COMMONWEALTH of LEARNING

Blended Course Experience at Kibabii University

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Executive Summary

Blended Course Experience at Kibabii University reports on a study conducted to evaluate the implementation of technology-enabled learning. A student survey was carried out in 20 courses that were being offered in the blended mode during the July–September and October–December semesters of 2021. The research involved both students and lecturers. The study collected data using questionnaires for students and interviews with lecturers. Most of the student survey questions were closed-ended, with one open-ended question, while the lecturer survey interviews consisted entirely of open-ended questions.

A total of 219 usable responses were received, yielding a response rate of 70.0%. This was considered satisfactory for qualitative and quantitative analysis. Data were analysed descriptively and inferentially and are presented in the form of tables. The study findings are intended to propel the implementation of blended learning in Kibabii University and other Kenyan universities.

1.0 Introduction

1.1 Background

Most higher learning institutions in developing countries are adopting modern technologies to enhance their mode of teaching (Abrahams, 2010). In line with this, there is a paradigm shift in the state of learning in Kenyan higher education institutions, as they are adapting technology-enabled learning (TEL) with a view to improving the quality of education (Cunningham, 2016) and reaching out to on-campus and off-campus learners. Kibabii University (KIBU) is one of the institutions that has intentionally decided to adopt TEL and blend it with face-to-face learning so as to improve the quality of student outcomes. KIBU has been implementing TEL since March 2020, with the support of the Commonwealth of Learning.

A baseline survey was carried out in 2020 to establish TEL readiness at KIBU (Barasa et al., 2021). The survey indicated that learners had a desire to learn using technology, and most of them had smartphones they could use to interact with online learning content. The lecturers also were motivated to integrate technology in learning. It was noted that lecturers had insufficient skills to integrate technology in learning. Capacity building was a suggested solution. The baseline report also noted that learners required training on the use of the university's learning management system (LMS) and available digital resources and services.

Following the survey, it was deemed feasible to implement blended learning, as the students were able to access the mobile phone version of the KIBU LMS and other web-based resources using their smartphones. Students who did not own laptops still took part in all the activities that had been added to the course.

All the students were trained on how to access and navigate through the LMS platform. Continuous user support was given to the learners by the university's e-learning technical staff.

Kibabii University's Open, Distance and Electronic Learning Directorate selected 50 teaching staff to be trained in order to spearhead the implementation of blended learning. The staff members were taken through five weeks of training on the development of blended courses in Moodle. This was done with support from the Commonwealth of Learning (COL). The members set up learning modules that incorporated both face-to-face teaching and online learning content. The facilitators used the KIBU LMS and COL platforms for resources and activities.

This document reports the findings of the survey and interviews conducted to assess the success of teaching and learning through the blended mode at KIBU.

1.2 Research Questions

This study was guided by the following research questions:

i. What is the level of learners' digital literacy and access to technology at KIBU?
ii. What is the students' blended learning course experience level at KIBU?
iii. What is the learners' course interest level at KIBU?
iv. What is the lecturers' experience of blended teaching at KIBU?

2.0 Literature Review

The Internet has opened up new modes of learning, including online and blended. Andersen et al. (2018) postulated that blended learning will continue to grow and aid many learners through knowledge acquisition. Blended learning creates an environment where learners study through both face-to-face and online modes. This presents learners with an opportunity to experience better learning content and interactions, which in turn enhance their problem-solving skills and engagement (Vaughan, 2014). Blended learning improves student success rate and satisfaction, as well as their sense of community, when compared with face-to-face courses (Means et al., 2013). For blended learning to be successfully adopted, though, there has to be institutional support for course redesign and planning (Tynan et al., 2015). Lecturers need to be trained in advance to generate learning content that suits this mode of learning. It is also essential to have an online learning platform in place, in addition to other relevant information technologies that support online learning. Having these learning resources in place cultivates a collaborative learning experience for students.

Blended learning incorporates both face-to-face and online learning, with direct instruction, indirect instruction, individualised online learning, and collaborative learning taking place. This includes face-to-face lecturing, learners interacting with course content online, peer group interactions, group discussions, access to e-libraries, virtual classrooms, online assessments, e-tuition and webinars (Lalima & Dangwal, 2017). For blended learning to be successfully implemented, lecturers must be well trained to nurture a scientific attitude, and must have a broad perspective on and positive approach towards change. The learning institution needs well-furnished learning areas, Internet connectivity, and video conferencing tools. Learners need Internet connectivity, along with formative and summative evaluation.

3.0 Methodology

A research methodology is a step-by-step guideline for how a study is carried out. It involves the research design, the data collection procedures, the reliability of the instruments that the researcher used to collect data, the sample size of the selected study population, and the data analysis instruments.

3.1 Research Design

This study was based on quantitative and qualitative research design. The learners and lecturers took part in the study by interacting in a blended mode of learning. The quantitative research design involved an empirical survey that collected data about blended learning. The KIBU Moodle platform was used for the online learning sessions. Learners' demographic data and blended learning course attributes were measured with respect to learning effectiveness.

