Library Broadband Access	24	10.8
	Hostel Broadband Access	5	2.2
	Faculty Room Broadband Access	53	23.8
	Laboratories Broadband Access	18	8.1
	Reception Broadband Access	8	3.6
	Seminar Hall Broadband Access	22	9.9
	Student Common Room Broadband Access	8	3.6
	Open Area Broadband Access	43	19.3
	Total	**223**	**100.0**

Note: Multiple responses.

Table 3.14 above illustrates that most of the faculty members represented by 23.8% access broadband connectivity in faculty offices followed closely by 18.8% who access it in classrooms.

3.3.8 University Wi-Fi/Wireless internet connectivity

Information shown in the Table 3.15 below summarises the feedback on whether respondents access Wi-Fi/wireless internet connectivity on campus.

Table 3.15: Campus Wi-Fi/Wireless Internet

		Frequency	Percent
Valid	Yes	70	98.6
	No	1	1.4
	Total	**71**	**100.0**

Table 3.15 above indicates that 98.6% of the respondents agreed that they accessed Wi-Fi/wireless Internet connectivity at the campus while 1.4% indicated that they accessed Wi-Fi/wireless Internet connectivity away from campus.

3.3.9 Frequency of Internet use

Table 3.16 below provides a summary of Internet use frequency from the study.

Table 3.16: Internet Use Frequency

		Frequency	Percent
Valid	Alternate Days	12	16.9
	Daily	57	80.3
	Irregular	1	1.4
	Once a Week	1	1.4
	Total	71	100.0

The Table 3.16 shows that 80.3% of the respondents used internet daily while 16.9% of respondents used Internet in alternate days.

3.3.10 ICT skills Level

The faculty members were asked to rate their program usability skills level provided by KIBU. This was assessed by use of a Likert scale. Table 3.17 provides a summary about ICT skills level.

Table 3.17: ICT skills level (self-rating) of Teachers

	Expert Level (Trainer)	User Level (Advanced)	User Level (Intermediate)	User Level (Basic)	Non-user Level (N/A)	Weighted Mean
Word Processor	17%	35%	39%	8%	0%	2.39
Spreadsheet	18%	34%	42%	6%	0%	2.35
Presentation	20%	37%	34%	9%	0%	2.31
Email	25%	25%	38%	11%	0%	2.35
Databases	15%	7%	30%	38%	10%	3.20
Multimedia	8%	10%	23%	46%	13%	3.45
Graphic Editing	7%	8%	17%	42%	25%	3.70
Digital Audio	4%	11%	14%	45%	25%	3.76
Video Editing	1%	7%	13%	40%	39%	4.07
Webpage Design	11%	1%	6%	41%	41%	3.99
LMS	10%	13%	44%	18%	15%	3.17
Web 2.0 Tools	7%	13%	24%	34%	23%	3.52

Category Average: 3.1883

The study collected data that rated skills of faculty on usage of some of the computer-related activities as indicated in Table 3.17. To give a clear picture and interpretation, the weighted mean score for each skill was computed. Analysis suggests that the faculty members have intermediate ICT skills (mean weighted average = 3.1883). This means that on average, faculty can use their computer related skills satisfactorily since they are at user level. Much as this is promising, effective implementation of TEL requires consistent training in low-ranked areas.

The number of skilled faculty diminishes in the areas of Graphic Editing, Digital Audio, Video Editing, Webpage Design and LMS. This was evident in the weighted mean. Cornu (2011) indicated that digital-native students prefer learning through graphics and other visual media rather than reading text and are used to learning interactively. Thus, multimedia editing and authoring skills as well as the ability to use Web 2.0 tools are important for faculty to generate

educational content and create interactive learning materials. Furthermore, the development of digital resources requires input from specialists with pedagogic, design and media expertise. Therefore, KIBU should take steps to improve lecturer competency in these skills and ensure that lecturers take responsibility for helping students to acquire the skills. One way to achieve this is to review all academic programmes at KIBU in terms of delivery and assessment, to ensure that students will be encouraged to acquire and practice the requisite skills.

3.3.11 Social Media accounts

Since there is need to incorporate social media into TEL, faculty were asked whether they had accounts or profiles on social media platforms and websites. This was done in order to determine their presence on social media. Results are as shown in the Table 3.18.

Table 3.18: Social Media Profile of Teachers

		Frequency	Percent
Valid	Yes	67	94.4
	No	1	1.4
	N/A	3	4.2
	Total	71	100.0

Table 3.18 shows that 94.4% of the faculty members have social media accounts. Only 5.6% do not have social media accounts. Table 3.19 shows that 30% of the respondents use Facebook, followed by 20.9% who uses research sharing social media sites. Table 3.20 shows that 43.7% of the respondents use social media several times a day while 18.3% use social media either once a day or week.

Table 3.19: Social media use by Teachers

		Frequency	Percent
Valid	Facebook	66	30.0
	Twitter	21	9.5
	Google+	21	9.5
	Blog	9	4.1
	Slideshare	22	10.0
	Photo Sharing	17	7.7
	Research Sharing Site	46	20.9
	Social Bookmarking Site	8	3.6
	Goodreads.com	10	4.5
	Total		100.0

Note: Multiple responses.

Table 3.20: Social Media Update Frequency

		Frequency	Percent
Valid	Not Very Frequently	12	16.9
	Once a Day	13	18.3
	Once a fortnight	1	1.4
	Once a week	13	18.3
	Several Times a Day	31	43.7
Total		**71**	**100.0**

3.3.12 Mailing Lists and Discussion Forums

Table 3.21 indicates that 80.3% of the respondents have membership to mailing lists while 16.9% do not have any membership to mailing lists.

Table 3.21: Member of Mailing List or Discussion Forum

		Frequency	Percent
Valid	Yes	57	80.3
	No	12	16.9
	N/A	2	2.8
	Total	**71**	**100.0**

Table 3.22: Number of Mailing Lists Subscriptions

		Frequency	Percent
Valid	1-5	58	81.7
	More than 5	6	8.5
Total		**71**	**100.0**

Table 3.22 shows that 81.7 % of the respondents are subscribed to between 1 to 5 discussion forums while 8.5% have subscribed to more than 5 email-based discussion forums.

Table 3.23: Moderate Discussion Forum/Mailing List

		Frequency	Percent
Valid	Yes	36	50.7
	No	25	35.2
	N/A	10	14.1
Total		**71**	**100.0**

Table 3.23 above shows that only 50.7% of the faculty moderates discussion forums/mailing list while 35.2% neither moderate any discussion forum nor mailing lists.

Table 3.24: Post to Discussion Forum/Mailing List

		Frequency	Percent
Valid	Not Very Frequently	23	32.4
	Once a Day	8	11.3
	Once a fortnight	3	4.2
	Once a week	9	12.7
	Several Times a Day	22	31.0
Total		**71**	**100.0**

Table 3.24 depicts that 32.4% of the respondents do not post to discussion forums/mailing lists very frequently, whereas 31.0% who posts several times a day. This indicates that while teachers at KIBU are members of discussion forums/ mailing lists, they are not very active in this space.

3.3.13 Technology-Enabled Learning Environment

The faculty members were asked to rate their experiences about a number of resources and services provided by KIBU. A Likert scale was used to assess members' experiences. Table 3.25 indicates the general faculty experience with resources provided by KIBU.

Table 3.25: Teachers' Perceptions of Technology-Enabled Learning Environment

	Not Available	Poor	Fair	Neutral	Good	Excellent	Weighted Average
e-classrooms	2	4	7	10	40	8	3.49
Computer Labs	0	2	11	10	36	11	3.61
Email	0	0	9	6	36	20	3.94
LMS	1	1	10	10	32	17	3.72
e-portfolio	5	3	17	29	12	3	2.71
Bandwidth	1	2	11	25	25	7	3.30
Wi-Fi	0	2	9	9	41	10	3.68
Online Technology	2	6	12	28	15	8	3.01
Software Access	5	11	14	28	9	4	2.52
Software Download and use	2	7	14	27	16	5	2.89
Support and Repair	3	9	15	23	15	5	2.76

Category Average 3.24

The analysis shows that the mean weighted score for TEL environment is 3.24. This implies that faculty experience with a number of resources and services provided by KIBU is neutral as per Likert scale. The areas of TEL below the mean weighted score of 3.24 are: software access, e-portfolio, software downloaded and used, support and repair. These areas require improvement in order for faculty to effectively participate in TEL.

3.4 Using ICTs for Teaching and Learning

3.4.1 Nature of Classes

Table 3.26 indicates that majority of the faculty at KIBU teach using the traditional face-to-face method. It's imperative to note that although a large number of courses are being delivered via face to face mode, a significant 37.2% proportion of faculty teach via the blended method. This is important to mainstream TEL at KIBU.

Table 3.26: Mode of Teaching

	Frequency	Percent
Teach Face to Face	54	62.8%
Teach Blended	32	37.2%
Total	86	100.0%

3.4.2 Resource Use Frequency

The faculty were asked to rate their experiences with a number of resources and services provided by KIBU. This was assessed using a Likert scale where 1-Never; 2=Rarely; 3-Sometimes; 4=Often; 5=Always. Table 3.27 indicates the faculty's experience with resources provided by KIBU.

The analysis of KIBU faculty resource use frequency reveals that the mean weighted score for resource usage is 3.08. This means that faculty means on average faculty frequency with a number of resources and services provided by KIBU is, sometimes as per Likert scale.
Those below the mean weighted score of 3.0624 are blogs, social bookmarking, microblogging, simulation & animation. These resources need improvement for TEL to be achieved in KIBU.

Table 3.27: Types of Resources Used

	Never	Rarely	Sometimes	Often	Always	Weighted Average
Images	1	2	37	25	6	3.46
Presentation	0	3	21	33	14	3.82
Word Files	1	0	17	30	22	4.03
Digital Films	2	18	29	20	2	3.03
Audio Recordings	4	23	23	17	3	2.89
Simulation & Animation	7	31	23	8	1	2.50
LMS	4	11	33	19	3	3.09
Blogs	8	29	24	7	1	2.48
Social Bookmarking	10	32	17	11	0	2.41
Microblogging	5	21	24	15	4	2.88
Open Textbooks	5	12	29	20	4	3.09
Open Access Research Papers	4	6	30	25	5	3.30

Category Average =3.08

3.4.3 Creating and sharing of teaching and learning resources/materials

The faculty were asked to rate their experiences on creating and sharing of teaching resources/ materials provided by KIBU. This was assessed using a Likert scale where 1=Never; 2=Rarely; 3-Sometimes; 4=Often; 5=Always. Results are shown in Table 3.28.

Table 3.28: Creating and sharing of teaching and learning resources/materials

	Never	Yes, but not Shared	Yes and Shared	Weighted Mean
Created and Shared Images	14.1%	69.0%	16.9%	2.03
Created and Shared Presentations	5.6%	43.7%	50.7%	2.45
Created and Shared Word Files	5.6%	36.6%	57.7%	2.52
Created and Shared Digital Films	32.9%	42.9%	24.3%	1.91
Created and Shared Audio Recordings	36.6%	49.3%	14.1%	1.77
Created and Shared simulations and 2D/3D animation	56.5%	1.4%	42.0%	1.45
Created and Shared LMS	20.6%	36.8%	42.6%	2.22
Created and Shared Blogs	47.1%	38.6%	14.3%	1.67
Created and Shared Course packs	40.0%	37.1%	22.9%	1.83

Category average = 1.98

Analysis of responses from KIBU faculty reveals that the mean weighted score for resource usage is 1.98, which implies that majority of faculty have created content in different formats but have not shared. The top three resources most created by faculty members were shared images, presentations and audio recordings. The most shared were word files, presentation and LMS. Faculty should be trained on how to create and share resources, especially those whose weighted mean score is below mean weighted score.

3.4.4 Awareness of Open Educational Resources

Respondent's awareness about Open Educational Resources are displayed in Table 3.29, which indicates that 84.5% are aware.

Table 3.29: Awareness of Open Educational Resources

		Frequency	Percent
Valid	Yes	60	84.5
	No	11	15.5
Total		**71**	**100.0**

The faculty were asked to rate their frequency of using OER platforms for teaching and learning. This was assessed using a Likert scale where 1-Never; 2=Rarely; 3-Sometimes; 4=Often; 5=Always. Table 3.30 shows that the mean weighted score for the frequency of use of OER platforms by faculty for teaching and learning in KIBU is 1.58. This means majority of faculty rarely use OER platforms for teaching and learning. Therefore, faculty should be sensitised on use of OER platforms for teaching and learning.

3.4.5 Level of skills in using various technologies

The faculty were asked to rate their level of skills in using various technologies. This was assessed using a Likert scale where 1= I can't use it; 2=I can use it to a small extent; 3=I can use it satisfactorily; 4=I can use it well; 5=I can use it very well. Table 3.31 shows that the mean weighted score on level of skill is 3.09. This implies that majority of faculty can use technologies satisfactorily. Accessible tools (for people with disabilities) whose weighted mean score is 2.91 and e-Portfolio whose weighted mean score is 2.63 are below the mean weighted mean score of 3.09. Therefore, these areas need to be addressed. It is also noted that majority of the faculty are comfortable with using LMS, followed by online collaboration tools. Interestingly, none of the skills were above 4, indicating lac of expertise in technology integration in teaching and learning.

Table 3.30: Frequency of using OER platforms for teaching and learning

	Rarely	Sometimes	Often	Always	Weighted Average
OER Commons	24	31	6	8	1.97
Saylor Academy	45	19	4	0	1.40
WikiEducator	45	14	7	0	1.42
OpenStax College	36	24	7	0	1.57
BCCampus Open Textbooks	35	23	10	0	1.63
NPTEL, India	36	25	6	1	1.59
MIT Open Courseware	38	21	5	4	1.63
OpenLearn, UK	39	19	9	1	1.59
College Open Textbook	40	22	5	0	1.48
Directory of Open Access Journals	34	24	7	3	1.69
Director of Open Access Books	40	19	7	2	1.57
MERLOT	41	26	1	0	1.41

Category Average 1.58

Table 3.31: Skills in the use of technologies

	I can't use it	I can use it to a small extent	I can use it satisfactorily	I can use it well	I can use it very well	Weighted Average
Learning Management System (e.g. Moodle)	0	12	33	12	13	3.37
Online collaboration tools (e.g. Adobe Connect, Google Docs)	2	17	21	19	11	3.29
e-Portfolio	8	20	16	20	5	2.91
eBooks/eTextbooks	3	17	19	18	13	3.30
Online video/audio	5	14	22	18	10	3.20
Educational games/simulations	5	22	17	20	6	3.00
Lecture capture tools	4	21	18	19	7	3.06
Accessible tools (for people with disabilities)	19	15	12	16	6	2.63
Social media (blogs, wikis, etc.)	6	20	18	21	6	3.01

Category Average 3.09

3.4.6 Training on use of ICTs for teaching

The study sought to establish whether respondents had ever attended training on the use of ICTs for teaching. Table 3.32 shows majority of the respondents (95.8%) had received training on the use of ICTs for teaching and learning while only 4.2% have not. Table 3.33 shows majority of the respondents (81.7%) indicated that KIBU provided regular training for teaching and learning while 18.3% did not receive the training in the past.