The variables tested involved a blended learning study at the end of the semester. The courses under investigation were expected to have learning content that included videos, audio and text, as well as a communication component that was basically announcements and assessment components, which included quizzes, discussion forums, assignments and multiple-choice questions.

Data were collected using interviews with 20 lecturers — eight male and 12 female — who had taught at least one course using the blended learning mode.

3.2 Sample Size

A total of 1,768 students were enrolled in 20 courses offered during the July–September and October–December semesters of 2021. Some students enrolled in multiple courses. A sample size of 313 from a population of 1,768 was sufficient for this study (Krejcie & Morgan, 1970). A total of 219 students responded to the survey questionnaire, for a response rate of 70%. A non-proportional allocation method was used to ensure that all the enrolled courses were represented. Both undergraduate and postgraduate course populations were surveyed. The postgraduate course modules used in the survey were MIT 824: Green Computing, MIT 821: Enterprise Application Development and Architecture, and MBA 813: Technology and Operations Management. The rest were undergraduate courses. This is summarised in Table 3.1.

Table 3.1. Sample sizes

Course/Module	Population	Respondents
ACR222: Annual Crops	67	7
BCA111: Financial Accounting	181	3
BCO111: Introduction to Business Management	180	10
BIT113: Fundamentals of Programming	69	3
BIT212: Introduction to Databases	64	4
CSC116: Electrical Principles	66	15
CSC217: Introduction to Artificial Intelligence	69	49
CUT211: Instructional Methods and Strategies	326	16
CUT219: Introduction to Teaching and School Operations	154	6
EDF111: Introduction to Education	33	1
ENG313: Special Methods in English	63	18
MAA212: Calculus II	92	10
MAT251: Engineering Mathematics	9	1
MBA813: Technology and Operations Management	22	6
MIT821: Enterprise Application Development and Architecture	19	2
MIT824: Green Computing	12	1
SBT211: Systematics and Plant Taxonomy	124	41
SCH111: Introduction to Inorganic Chemistry	69	23
SSW111: Introduction to Social Work	99	2
SWA112: Stadi za Mawasiliano	50	1
Total	**1,768**	**219**

3.3 Data Collection

A data collection questionnaire prepared by COL (Bhagat, 2019) was adapted and administered to learners who took part in the study. It was mandatory for the learners to have studied through

the blended mode of learning. The questionnaire was comprised of five sections. The first section gathered general student information. The second section was general blended learning course information, the third covered digital literacy and access to technology, the fourth was on students' blended learning experience, and the fifth sought to determine why the module was of interest to the student. The data collected were analysed qualitatively and quantitatively to generate new knowledge about blended learning and its future at KIBU.

Quality control for the research instruments was ensured by subjecting the questionnaire to both validity and reliability tests. Validity was achieved through face and content validity, while the Cronbach's alpha coefficient was used to confirm the reliability of the instruments. The Cronbach's alpha (α) rating for five of the factors was "good," with four factors rated "acceptable," where $\alpha \geq 0.9$ is excellent; $0.7 \leq \alpha < 0.9$ is good; $0.6 \leq \alpha < 0.7$ is acceptable; $0.5 \leq \alpha < 0.6$ is poor; and $\alpha < 0.5$ is unacceptable (Field, 2009). The results of the reliability test are presented in Table 3.2.

Table 3.2. Overall reliability

	Number of Items	Cronbach's Alpha (α)	Cronbach's Alpha Value Descriptor
Digital literacy and Access to technology	3	0.86	Good
Course Design	7	0.87	Good
Learning Experience	7	0.83	Good
Personal factors	3	0.60	Acceptable
Attention	8	0.65	Acceptable
Relevance	9	0.62	Acceptable
Satisfaction	9	0.81	Good
Confidence	8	0.67	Acceptable
Attitude towards thinking and learning	10	0.82	Good

3.4 Data Analysis

The collected data were analysed with the aim of providing structure and generating meaning out of it. Both open-ended and closed-ended questions were formulated for data collection. The collected data were cleaned and coded to pave the way for analysis in order to assess the blended learning experience at KIBU. Descriptive data analysis was performed to describe general student information, general blended learning course information, digital literacy and access to technology, students' blended learning experience, and why the module was of interest to the students. This information is presented using frequency distribution, percentages and means.

4.0 Findings and Discussion

4.1 Student Survey

Students were asked to give their views on blended learning-related issues at KIBU, as presented in the sections that follow.

4.1.1 Digital literacy and access to technology

Students using the blended mode of learning were asked to state their level of agreement with statements about their digital literacy and access to technology. Table 4.1 shows that the majority of students (95.4%) agreed they were digitally literate, since they could comfortably use MS Office, browse the Web and navigate through the virtual learning environment. Only 2.3% of the respondents could not use perform these tasks. The survey found that 95.4% of students had excellent access to and use of digital tools such as laptops and smartphones, whereas eight of the students (3.6%) disagreed with the statement. In terms of their ability to access and use the KIBU learning management system, the majority of the students (91.8%) agreed that they were excellent, while 4.1% of students disagreed. All the parameters under digital literacy had a mean above four on a scale of one to five, indicating that students' digital literacy and access to technology was very high.