Table 3.32: Training on use of ICTs for teaching

		Frequency	Percent
Valid	Yes	68	95.8
	No	3	4.2
Total		**71**	**100.0**

Table 3.33: University provision of regular training on new technologies

		Frequency	Percent
Valid	Yes	58	81.7
	No	13	18.3
Total		**71**	**100.0**

Table 3.34: Participated in Online Training

		Frequency	Percent
Valid	Yes	63	88.7
	No	8	11.3
Total		**71**	**100.0**

Table 3.34 shows that majority of the respondents (88.7%) have participated in some online training, while 11.3% had not participated in any online training. Slightly above half of the respondents (52.1%) indicated that they had attended a MOOC, while 47.9% were yet to attend any such course (Table 3.35). Table 3.36 shows that the awareness level of MOOC platform ranges from 6% to 30%, with Coursera accounting the highest awareness. Interestingly over 52% respondents indicated they are not aware of any platform.

Table 3.35: Attended MOOCs

		Frequency	Percent
Valid	Yes	37	52.1
	No	34	47.9
Total		**71**	**100.0**

Table 3.36: Online learning platform awareness

	Frequency	Percent
Coursera	24	30.0%
Udacity	3	3.8%
EdX	4	5.0%
iVersity	2	2.5%
FutureLearn	5	6.3%
Not aware	42	52.5%
Total	**80**	**100.0%**

Note: Multiple response

3.5 Policy Issues for Technology-Enabled Learning

The study sought to get an understanding of the respondents' awareness about existing policy issues for TEL. Table 3.37 shows that mean weighted score on policy awareness is 1.28. This implies that majority of faculty are not aware of existing policies.

Table 3.37: Policy issue awareness

	Don't Know	No	Yes	Weighted Average	Total
There is policy for ICT use in teaching.	14	3	54	1.56	71
There is a strategy for Technology-enabled Learning.	16	3	51	1.50	70
There is an ICT policy in university.	19	3	49	1.42	71
There is a privacy and data protection policy in university.	25	4	42	1.24	71
There is a policy on dealing with plagiarism in university.	23	2	46	1.32	71
There is a policy for the use of open source software in university.	30	8	33	1.04	71
There is a system in place for the use of open source software in university.	32	7	32	1.00	71
There is workflow and escalation procedure for repair and maintenance of ICTs in university.	28	7	36	1.11	71

Category average 1.28

3.6 Using ICTS for Research and Scholarship

In order to understand the ICTs services provided by the university for Research and Scholarship, the study collected data on various sections as indicated in the following section.

3.6.1 Access to e-Resources in Library

Table 3.38 shows that 91.5% of the respondents accessed library in the university provided access to subscription-based e-resources. Table 3.39 shows that majority of faculty members sometimes accessed e-resources in the library based on the mean weighted score of 2.89. The e-resources that faculty used most rarely are statistical databases, patent databases e-proceedings of conference respectively as indicated by the low scores of weighted means.

Table 3.38: Library Provide Access to e-Resources

		Frequency	Percent
Valid	Yes	65	91.5
	No	4	5.6
	N/A	2	2.8
Total		**71**	**100.0**

Table 3.39: Frequency of Access to e-Resources in the Library

	Never	Rarely	Sometimes	Often	Always	Weighted Average
e-Journals	2	9	26	16	17	3.53
e-Books	2	9	28	18	13	3.44
Citation databases	4	17	29	15	5	3.00
e-Newspapers	5	24	24	8	8	2.86
e-Theses and Dissertations	7	20	28	6	9	2.86
Patent databases	10	26	23	8	2	2.51
e-Processing of conferences	10	23	29	2	5	2.55
Statistical databases	15	22	23	8	1	2.39

Category Average: 2.89

3.6.2 Availability of Research Support

It was necessary to identify the perception of faculty towards access to available research support provided by KIBU. In order to achieve this faculty were asked to rate availability of research support at KIBU. Analysis of data shows a mean weighted score of 2.98, which is towards 'neutral'. Based on the weighted mean score, plagiarism detection software and access to data storage had a higher rating (Table 3.40).

Table 3.40 Experience on Research Support

	Not Available	Poor	Fair	Neutral	Good	Excellent	Weighted Average
Access to data storage	3	7	9	19	28	4	3.06
Data visualization software	4	5	15	26	18	1	2.75
Citation/reference management software	4	4	14	21	21	5	2.96
Plagiarism detection software	1	5	13	17	20	14	3.31
Institutional repository for sharing of research	1	6	13	18	21	11	3.21
Funds to support open access publications	5	7	19	19	17	2	2.61

Category Average 2.98

3.7 Perceptions of Use of Technology-Enabled Learning

Faculty members were asked to rate their perception about the use of TEL. This was to help identify how faculty visualise the importance of technology in teaching and learning. This was assessed using a Likert scale where response choices were coded as: 5=Strongly Agree; 4=Agree; 3= Neither agree nor disagree; 2=Disagree; 1=Strongly Disagree. Table 3.41 shows that the weighted mean is 4.39, which indicates a strong positive disposition for use of ICTs in teaching and learning.

Table 3.41: Perception towards TEL

	Disagree	Neither agree nor Disagree	Agree	Strongly Agree	Weighted Average
Can solve many of our educational problems.	0	5	18	48	4.61
Bring new opportunities for organizing teaching and learning.	0	5	17	49	4.62
Saves time and effort for both teachers and students.	0	10	17	43	4.47
Increases access to education and training.	3	10	24	34	4.25
Increases my efficiency in teaching.	1	8	24	38	4.39
Enables collaborative learning.	1	4	23	43	4.52
Can engage learners more than other forms of learning.	4	8	26	33	4.24
Increases the quality of teaching & learning because it integrates all forms of media.	0	9	24	38	4.41
Increases the flexibility of teaching and learning.	1	14	22	34	4.25
Improves communication between students and teachers.	2	8	27	34	4.31
Enhances the pedagogic value of a course.	2	10	30	29	4.21
Universities should adopt more and more TEL for the benefit of their students.	1	7	25	38	4.41

Category average 4.39

3.8 Motivators for using Technology-Enabled Learning

The study sought to identify what motivated faculty to use TEL. Three motivators based on weighted mean score are personal interest in using technology, infrastructure, hardware and software deployment, and intellectual challenge (see Table 3.42).

The mean weighted score for TEL is 4.07 shows that on average, faculty members agreed that all factors listed in table 3.42 were strong motivators for TEL. On the other hand, incentives to use TEL, professional prestige, and credit towards promotion were the least powerful motivators.