Table 4.1. Digital literacy and access to technology

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
My digital literacy skills (use MS Office, browse the Web and navigate through the virtual learning environment) are excellent.	87 (39.7%)	122 (55.7%)	5 (2.3%)	3 (1.4%)	2 (0.9%)	4.32
My access to and use of digital tools (laptop, smartphone) are excellent.	75 (34.2%)	132 (60.3)	4 (2.5%)	6 (2.7%)	2 (0.9%)	4.24
My ability to access and use the KIBU learning management system is excellent.	71 (32.4%)	130 (59.4%)	9 (4.1%)	6 (2.7%)	3 (1.4%)	4.19

4.1.2 Blended learning course experience

This question sought to find out the students' experience of blended courses in terms of course design, learning experience and personal factors.

4.1.2.1 Course design

Students using the blended mode of learning were asked to state their level of agreement with statements about the course design. Table 4.2 shows that the majority of students (94.1%) agreed the description of the course objectives, learning activities and assignments in their online course was excellent. Only four respondents disagreed, representing 1.9%. An aggregate of 204 (93.1%) respondents agreed that the expression of expectations for performance (e.g., online forums and assignments) in the course was excellent, with only seven respondents (3.2%) disagreeing. A total of 209 (95.5%) of the respondents agreed that their lecturer's overall organisation of the course was great, with two (0.9%) respondents disagreeing. A total of 198 (90.3%) respondents agreed that the continuity between the face-to-face class and online learning was good, with 13 (5.9%) respondents disagreeing. A total of 207 (94.1%) students agreed that the pace of the course was user friendly, while eight (3.7%) disagreed.

Table 4.2. Course design

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
Description of course objectives, learning activities and assignments in the online course was excellent.	83 (37.9%)	123 (56.2%)	9 (4.1%)	3 (1.4%)	1 (0.5%)	4.30
Expression of expectations for performance (e.g., online forums and assignments) in the course was excellent.	73 (33.3%)	131 (59.8%)	8 (3.7%)	5 (2.3%)	2 (0.9%)	4.22
The lecturer's overall organisation of the course was great.	86 (39.3%)	123 (56.2%)	8 (3.7%)	2 (0.9%)		4.34
Continuity between face-to-face class and online learning was good.	78 (35.5%)	120 (54.8%)	8 (3.7%)	11 (5.0%)	2 (0.9%)	4.19
The pace of the course was user friendly.	76 (34.7%)	131 (59.4%)	4 (1.8%)	8 (3.7%)		4.26
The lecturer's interest in my learning was good.	80 (36.5%)	130 (59.4%)	5 (2.3%)	4 (1.8%)		4.31
The lecturer's feedback on my performance in assignments and participation in the forums was very helpful.	77 (35.2%)	131 (59.8%)	7 (3.2%)	3 (1.4%)	1 (0.5%)	4.28
The lecturer provided orientation on the use of the online resources, activities and KIBU learning management system, which was very helpful.	86 (39.3%)	124 (56.6%)	4 (1.8%)	3 (1.4%)	2 (0.9%)	4.32
Overall course experience was excellent.	75 (34.2%)	132 (60.3%)	8 (3.7%)	3 (1.4%)	1 (0.5%)	4.26

Respondents agreed that the lecturer's interest in their learning was good. This represented 210 (95.9%) respondents, with four (1.9%) disagreeing. A total of 208 (95%) respondents agreed with the statement that the lecturer's feedback on their performance in assignments and participation in the forums was very helpful, while four (1.9%) disagreed. A total of 210 (95.9%) respondents agreed that the lecturer provided a very helpful orientation on the use of the online resources, activities and KIBU LMS, with five (2.3%) respondents disagreeing with the statement. Finally, 207 (94.5%) students agreed that the overall course experience was excellent, with four (1.9%) disagreeing. All the parameters under course design had a mean above four on a scale of one to five, indicating that the students rated the designed courses very highly.

4.1.2.2 Learning experience

Students using the blended mode of learning were asked to state their level of agreement with statements about their blended course learning experience. The results are summarised in Table 4.3.

Table 4.3. Learning experience

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
Multimedia resources on KIBU's learning management system enriched my learning experience.	71 (32.4%)	133 (60.7%)	8 (3.7%)	7 (3.4%)	–	4.22
Communicating online with students and the lecturer improved my learning.	71 (32.4%)	132 (60.3%)	11 (5.0%)	5 (2.3%)	–	4.23
Blended learning improved my time-management skills.	76 (34.7%)	131 (59.8%)	6 (2.7%)	4 (1.8%)	2 (0.9%)	4.26
Blended learning improved my digital literacy.	86 (39.3%)	125 (57.1%)	4 (1.8%)	3 (1.4%)	1 (0.5%)	4.33
Blended learning improved my performance in mid-semester tests and end-of-semester exams.	65 (29.7%)	128 (58.4%)	15 (6.8%	9 (4.1%)	2 (0.9%)	4.12
Blended learning enabled me to learn at my own time and pace, from anywhere, using any device.	93 (42.5%)	115 (52.5%)	6 (2.7%)	4 (1.8%)	1 (0.5%)	4.35
Use of the Moodle classic mobile app for viewing/reading learning resources; interacting with faculty and peers in forums; and submitting assignments was satisfactory.	76 (34.7%)	129 (58.9%)	7 (3.2%)	5 (2.3%)	2 (0.9%)	4.24