Table 3.42: Motivations for technology-enabled learning

	Very weak motivator	Weak motivator	Average motivator	Strong motivator	Very strong motivator	Weighted Average
Personal interest in using technology	0	0	6	27	38	4.45
Intellectual challenge	0	0	10	39	21	4.16
Self-gratification	2	3	17	29	19	3.86
Training on Technology- Enabled Learning	1	1	13	28	27	4.13
Better Internet bandwidth at workplace	1	3	11	31	25	4.07
Credit towards promotion	3	3	15	26	24	3.92
Professional incentives to use Technology-Enabled Learning	5	3	9	30	24	3.92
Technical support	3	3	13	28	24	3.94
Peer recognition, prestige and status	3	2	14	26	25	3.97
Improved infrastructure (hardware and software) deployment	2	3	4	31	31	4.21
Release time/Reduction in existing workload	2	2	5	36	26	4.15
To be a trendsetter by early adoption of technology in education	1	2	11	36	21	4.04

Category average: 4.07

3.9 Barriers for using Technology-Enabled Learning

The study identified barriers to the use of TEL by faculty members. The first three barriers are key issues in bringing more faculty around to using TEL namely, concern about students' access to technology, inadequate availability of hardware and software, poor Internet access and networking in the university (see table 3.43). The mean weighted score for TEL barriers was 3.60, implying that on average, faculty members agreed that all factors listed in table 3.43 were average barriers for use of TEL. On the other hand, lack of role models, concern about the quality of e-courses, lack of incentives to use TEL and lack of credit towards promotion were the least powerful barriers for TEL usage by faculty (Table 3.43).

Table 3.43: Barriers to the use of Technology

	Very weak barrier	Weak barrier	Average barrier	Strong barrier	Very strong barrier	Weighted Average
Concern about faculty workload	3	7	14	30	17	3.72
Concern about students' access to technology	3	2	11	32	22	3.97
Lack of training on Technology-Enabled Learning	3	5	21	25	14	3.62
Lack of technical support in the University	1	8	24	27	10	3.53
Lack of institutional policy for Technology- Enabled Learning	4	8	18	22	19	3.62
Lack of professional prestige	7	9	17	30	8	3.32
Concern about the quality of e-courses	7	6	13	37	8	3.46
Lack of incentives to use Technology-Enabled Learning	5	6	17	32	9	3.49
Lack of credit towards promotion	4	7	18	31	11	3.54
Intimidated by technology	7	9	18	26	11	3.35
Concern about security issues on the Internet	5	7	11	35	13	3.62
Inadequate availability of hardware and software	3	2	12	33	21	3.94
Poor Internet access and networking in the university	5	5	12	27	22	3.79
Lack of time to develop e-courses	5	5	21	24	15	3.56
Lack of instructional design support for Technology-Enabled Learning	5	3	19	26	18	3.69
No role models to follow	7	8	18	28	10	3.37

Category average: 3.60

3.10 Summary

Majority of faculty have their own devices while some devices have been provided by the university. Most members of faculty have access to Internet in their offices. The most used device to access Internet by faculty was the smart phone followed by the laptop. Faculty also use Internet daily to a large extent. On average, the faculty members had intermediate level of ICT skills, which was at user level. The number of skilled faculty are less in the areas of Graphic Editing Comfort Level, Digital Audio Comfort Level, Video Editing Comfort Level, Webpage Design Comfort Level and LMS Comfort Level.

The results further revealed that faculty had social media accounts, the most popular sites among faculty were Facebook, Slideshare, Twitter and Google+, and majority used social media several

times a day. It was also revealed that not many faculty members frequently used post to discussion forum/mailing list.

Majority of faculty at KIBU teach using traditional face to face. However, this is changing due to the COVID-19. It is imperative to note that although a large number of courses were being delivered via face to face mode, a significant 37.2% proportion of faculty taught via the blended method. This a positive aspect of TEL implementation at KIBU.

Results revealed that majority of faculty rarely use OER platforms for teaching and learning, which highlights the need for training on OER. Many teachers are also not aware of MOOC platforms.

Teachers at KIBU are positively disposed to use TEL and are highly motivated. There are several barriers that the KIBU management needs to take note of the perceived barriers to TEL, especially the ones that are related access to technology.

With the commitment to adopt a TEL policy, and the current scenario, it is imperative for KIBU to go towards mainstreaming TEL in all its courses and programmes.

Chapter Four: Student Survey at KIBU

Assessing the level of student preparedness for TEL was an important component of this study. The results of this study would not only inform the basic training prerequisites to consider, but also the extent to which students have access to KIBU ICT infrastructure. A sample of 575 out of 7,026 students was used in survey. This chapter presents the response rate; background information of respondents; access and use of information and communication technologies (ICTs) and perceptions of use of TEL.

4.1 Student Profile

4.1.1 Gender

The gender distribution of the respondents was 63.6% male and 36.4% female (Table 4.1).

Table 4.1: Gender of Respondents (Learners)

		Frequency	Percent (%)
Valid	Female	203	36.4
	Male	354	63.6
	Total	**557**	**100.0**

4.1.2 Age distribution

In terms of age distribution (Table 4.2), the majority of respondents are in the 21–25 age group (57.1%), followed by those between 26-30 group (27.8%). It is important to note that majority of the students at KIBU are young.

Table 4.2: Age of Respondents (Learners)

		Frequency	Percent
Valid	Below 20	46	8.1
	21-25	325	57.1
	26-30	158	27.8
	31-35	24	4.2
	36-40	9	1.6
	41 and above	7	1.2
	Total	**569**	**100.0**

4.1.3 Level and Year of Study

Table 4.3: Level of Study

		Frequency	Percent
Valid	Certificate	34	6.0
	Diploma	67	11.8
	Undergraduate	413	72.8
	Graduate or post-graduate	53	9.3
	Total	**567**	**100.0**

Table 4.3 shows that only 6% of the respondents currently are undertaking certificate courses, while those doing diploma courses accounted for 11.8%, those in undergraduate courses accounted for 72.8%, and those pursuing Graduate and post graduate studies accounted for 9.3% of the total population, indicating KIBU is primarily a undergraduate teaching university.

4.1.4 Year of Study

Table 4.4: Year of Study

		Frequency	Percent
Valid	Year 1	109	19.3
	Year 2	159	28.2
	Year 3	109	19.3
	Year 4	187	33.2
	Total	**564**	**100.0**

Table 4.4 above shows that those in first year accounted for 19.3% of the population, those in second year accounted for 28.2%, those in third year accounted for 19.3%, and those in fourth year of studies accounted for 33.2% of the total population. This shows that the respondents were distributed amongst different years of studies and with different levels of experiences at KIBU.

4.1.5 Faculty Discipline

Table 4.5: Distribution of Students across various Disciplines

		Frequency	Percent
Valid	Humanities	56	9.8
	Social Sciences	126	22.1
	Commerce and Management	62	10.9
	Health and Medical Services	20	3.5
	Natural Sciences	81	14.2
	Engineering and Technology	82	14.4
	Agriculture and Natural Sciences	110	19.3
	Fine and Performing Arts	2	.4
	Other	32	5.6
	Total	**571**	**100.0**

Table 4.5 shows that students doing Humanities accounted for 9.8% of the population, those doing Social Sciences accounted for 22.1%, those in Commerce and Management accounted for 10.9% of the population, those in Natural Sciences accounted for 14.2%, those in Engineering and Technology accounted for 14.4%, those in Agriculture and Natural sciences accounted for 19.3%, those in Fine and Performing Arts accounted for 0.4% while those in unspecified course accounted for 5.6% of the total population. The discipline-wise distribution of respondents shows a range of courses at KIBU with social sciences having the maximum respondents.

4.1.6 Physical and/or Learning Disabilities

Table 4.6 shows that only 2% of the respondents had some kind of disabilities. Those who have one or more physical disabilities that requires access to adaptive technologies accounted for 1.4% of the respondents, while 0.7% indicates having learning disabilities. To ensure fair learning for all, KIBU needs to acquire adaptive technologies to accommodate students with disabilities.

Table 4.6: Physical Disability

		Frequency	Percent
Valid	No	492	86.6
	Yes, I have one or more PHYSICAL disabilities that require accessible or adaptive technologies	8	1.4
	Yes, I have one or more LEARNING disabilities that require accessible or adaptive technologies	4	.7
	Yes, I have both physical and learning disabilities that require accessible or adaptive technologies	5	.9
	Prefer not to answer	59	10.4
	Total	**568**	**100.0**

4.1.7 Study Mode

Students were asked their mode of study, and the responses showed that most (71.1%) of their courses were delivered using traditional face-to-face teaching, compared to only. 2.1% done completely online; 26.7% indicated that some of their courses were blended, which may be because their lecturers sent them resources via email, WhatsApp or provided links to online resources (Table 4.7). However, KIBU currently offers blended courses.

Table 4.7: Study Mode

		Frequency	Percent
Valid	Traditional face-to-face	399	71.1
	Completely online	12	2.1
	Blended, where some components of study are done online	150	26.7
	Total	**561**	**100.0**

4.2 Access to ICT

This section investigated learners' access to ICT devices, while at home and on campus. It also assessed their access to the Internet. Besides, it assessed their frequency of Internet use and the specific devices they used. This segment also identified learners' level of proficiency with ICT by assessing their comfort level with computer-related skills and activities, their social media presence, and their participation in mailing lists and discussion forums.

4.2.1 Ownership of Devices and Access to ICT

Tables 4.8 shows that respondents who own desktops, laptop, smartphone and tablet accounted for 22.2%, 44.9%, 77.1% and 22.7%, respectively. Those who didn't have but have plans of buying either desktop, laptop, smartphone and tablets in the next 12 months accounted for 20.4%, 19.7%, 6.9% and 20.5%, respectively.

From the results it is deduced that most learners have smartphones and laptops. This would help implement TEL at KIBU and encourage those who are planning to buy. However, there are also many who are not having personal devices, and KIBU needs to plan for such learners before implementing TEL.

Table 4.8: Device Ownership by Learners

		Desktop Computer		Laptop		Smartphone		Tablet	
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Valid	Yes	120	22.2	251	44.9	438	77.1	120	22.7
	No, but I plan to buy one in the next 12 months	110	20.4	110	19.7	37	6.5	108	20.5
	No, and I do not plan to buy one in the next 12 months	310	57.4	198	35.4	93	16.4	300	56.8
	Total	**540**	**100.0**	**559**	**100.0**	**568**	**100.0**	**528**	**100.0**

Table 4.9: Learner Access to Devices at KIBU

		Desktop Computer		Laptop		Smartphone		Tablet	
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Valid	Yes, provided by the university	364	67.7	78	14.3	47	8.4	52	10.2
	Yes, I use my personal device in the university	65	12.1	336	61.7	442	79.1	249	48.8
	No, my university does not allow me to use these	109	20.3	131	24.0	70	12.5	209	41.0
	Total	**538**	**100.0**	**545**	**100.0**	**559**	**100.0**	**510**	**100.0**

Table 4.9 shows that respondents in the study indicated 67.7%, 14.3%, 8.4% and 10.2% having access to desktop, laptop, smartphone at the university, respectively. While the data related to smartphone and tablet may not be factual, it is important to note that over 80% of learners use ICT devices (desktop and laptop) provided at KIBU. Table 8.9 also shows that there are learners who are not aware of ICT facilities at KIBU.

4.2.2 Internet Access

Internet access is a vital element of TEL; therefore, it was necessary to establish how comfortable learners were with Internet provision at KIBU. Overall, 47.6% of the respondents accessed the Internet from university, 29.4% accessed Internet from cybercafés while 22.0% access it from their places of residence; 1% do not have Internet access (Table 4.10).

Table 4.10: Internet Access Location

		Frequency	Percent
Internet Access Location	Home	229	22.0
	School	495	47.6
	Cyber Cafe	306	29.4
	No Internet Access	10	1.0

Note: Multiple responses

One question required students to select the Internet access mode. As Table 4.11 shows, students primarily used wireless connectivity (47.4%), followed by mobile devices (39.3%), ADSL connection (7.3%), dial up connection (3.8%) and Lease line mode (2.2%) to access Internet.

Table 4.11: Internet access mode

		Frequency	Percent
Internet Access Mode	Dial-up connection	38	3.8
	ADSL connection	74	7.3
	Wireless	478	47.4
	Mobile Device	397	39.3
	Leased Line Mode	22	2.2

Note: Multiple responses

Table 4.12: Frequently use Device

		Frequency	Valid Percent
Valid	Smartphone	446	79.1
	Laptop	62	11.0
	Tablet or iPad	33	5.9
	Desktop computer	23	4.1

Students were asked to choose the primary device they most frequently used to access the Internet. The majority indicated they access Internet (see Table 4.12) through mobile devices (79.1%), followed by laptop (11.0%), tablets or iPad (5.9%) and desktop computer (4.1%). This indicates that TEL can easily be implemented because majority of students can access the Internet through various devices.

Table 4.13: Broadband Internet Connectivity

		Frequency	Percent
Broadband Connectivity	Home	159	17.9
	School/University	426	47.9
	Cyber Café	273	30.7
	No Access	32	3.6

Note: Multiple responses

Table 4.13 shows that 17.9% of the respondents use home broadband connectivity, 47.9% use School/University broadband connectivity, 30.7% used Cyber Café, while 3.6% of the learners did not have access to broadband connectivity. High-speed Internet access is essential in the information technology era. Hence, knowing where students access high-speed Internet is vital for strategic positioning of resources that support TEL to ensure convenient and optimal use.

Table 4.14 illustrates broadband Internet access at KIBU, which shows that 9.8% of respondent access broadband connectivity in classroom, followed by 33.6% access broadband connectivity in the library, 12.0% in the hostel, 10.6% in faculty rooms, 12.5% in the laboratories, 3.0% in reception lounge, 9.1% access broadband connectivity in seminar halls, 4.0% access at students' common rooms, while 5.2% of the respondent access broadband connectivity in open areas.