The majority of the students (204), representing 93.1% of the respondents, agreed that multimedia resources on KIBU's LMS enriched their learning experience, while 15 (7.1%) disagreed. A total of 203 (92.7%) of the respondents agreed that communicating online with students and the lecturer improved their learning, with 16 (7.3%) disagreeing. A majority of 207 (94.5%) agreed with the statement that blended learning improved their time-management skills, while six (2.7%) disagreed. An aggregate of 211 (96.4%) respondents agreed that blended learning improved their digital literacy, while four (1.9%) respondents disagreed. Further, 193 (88.1%) respondents agreed that blended learning improved their performance in mid-semester tests and end-of-semester exams, while 11 (5%) disagreed. An aggregate of 208 (95%) respondents agreed that blended learning enabled them to learn at their own time, at their own pace, from anywhere, using any device, with five (2.3%) disagreeing. A grand total of 205 (93.6%) respondents agreed that the use of the Moodle classic mobile app for viewing/reading learning resources, interacting with faculty and peers in forums, and submitting assignments was satisfactory, while seven (3.2%) disagreed. Hence, blended learning improved learner experience.

4.1.2.3 Personal factor

These questions sought to investigate the students' level of agreement with statements about personal factors when using the blended mode of learning. Table 4.4 shows a total of 126 (57.6%) respondents agreed that they felt more anxious in the blended course, while 66 (30.2%) disagreed with the statement. A total of 66 (30.1%) of the respondents agreed that they had trouble using the technologies in their blended course, with 135 (61.7%) disagreeing. This indicates that the majority of the respondents were comfortable using technologies in their course. In total, 176 (80.4%) respondents agreed that the blended course required more time and effort, while 34 (15.5%) disagreed. This was attributed to the fact that the students were using the learning management system for the first time.

Table 4.4. Personal factor

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
I felt more anxious in this course.	33 (15.1%)	93 (42.5%)	27 (12.3%)	49 (22.4%)	17 (7.8%)	3.35
I had trouble using the technologies in this course.	13 (5.9%)	53 (24.2%)	18 (8.2%)	107 (48.9%)	28 (12.8%)	2.62
This course required more time and effort.	51 (23.3%)	125 (57.1%)	9 (4.1%)	27 (12.3%)	7 (3.2%)	3.85

4.1.3 Course interest

This survey section sought to determine the students' interest in the blended course in terms of attention, relevance, satisfaction and confidence.

4.1.3.1 Attention

These questions sought to investigate the students' level of agreement with statements about their attention to the blended course. Table 4.5 shows a total of 199 (90.9%) respondents agreed that the lecturer knew how to make them feel enthusiastic about the subject matter of the blended course, with seven (3.2%) respondents disagreeing. A sum of 99 (45.2%) respondents agreed that very little in the blended course had captured their attention, while 101 (46.1%) disagreed with the statement. A total of 104 respondents (47.5%) agreed that the lecturer created suspense when building up to a point, with 88 (40.2%) of the respondents disagreeing. An aggregate of 155 (70.7%) respondents agreed that the respondents in the blended course seemed curious about the subject matter, while 36 (16.5%) disagreed. A grand total of 147 (67.1%) respondents agreed that the lecturer did unusual or surprising things that were interesting in the blended course, while 46 (21%) disagreed. A total of 203 (92.7%) respondents agreed that the lecturer used an interesting variety of teaching techniques in the blended course, with seven (3.2%) disagreeing. A sum of 58 (26.5%) respondents stated that they often daydreamed while in the blended course, while 139 (63.5%) disagreed. This implies that a majority of the respondents had good concentration while in the blended course. An aggregate of 166 respondents (75.8%) agreed that their curiosity was often stimulated by the questions asked or the problems given on the subject matter in the blended course, while 35 (26%) disagreed.