Table 4.14: University Broadband Connectivity

		Frequency	Percent
University Broadband Connectivity	Classrooms	114	9.8
	Library	391	33.6
	Hostels	140	12.0
	Faculty Rooms	123	10.6
	Laboratories	145	12.5
	Reception Lounge	35	3.0
	Seminar Halls	106	9.1
	Students' common rooms	47	4.0
	Open Areas	61	5.2

Note: Multiple responses

Table 4.15: University Wi-Fi/Wireless Internet Connectivity

		Frequency	Percent
Valid	Yes	550	95.7
	No	25	4.3

Table 4.15 indicates that 95.7% of the respondents agreed that they got Wi-Fi/wireless Internet connectivity at the campus, while 4.3% indicated they did not get Wi-Fi/wireless Internet connectivity at the campus. Despite the overwhelmingly positive response, there is still a need to increase the wireless access points on campus so that all learners have access.

Table 4.16: Internet use

		Frequency	Percent
Valid	Daily	290	50.5
	Alternate days	120	20.9
	Once a week	35	6.1
	Irregularly	73	12.7
	Rarely	48	8.4
	Never	8	1.4

Table 4.16 shows that 50.5% of the respondents use Internet daily, 20.9% use the Internet on alternate days, while 6.1% used Internet once a week. In addition, it is noted that 12.7% used Internet irregularly, 8.4% rarely used internet while 1.4% of the respondents never used the Internet. There is need to encourage more students to access Internet regularly in order to promote TEL at KIBU.

Table 4.17: Internet use Duration

		Frequency	Percent
Valid	<1 hour	74	13.0
	1-2 hours	236	41.5
	3-5 hours	173	30.4
	>5 hours	51	9.0
	Do not use daily	35	6.2

Students and lecturers often used the Internet for TEL. Therefore, it is important to know how much time learners spend on Internet-related activities such as email, browsing and social media. Table 4.17 indicates that 13.0% of the learners use Internet less than an hour daily, 41.5% used Internet between 1 hour to 2 hours daily. Some 30.4% used Internet between 3 hours to 5 hours daily, 9.0% used Internet more than 5 hours daily, whereas 6.2% of the respondents did not use Internet daily.

4.3 Use of ICT

A probe to determine students' proficiency in computer-related technologies was vital, as it would indicate the level of training needed to successfully implement TEL at KIBU.

4.3.1 Computer-related activities skills

Table 4.18: Skills for Computer-Related Activities

	I can't use	I can use it to a small extent	I can use it satisfactorily	I can use it well	I can use it very well	Weighted Average
Word Processor	33	108	148	122	164	**3.48**
Spreadsheets	45	111	149	159	107	**3.3**
Presentation	51	114	141	158	104	**3.26**
Email	39	95	135	152	151	**3.49**
Databases	62	117	139	162	88	**3.17**
Multimedia	112	108	166	125	59	**2.84**
Graphic	121	137	139	121	49	**2.71**
Digital Audio	121	146	137	119	48	**2.69**
Video Editing	131	152	142	105	40	**2.59**
Webpage Design	137	145	140	105	43	**2.6**
LMS	118	126	163	121	42	**2.72**
Web 2.0 Tools	127	141	129	124	46	**2.68**
Search Engine	62	128	150	118	112	**3.15**
Category Average						***2.97***

Generally, learners had intermediate computer skills (mean weighted average = 2.9). This means that on average, students could use their computer related skills satisfactorily. This is promising. However, effective TEL implementation requires consistent training in low-ranked areas. The number of skilled students diminished in the areas of web tools, LMS, multimedia authoring, graphic editing, video editing, use of learning management systems and Web tools. Cornu (2011) indicated that digital-native students prefer learning through graphics and other visual media rather than reading text and are used to learning interactively.

Students' competency level is as important as that of the teachers. Although students were digital natives, they do not necessarily have the skills to employ digital tools strategically to optimise their learning experiences in the university. None of the skills were near 4 (I can use it well), indicates strong digital literacy training needs for leaners at KIBU. Thus, KIBU must take steps to improve lecturer competency in these skills and then ensure that lecturers take up the responsibility for helping students to acquire the skills. One way to achieve this is to review all

academic programmes at KIBU in terms of delivery and assessment to ensure that students are encouraged to acquire and practice the requisite skills.

4.3.2 Social Media

Social media should be incorporated into TEL environment. In order to determine their social media presence, students were asked whether they had accounts or profiles with social media websites and platforms.

Table 4.19: Social Media Accounts

		Frequency	Percent
Valid	Yes	497	88.4
	No	65	11.6

Table 4.19 shows that 88.4% of the respondents had social media accounts while 11.6% did not have social media accounts. A further question about the social media platforms used by students asked which social media accounts they used most. The summary of the findings is in Table 4.20.

Table 4.20: Social media platforms

		Frequency	Percent
Social Media Platforms	Facebook	431	32.1
	Twitter	295	22.0
	Google+	204	15.2
	Blog	50	3.7
	Slideshare	45	3.4
	Photo Sharing	115	8.6
	Research Sharing Site	95	7.1%
	Social bookmarking	57	4.2
	Goodreads.com	51	3.8

Note: Multiple responses

Table 4.20 indicates that 32.1% of the respondents use Facebook, 22.0% use Twitter, 15.2% use Google+, 3.7% use blogs, 3.4% of the population use SlideShare, 8.6% use Photo sharing apps, 7.1% use research sharing platforms, 4.2% use Social bookmarking sites while 3.8% of the respondents indicated they use Goodreads.com site.

Table 4.21: Social Media Use

		Frequency	Percent
Valid	Several times a day	125	24.3
	Once a day	135	26.3
	Once a week	55	10.7
	Once a fortnight	32	6.2
	Not very frequently	159	30.9
	Not at all	8	1.6

Table 4.21 shows that 24.3% of the respondents use social media several times a day, 26.3% use once a day, 10.7% used once a week, 30.9% did not use social media frequently, while 1.6% of the respondents did not use social media at all.

Table 4.22: Social Media use Duration

		Frequency	Percent
Valid	<1 hour	77	15.0
	1 - 2 hours	227	44.2
	3 - 5 hours	132	25.7
	>5 hours	39	7.6
	Do not use daily	39	7.6

Table 4.22 shows that 15.0% of the respondents use social media less than 1 hour a day, 44.2% use between 1 to 2 hours a day, 25.7% of the respondents use social media for 3 to 5 hours a day, while 7.6% did not use social media daily.

4.3.3 Mailing Lists and Discussion Forums

Table 4.23: Membership of Mailing lists and Discussion Forums

		Frequency	Percent
Valid	Yes	330	59.4
	No	226	40.6

Table 4.23 indicates that 59.4% of the respondents have membership to mailing lists and discussion forums, while 40.6% do not. Table 4.24 shows that 71.5% of the respondents are subscribed to 1 to 5 discussions forums while 28.5% had been subscribed to more than 5 email-based discussion forums.

Table 4.24: Discussion Forums Subscription

		Frequency	Percent
Valid	1-5	279	71.5
	More than 5	111	28.5

Table 4.25: Discussion Forums Moderation

		Frequency	Percent
Valid	Yes	247	61.9
	No	152	38.1

Table 4.25 shows that 61.9% of the respondents moderated discussion forums/mailing list, while 38.1% neither moderated any discussion forum nor mailing lists. While this needs further probing through additional research, it is encouraging to note that majority of the respondents moderated discussion forums/mailing list. Table 4.26 shows that 19.5% of respondents posted several times a day on discussion forum/mailing lists, 26.8% posted once a day, 18.0% posted once a week, 9.3% posted once a fortnight, while 26.5% of the total respondents did not post on the mailing lists frequently.

Table 4.26: Mailing Lists Post Frequency

		Frequency	Percent
Valid	Several times a day	78	19.5
	Once a day	107	26.8
	Once a week	72	18.0
	Once a fortnight	37	9.3
	Not very frequently	106	26.5

4.4 TEL at KIBU

4.4.1 Experiences with resources/services/spaces provided by KIBU

The students were asked to rate their experiences with a number of resources and services provided by KIBU. This was assessed using a Likert scale where 0 = not available, 1 = poor, 2 = fair, 3 = neutral, 4 = good, and 5 = excellent. Table 4.27 indicates in general, students' experience with resources provided by KIBU.

Table 4.27: Learners' Perception of Technology-Enabled Learning Environment at KIBU

	Not available	Poor	Fair	Neutral	Good	Excellent	Weighted Average
e-Classroom	5	55	138	109	227	37	3.06
Computer Lab	0	52	110	122	234	51	3.21
Email	3	37	104	99	244	79	3.37
LMS	11	45	119	121	211	60	3.15
e-Portfolio	17	58	125	108	206	51	3.02
Network Bandwidth	8	49	126	94	231	60	3.18
Wi-Fi	4	50	121	104	217	74	3.23
Online/ Virtual	14	48	122	118	209	55	3.10
Software	17	67	114	114	203	50	3.0
Open Source	15	44	123	109	213	62	3.14
Repair and Maintenance Support	15	55	113	102	230	54	3.12
Data Storage	15	51	118	104	216	59	3.12
Data Visualization	15	60	125	116	209	40	2.99
Citation/ Reference Management Software	17	68	110	110	209	55	3.03
Plagiarism detection Software	20	56	135	95	196	65	3.03
Research Repository Sharing	14	56	133	104	206	57	3.05
e-Journal	17	56	132	114	189	61	3.02
e-Books	14	67	130	92	207	60	3.03
Citation Database	24	60	125	107	207	45	2.96
Bibliographic Database	22	66	114	113	201	52	2.98
e-Newspapers	17	65	113	95	228	52	3.06
e-Theses and Dissertations	21	73	117	106	208	42	2.94
Patent Database	27	77	115	106	193	45	2.88
Conference e-proceedings	28	75	116	109	194	43	2.87
Statistical Databases	27	72	122	97	206	40	2.89

Category Average: 3.06

The mean weighted score for TEL environment was 3.06. This implies that students' experiences with a number of resources and services provided by KIBU is neutral. The areas below the mean weighted score of 3.06 are statistical databases, conference e-proceedings, patent database, e-theses and dissertation, bibliographic database, citation database and visualization. These areas below the mean weighted score should be earmarked for improvement in order to enable learners TEL environment. Availability of these services at KIBU would improve the teaching, learning and research environment in general.

4.4.2 Online Courses

To know if respondents understood what MOOC was and if they had ever used it before. Table 4.28 shows that 44.0% of the respondents had neither heard nor used MOOC. Moreover, they did not know what MOOC was. Some 19.4% knew what MOOC was but had not used it before whereas 16.9% knew about MOOC and had used it before. However, they had not completed MOOC online course. 19.7% of the respondents indicated that they had attempted MOOC online course and completed it. Within the TEL implementation process, KIBU may focus on integrating MOOC as part of the teaching and learning.

Table 4.28: Online Courses Use

		Frequency	Percent
Valid	No, and I do not know what a MOOC is	177	44.0
	No, but I do know what a MOOC is	78	19.4
	Yes, but I didn't complete it	68	16.9
	Yes, and I completed it	79	19.7

4.5 Perceptions of the Use of TEL

4.5.1 Importance of Technology

The students were asked to rate their perception of the importance of technology in TEL. This was to help identify how learners visualized the importance of technology in teaching and learning. This was assessed using a Likert scale where 1=Strongly Agree; 2=Agree; 3= Neither agree nor disagree; 4=Disagree; 5=Strongly Disagree. Table 4.28 indicates the general, students' perception on the importance of TEL.

Table 4.29 shows how learners visualise the importance of technology in teaching and learning. Generally, the students agreed that technology is important as indicated by a mean weighted average of 1.9. The students think that technology is more important in achieving better results with weighted score of 1.81, followed by deep understanding with weighted mean score of 1.86 and exploring many topics was third with a weighted score of 1.88. Students also perceive that technology is important in improving their career prospects with weighted score of 2.0 and improving of IT management skills with weighted score of 1.9510 as least important push for technology in teaching and learning.

Table 4.29: Technology Importance

		Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree	Weighted Average
Better Results	N	229	256	67	9	13	1.81
	%	39.9	44.6	11.7	1.6	2.3	
Deep Understanding	N	221	248	73	16	13	1.86
	%	38.7	43.4	12.8	2.8	2.3	
Fast Work Completion	N	196	256	78	26	12	1.94
	%	34.5	45.1	13.7	4.6	2.1	
Explore Many Topics	N	196	275	72	15	10	1.88
	%	34.5	48.4	12.7	2.6	1.8	
Ease of Collaboration	N	177	277	79	26	11	1.97
	%	31.1	48.6	13.9	4.6	1.9	
Improve IT Management Skills	N	183	280	76	20	13	1.95
	%	32	49	13.3	3.5	2.3	
Improve Career Prospects	N	178	262	86	32	10	2.0
	%	31.3	46.1	15.1	5.6	1.8	
Category Average							1.92

4.5.2 Technology Usefulness

Majority of students think that most of the technologies listed in Table 4.30 are useful for their learning. The technologies that students see as less useful are: design and building web pages, using e-portfolio system, blog as course requirements, as indicated by the low mean scores (see table 4.30). TEL increases accessibility for students who would not be able to attend conventional classrooms. Most of them found it very useful for multimedia shows, supplementary lecture recording and Mobile Web Access to university services as indicated by high weighted mean in the table below. The average weighted mean score was 3.57, meaning that most students think that TEL could be useful.

4.5.3 Technology Issues

Adoption of technology comes with implications. Table 4.31 shows how the learners react to the use of technology in teaching and learning. Learners indicate that they would like to use videos and thus, they may skip classes (53%). Interestingly 58% of the respondents think that they were adequately prepared to use technology while entering the University. However, this is not necessarily reflected in the self-ratings on ICT skills. They feel ICTs help them to connect with other learners (69.6%), and to teachers (67.5%). 55.8% of them are concerned with privacy related issues while using technology. 54.5% respondents think that use of mobile phone in class distracts them, while 53.7% also think that it does distract teachers too. However, use of tablets/laptops in-class improves their engagement (63.5%). Table 4.31 reveals that the students are very matured in use of technology for teaching and learning.