Table 4.5. Attention

	Strongly agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
The lecturer knows how to make us feel enthusiastic about the subject matter of this course.	81 (37.0%)	118 (53.9%)	13 (5.9%)	4 (1.8%)	3 (1.4%)	4.23
This course has very little in it that captures my attention.	32 (14.6%)	67 (30.6%)	19 (8.7%)	82 (37.4%)	19 (8.7%)	3.05
The lecturer creates suspense when building up to a point.	35 (16.0%)	69 (31.5%)	27 (12.3%)	74 (33.8%)	14 (6.4%)	3.17
The students in this course seem curious about the subject matter.	36 (16.4%)	119 (54.3%)	28 (12.8%)	28 (12.8%)	8 (3.7%)	3.67
The lecturer does unusual or surprising things that are interesting.	41 (18.7%)	106 (48.4%)	26 (11.9%)	41 (18.7%)	5 (2.3%)	3.63
The lecturer uses an interesting variety of teaching techniques.	82 (37.4%)	121 (55.3%)	9 (4.1%)	5 (2.3%)	2 (0.9%)	4.26
I often daydream while in this course.	17 (7.8%)	41 (18.7%)	22 (10.0%)	99 (45.2%)	40 (18.3%)	2.53
My curiosity is often stimulated by the questions asked or the problems given on the subject matter in this course.	47 (21.5%)	119 (54.3%)	18 (8.2%)	30 (13.7%)	5 (2.3%)	3.79

4.1.3.2 Relevance

This question sought to investigate the students' level of agreement with statements about the relevance of the blended course. Table 4.6 summarises the results. A total of 210 (95.9%) respondents agreed that what they were learning in the blended course would be useful to them, while four (1.8%) disagreed. This implies that the course content is relevant. A total of 214 (97.8%) of the respondents agreed that the lecturer made the subject matter of the blended module seem important, with four (1.8%) disagreeing. A sum of 59 (26.9%) respondents agreed that they did not see how the content of their course related to anything they already knew, while a majority of the respondents (147), representing 67.1%, disagreed with the statement. This indicates that the content related to what they knew. A total of 211 (96.4%) respondents agreed that in the blended course, they tried to set and achieve high standards of excellence, with three (1.4%) disagreeing. An aggregate of 216 (94%) respondents agreed that the content of the blended course related to their expectations and goals, while three (1.4%) disagreed. A grand total of 197 (89.9%) respondents stated that the students actively participated in the blended course, while seven (3.2%) disagreed. A total of 211 (96.3%) respondents agreed that to accomplish their goals, it was important that they do well in the blended course, with three (1.4%) disagreeing.

Table 4.6. Relevance

	Strongly agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
The things I am learning in this course will be useful to me.	104 (47.5%)	106 (48.4%)	5 (2.3%)	2 (0.9%)	2 (0.9%)	4.41
The lecturer makes the subject matter of this module seem important.	91 (41.6%)	123 (56.2%)	2 (0.9%)	2 (0.9%)	2 (0.9%)	4.37
I do not see how the content of this course relates to anything I already know.	20 (9.1%)	39 (17.8%)	13 (5.9%)	110 (50.2%)	37 (16.9%)	2.52
In this course, I try to set and achieve high standards of excellence.	100 (45.7%)	111 (50.7%)	5 (2.3%)	1 (0.5%)	2 (0.9%)	4.40
The content of this course relates to my expectations and goals.	98 (44.7%)	108 (49.3%)	10 (4.6%)	2 (0.9%)	1 (0.5%)	4.37
The students actively participate in this course.	80 (36.5%)	117 (53.4%)	15 (6.8%)	5 (2.3%)	2 (0.9%)	4.22
To accomplish my goals, it is important that I do well in this course.	108 (49.3%)	103 (47.0%)	5 (2.3%)	2 (0.9%)	1 (0.5%)	4.44
I do not think I will benefit much from this course.	19 (8.7%)	39 (17.8%)	13 (5.9%)	99 (45.2%)	49 (22.4%)	2.45
The personal benefits of this course are clear to me.	81 (37.0%)	127 (58.0%)	6 (2.7%)	4 (1.8%)	1 (0.5%)	4.29

A sum of 58 (26.5%) respondents did not think they would benefit much from the blended course, while the majority of the respondents (148), representing 67.6%, thought they would benefit greatly from the blended course. A total of 208 (95 %) respondents agreed that the personal benefits of the blended course were clear to them, while five (2.3%) disagreed. It can be concluded that the blended course was relevant for its purpose.

4.1.3.3 Satisfaction

This question sought to investigate the students' level of agreement with statements about the satisfaction they gained from the blended course. The results are summarised in Table 4.7. A total of 213 (97.3%) of the respondents agreed that they had to work very hard to succeed in the blended course, with six (2.7%) disagreeing. A sum of 206 (94.1%) of the respondents agreed that the blended course gave them a lot of satisfaction, while five (2.3%) stated otherwise. A total of 172 (78.6%) of the respondents felt that the grades or other recognition they received were fair, whereas 21 (9.6%) disagreed with the statement. A total of 207 (94.5%) of the respondents agreed that they enjoyed working on the blended course, while 12 (5.5%) disagreed. A total of 196 (89.5%) of the respondents agreed that they were pleased with the lecturer's evaluations of their work compared to how well they thought they had done, while nine (4.1%) disagreed.