Table 4.30: Technology Usefulness

	Do not know	Not at all useful	Useful to a limited extent	Neutral	Useful	Very useful	Weighted Average
Design and build web pages	11	43	98	98	208	114	3.38
Multimedia Shows	7	19	77	101	222	144	3.65
Audio/Video	10	16	81	122	211	129	3.57
Missed Lecture Recording	15	20	80	111	209	134	3.54
Lecture Revision Recording	8	16	80	103	227	133	3.62
Supplementary Lecture Recording	12	14	69	111	215	145	3.65
University Services Web Access	14	22	66	105	213	145	3.62
Mobile Web Access to University Services	13	20	73	94	218	150	3.64
Instant Messaging Communication	14	17	76	103	220	138	3.6
Social Media Collaboration	13	14	76	111	225	127	3.59
Micro-blogging Course Activities	16	25	62	120	218	127	3.54
Blog as Course Requirements	17	22	81	136	202	109	3.43
Administrative Instant Messaging	17	22	65	110	213	140	3.58
Blog Contribution as Course Requirements	21	24	72	132	212	108	3.43
Web Digital Files Share	13	19	67	114	229	124	3.58
Web Conferencing Collaboration	12	21	73	105	232	125	3.58
Course RSS Feeds Alerts	17	17	74	112	212	137	3.57
Course Text Message	18	16	64	99	217	153	3.65
Wiki Development as Course Requirements	15	20	57	115	221	138	3.62
Text Message Results	15	17	61	121	219	137	3.61
Pre-Class Discussion Text Messages	13	21	76	104	212	143	3.59
Personal Dashboard	18	14	70	104	214	150	3.63
e-portfolio System	21	17	78	126	208	119	3.47
Category Average							**3.57**

4.6 Summary

Learners at KIBU indicated that there was need to improve TEL infrastructure. It has been noted that most students learn in the face-to-face courses. While the access to technology is high, to enhance integration of TEL, KIBU should encourage students to own their ICT devices. Internet access is an area that needs improvement, and there is need to provide more connectivity points for learners, besides training all students to use LMS. Furthermore, training in computer-related skills such as multimedia authoring, graphic editing, digital audio, video editing, webpage design, learning management systems, and Web 2.0 tools should be undertaken. Students should be encouraged to interact with resources/services provided by KIBU as they would enhance their learning and optimise the use of available resources.

Students also acknowledged that TEL enhanced better results, deep understanding, exploring many topics, ease of collaboration, improved IT management and improved career prospects. However, adoption of technology comes with technological implications such as increased class absenteeism, interfering with concentration and mobile distraction in class which should be borne in mind during implementation of TEL.

Table 4.31: Technology Issues

		Do not know	Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree
I get more actively involved in courses that use technology	N	14	148	225	104	50	29
	%	2.5	26	39.5	18.2	8.8	5.1
I am more likely to skip classes when materials from course lectures are available online	N	11	112	188	97	107	52
	%	1.9	19.8	33.2	17.1	18.9	9.2
When I enter college, I was adequately prepared to use the technology needed in my courses	N	20	106	229	105	77	32
	%	3.5	18.6	40.2	18.5	13.5	5.6
Technology makes me feel connected to other students	N	15	122	274	98	40	20
	%	2.6	21.4	48.2	17.2	7	3.5
Technology makes me feel connected to teachers	N	11	119	265	98	50	26
	%	1.9	20.9	46.6	17.2	8.8	4.6
Technology interferes with my ability to concentrate and think deeply about subjects I care about	N	14	98	194	120	98	46
	%	2.5	17.2	34	21.1	17.2	8.1
I am concerned that technology advances may increasingly invade my privacy	N	18	85	233	103	94	36
	%	3.2	14.9	40.9	18.1	16.5	6.3
I am concerned about cyber security (password protection and hacking	N	16	130	235	95	54	36
	%	2.8	23	41.5	16.8	9.5	6.4
In-class use of mobile devices is distracting to my teacher	N	28	88	222	113	75	43
	%	4.9	15.5	39	19.9	13.2	7.6
Use of tablets/laptops in-class improves my engagement with the content and class	N	13	108	253	100	66	29
	%	2.3	19	44.5	17.6	11.6	5.1
Multitasking with my technology devices sometimes prevents me from concentrating on or doing the work that is	N	14	103	215	104	89	44
	%	2.5	18.1	37.8	18.3	15.6	7.7
When it comes to social media (e.g. Facebook, Twitter, Linkedin), I like to keep my academic life and social life	N	8	103	250	103	67	37
	%	1.4	18.1	44	18.1	11.8	6.5
I wish my teachers in the university would use and integrate more technology in their teaching	N	5	128	238	113	43	39
	%	0.9	22.6	42	20	7.6	6.9
Technology makes me feel connected to what's going on at the college/university	N	14	133	252	92	44	31
	%	2.5	23.5	44.5	16.3	7.8	5.5
In-class use of mobile devices is distracting to me	N	16	85	221	114	82	52
	%	2.8	14.9	38.8	20	14.4	9.1

Chapter Five: Conclusions and Recommendations

This baseline study shows KIBU is gearing towards integrating TEL in its educational delivery systems and process. The TEL preparedness score indicated “developing preparedness”, which indicates that KIBU has put in place “some of the aspects of a Technology-Enabled Learning system, policies and infrastructure, and is in the process of developing a robust system., which has put in place some of the aspects of TEL.” As deduced from this baseline study, KIBU should improve its ICT infrastructure in order to boost TEL. Both faculty and students observed that infrastructure was available but needed to be upgraded to excellent standards. There is need for KIBU to enhance its TEL infrastructure to accommodate both blended and eLearning modes of study.

KIBU may include the use of social media in its teaching and learning along with having a robust policy to integrate learning management system in its courses. It is noted that implementation of TEL also envisages that faculty at KIBU use ICT effectively for teaching their existing courses. From the results, it is evident that students and teachers are positively disposed to use TEL. This implies that many will embrace TEL implementation.

Skills related to use of advanced ICT skills for both teachers and students needs to be improved, as most of them are not using tools beyond word-processing, presentation and email. In order to strengthen the use of ICTs, there is need of training of teachers as well as students. Also, digital content creation and curation are important area, where faculty of KIBU are not active. Moving forward, this needs to be strengthened by setting up appropriate technology infrastructure for creation as well as dissemination of the knowledge resources created at KIBU. Therefore, as a priority, KIBU should focus on setting up a digital content creation facility for use by teachers.

Also, for faculty and students, the strongest barriers to using TEL are lack of training on existing LMS and available digital resources and services. Continuous capacity building of teachers will reduce the barriers of adoption of TEL. The institution should increase Wi-Fi access in faculty rooms and other areas where faculty spend much time.

The University’s ICT Policy had a few annexes that support TEL. However, these annexes did not address TEL sufficiently. The institution should develop a comprehensive TEL Policy to guide implementation and effective use of TEL. Once adopted, the policy should create awareness among faculty and students. In addition, there is need to increase institutional visibility by creating openly licensed course content and course packs that can be shared with the world as OER.

References

Cornu, B. (2011). Digital natives: How do they learn? How to teach them? Policy Brief. UNESCO Institute for Information Technologies in Education.

Kirkwood, A., & Price, L. (2016). *Technology-enabled learning implementation handbook.* Commonwealth of Learning.

Krejcie, R. V., & Morgan, D. W. (1970). Determining sample size for research activities. *Educational and Psychological Measurement*, 30: 607–610.

Latchem C. (2016). *Open and distance learning quality assurance in Commonwealth universities*. Commonwealth of Learning.

National Economic and Social Council of Kenya (NESC). (2007). Kenya Vision 2030: A globally competitive and prosperous Kenya. Retrieved from https://vision2030.go.ke

4710 Kingsway, Suite 2500
Burnaby, BC V5H 4M2
Canada
Tel: +1 604 775 8200
Fax: +1 604 775 8210
E-mail: info@col.org
Web: www.col.org

October 2020