Table 4.7. Satisfaction

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
I have to work very hard to succeed in this course.	100 (45.7%)	113 (51.6%)	5 (2.2%)	1 (0.5%)	–	4.42
This course gives me a lot of satisfaction.	85 (38.8%)	121 (55.3%)	8 (3.7%)	3 (1.4%)	2 (0.9%)	4.30
I feel that the grades or other recognition I receive are fair compared to other students.	51 (23.3%)	121 (55.3%)	26 (11.9%)	13 (5.9%)	8 (3.7%)	3.89
I enjoy working through this course.	79 (36.1%)	128 (58.4%)	12 (5.5%)	–	–	4.31
I am pleased with the lecturer's evaluations of my work compared to how well I think I have done.	69 (31.5%)	127 (58.0%)	14 (6.4%)	7 (3.2%)	2 (0.9%)	4.16
I feel satisfied with what I am getting from this course.	73 (33.3%)	126 (57.5%)	11 (5.0%)	6 (2.7%)	3 (1.4%)	4.19
I feel rather disappointed with this course.	21 (9.6%)	37 (16.9%)	14 (6.4%)	103 (47.0%)	44 (20.1%)	2.49
I feel that I get enough recognition for my work in this course by means of grades, comments or other feedback.	62 (28.3%)	135 (61.6%)	17 (7.8%)	3 (1.4%)	2 (0.9%)	4.15
The amount of work I have to do is appropriate for this type of course.	60 (27.4%)	145 (66.2%)	11 (5.0%)	2 (0.9%)	1 (0.5%)	4.19

A grand total of 199 (90.8%) of the respondents felt satisfied with what they were getting from the blended course, while nine (4.1%) felt dissatisfied. A sum of 58 (26.5%) of the respondent agreed that they felt rather disappointed with the blended course, while 147 (67.1%) disagreed with the statement. The majority of the respondents were not disappointed with the blended course. An aggregate of 197 (89.9%) agreed that they received enough recognition of their work in the blended course by means of grades, comments or other feedback, while three (1.4%) felt they did not. A total of 205 (93.6%) of the respondents agreed that the amount of work they had to do was appropriate for the type of blended course, while three (1.4%) disagreed.

4.1.3.4 Confidence

This question sought to investigate the students' level of agreement with statements about the confidence they had during the blended course. Table 4.8 summarises the findings. A total of 212 (96.8%) of the respondents felt confident that they would do well in the blended course, with seven (3.2%) disagreeing. A total of 127 (57.9%) of the respondents felt that one had to be lucky to get good grades in the blended course, with 64 (29.2%) disagreeing. A sum of 143 (65.2%) of the respondents agreed that their success in a blended course depended on them, while 54 (24.7%) disagreed. A grand total of 50 (22.8%) of the respondents agreed with the statement that the subject matter of the blended course was just too difficult for them, with 148 (67.6%)

disagreeing. This implies that majority of the respondents found the subject matter of their blended course to be understandable.

Table 4.8. Confidence

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
I feel confident that I will do well in this course.	107 (48.9%)	105 (47.9%)	7 (3.2%)	–	–	4.46
You have to be lucky to get good grades in this course.	52 (23.7%)	75 (34.2%)	28 (12.8%)	51 (23.3%)	13 (5.9%)	3.47
Whether or not I succeed in this course is up to me.	42 (19.1%)	101 (46.1%)	22 (10.0%)	37 (16.9%)	17 (7.8%)	3.52
The subject matter of this course is just too difficult for me.	14 (6.4%)	36 (16.4%)	21 (9.6%)	121 (55.3%)	27 (12.3%)	2.49
It is difficult to predict what grade the lecturer will give my assignments.	33 (15.1%)	84 (38.4%)	38 (17.4%)	51 (23.3%)	13 (5.9%)	3.33
As I am taking this course, I believe that I can succeed if I try hard enough.	90 (41.1%)	113 (51.6%)	9 (4.1%)	7 (3.2%)		4.31
I find the challenge level in this module to be about right: neither too easy nor too hard.	36 (16.4%)	113 (51.6%)	44 (20.1%)	23 (10.5%)	3 (1.4%)	3.71
I get enough feedback to know how well I am doing.	57 (26.0%)	128 (58.4%)	21 (9.6%)	9 (4.1%)	4 (1.8%)	4.03

A sum of 117 (53.5%) of the respondents agreed that it was difficult to predict what grade the lecturer would give their assignments, with 64 (29.2%) disagreeing. A grand total of 203 (92.7%) of the respondents agreed that as they took the blended course, they believed they could succeed if they tried hard enough. An aggregate of 149 (68%) of the respondents agreed that they found the challenge level in the blended module neither too easy nor too hard, with 26 (11.9%) disagreeing. Finally, 185 (84.8%) of the respondents agreed that they received enough feedback to know how well they were doing, while 13 (5.9%) disagreed. It can be concluded that the majority of the respondents had confidence during the blended course.

4.2 Attitudes Towards Thinking and Learning

Table 4.9 presents the students' level of agreement with statements regarding their attitude towards thinking and learning in the blended course. An aggregate of 189 (86.3%) of the respondents agreed that they like to understand where other people are coming from and the experiences that led them to feel the way they do, with 30 (13.7%) being in disagreement. A total of 178 (81.3%) of the respondents agreed that the most important part of their education had been learning to understand people who are different from them, while 22 (10.1%) of the respondents disagreed. A sum of 197 (90.0%) of the respondents felt that the best way for them to achieve their own identity was to interact with a variety of other people, while nine (3.6%) of the respondents disagreed. A grand total of 206 (94.1%) of the respondents agreed that they enjoy hearing the opinions of people who come from backgrounds different from theirs, since

this helps them to understand how the same things can be seen in such different ways. A total of 199 (89.5%) of the respondents agreed that they are always interested in knowing why people say and believe the things they do, with four (1.8%) disagreeing. An aggregate of 196 (89.5%) of the respondents agreed that they usually tried to think with people in the blended course instead of against people, whereas seven (3.2%) of the respondents disagreed.

Table 4.9. Attitudes towards thinking and learning

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
I like to understand where other people are "coming from," what experiences have led them to feel the way they do.	66 (30.1%)	123 (56.2%)	21 (9.6%)	9 (4.1%)	–	4.12
The most important part of my education has been learning to understand people who are very different from me.	51 (23.3%)	127 (58.0%)	19 (8.7%)	19 (8.7%)	3 (1.4%)	3.93
I feel that the best way for me to achieve my own identity is to interact with a variety of people.	63 (28.8%)	134 (61.2%)	14 (6.4%)	5 (2.2%)	4 (1.4%)	4.14
I enjoy hearing the opinions of people who come from backgrounds different from mine, since it helps me to understand how the same things can be seen in such different ways.	77 (35.2%)	129 (58.9%)	9 (4.1%)	3 (1.4%)	1 (0.5%)	4.27
I am always interested in knowing why people say and believe the things they do.	69 (31.1%)	130 (58.4%)	16 (7.3%)	4 (1.8%)		4.21
I try to think with people instead of against them.	68 (31.1%)	128 (58.4%)	16 (7.3%)	5 (2.3%)	2 (0.9%)	4.16
I'm more likely to try to understand someone else's opinion than to try to evaluate it.	56 (25.6%)	130 (59.4%)	18 (8.2%)	14 (6.4%)	1 (0.5%)	4.03
I tend to put myself in other people's shoes when discussing controversial issues, to see why they think the way they do.	71 (32.4%)	128 (58.4%)	13 (5.9%)	7 (3.2%)	–	4.20
Through empathy, I can obtain insight into opinions that differ from mine.	62 (27.9%)	126 (57.6%)	19 (8.5%)	13 (5.9%)	–	4.07
When I encounter people whose opinions seem alien to me, I make a deliberate effort to "extend" myself into that	66 (30.1%)	124 (56.6%)	20 (9.1%)	8 (3.7%)	1 (0.5%)	4.12

	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree	Mean
person, to try to see how they could have those opinions.						
In evaluating what someone says, I focus on the quality of their argument, not on the person who's presenting it.	65 (29.7%)	130 (59.4%)	19 (8.5%)	3 (1.4%)	2 (0.9%)	4.16
I like playing devil's advocate, arguing the opposite of what someone is saying.	22 (10.0%)	63 (28.8%)	28 (12.8%)	76 (34.7%)	30 (13.4%)	2.87
I find that I can strengthen my own position through arguing with someone who disagrees with me.	42 (19.2%)	102 (46.6%)	27 (12.3%)	38 (17.4%)	10 (4.5%)	3.58
I often find myself arguing, in my head, with the authors of books that I read, trying to logically figure out why they're wrong.	35 (16.1%)	117 (53.4%)	25 (11.4%)	33 (15.1%)	9 (4.1%)	3.62
It's important for me to remain as objective as possible when I analyse something.	61 (27.9%)	133 (60.7%)	18 (8.2%)	4 (1.8%)	3 (1.4%)	4.12
I have certain criteria I use for evaluating arguments.	58 (26.5%)	138 (63.0%)	13 (5.8%)	10 (4.5%)	–	4.10
I try to point out weaknesses in other people's thinking to help them clarify their arguments.	57 (26.0%)	121 (55.3%)	24 (11.0%)	15 (6.8%)	2 (0.9%)	3.98
One could call my way of analysing things "putting them on trial" because I am careful to consider all the evidence.	49 (22.4%)	136 (62.1%)	27 (12.3%)	7 (3.2%)	–	4.03
I value the use of logic and reason over the incorporation of my own concerns when solving problems.	65 (29.7%)	129 (58.9%)	24 (11.0%)	1 (0.5%)	–	4.17
I spend time figuring out what's "wrong" with things. For example, I'll look for something in a literary interpretation that isn't argued well enough.	51 (23.3%)	132 (60.3%)	23 (10.3%)	11 (5.0%)	2 (0.9%)	4.00

A sum of 186 (85.0%) of the respondents agreed that they were more likely to try to understand someone else's opinion than to try to evaluate it, while 15 (6.9%) disagreed. A total of 199 (90.8%) of the respondents agreed that they tend to put themselves in other people's shoes when discussing controversial issues, to see why the other people think the way they do. A grand total of 188 (85.5%) of the respondents agreed that through empathy, they can obtain insight into

opinions that differ from theirs, with 13 (5.9%) disagreeing. A total of 190 (86.7%) of the respondents agreed that when they encounter people whose opinions seem alien to them, they make a deliberate effort to "extend" themselves into that person, to try to see how the person could have those opinions, while nine (4.4%) disagreed. An aggregate of 195 (89.1%) of the respondents agreed that they focus on the quality of an argument when evaluating what someone says but not on the person who's presenting it, while five (2.3%) felt that they do not. A total of 85 (38.8%) of the respondents agreed that they like playing the devil's advocate by arguing the opposite of what someone is saying, with 106 (48.1%) disagreeing. A grand total of 144 (65.8%) of the respondents agreed that they could strengthen their own position through arguing with someone who disagrees with them, while 48 (21.9%) disagreed. A sum of 152 (69.5%) of the respondents often found themselves arguing, in their head, with the authors of books that they read, trying to logically figure out why the authors are wrong, while 42 (19.2%) did not. A total of 194 (88.6%) of the respondents agreed that it is important for them to remain as objective as possible when analysing something, with seven (3.2%) in disagreement. A sum of 196 (89.5%) of the respondents agreed that they have certain criteria they use for evaluating arguments, with ten (4.5%) having no specified criteria. An aggregate of 178 (81.3%) of the respondents agreed that they try to point out weaknesses in other people's thinking to help them clarify their arguments, while 17 (7.7%) disagreed. A grand total of 185 (84.5%) of the respondents agreed that one could call their way of analysing things "putting them on trial" because they are careful to consider all the evidence, while seven (3.2%) disagreed with the statement. A total of 194 (88.6%) of the respondents agreed that they value the use of logic and reason over the incorporation of their own concerns when solving problems, with one (0.5%) being in disagreement. Finally, 183 (83.6%) of the respondents agreed that they spend time figuring out what is "wrong" with things. This included looking for something in a literary interpretation that is not argued well enough.

4.3 Performance

Was there any significant difference between students' learning performance in blended learning courses as opposed to non-blended learning courses? Students' performance in courses presented via the blended learning mode was compared against the courses presented in the non-blended learning mode. The non-blended and blended groups' pre-test results (on prior knowledge about computer literacy) are presented in Table 4.10.

Table 4.10. Comparison of prior knowledge about computer literacy in the non-blended and blended groups

Group	N	Mean	Standard Deviation	df	*t* value	*p*
Non-blended	300	25.062	12.834	177	0.999	0.319
Blended	250	24.140	13.322			

Table 4.10 shows how the independent samples *t*-test technique was applied to the mean pre-test scores for the non-blended and blended groups to examine the differences in prior knowledge. The test results indicated that there was no significant difference in prior knowledge about the

course between the non-blended and blended groups ($p = 0.319$). The non-blended and blended groups' post-test results (course achievement) are presented in Table 4.11.

Table 4.11. Comparison of course achievement in the non-blended and blended groups

Group	N	Mean	Standard Deviation	df	*t* value	*p*
Non-blended	300	52.013	9.970	177	6.818	0.000
Blended	250	60.590	10.103			

In Table 4.11, the independent samples *t*-test technique was applied to the mean post-test scores for the non-blended and blended groups to examine the differences in course achievement. According to the test results, there was a significant difference in course achievement in terms of mean score obtained; the values for the non-blended group were mean = 52.013, with a standard deviation of 9.970, compared with the blended groups' values of mean = 60.590 and a standard deviation of 10.103 (t value = 6.818, $p < 0.001$). The experimental (blended) group's mean score on the achievement test was higher than the control (non-blended) group's. This result indicated that the students in the blended mode of learning performed better than the students in the non-blended mode.

Table 4.12. Independent sample *t*-test of the final scores for different courses

Course/Module	Non-blended Mean (Standard Deviation)	Blended Mean (Standard Deviation)	*t* value
ACR 222 Annual Crops	3.72(0.56)	4(0.707)	4.303
BCA111 Financial Accounts 1	3.68(0.47)	4.5(0.781)	3.182
BCO111 Introduction to Business Management	3.6(0.67)	3.556(0.726)	2.571
BIT 113 Fundamentals of Programming	3.71(0.89)	3.67(0.577)	6.314
BIT212 Introduction to Databases	2.8(0.92)	3.5(0.577)	6.213
CSC116 Electrical Principles	3.7(0.78)	4.2(0.561)	1.390
CSC217 Introduction to Artificial Intelligence	3.82(0.88)	3.41(0.734)	0.89
CUT211: Instructional Methods and Strategies	3.35(0.88)	3.75(0.447)	7.77
CUT219 Introduction to Teaching and School Operations	3.67(.0.89)	3.5(0.887)	2.43
ENG313 Special Methods in English	3.98(0.65)	3.89(0.583)	8.93
MAA212 Calculus II	3.5(.0.630)	3.1(0.738)	7.95
MBA813 Technology and Operation	3.12(0.679)	4(0.558)	5.56
SCH111 Introduction to Inorganic Chemistry	3.90(0.856)	3.85(0.483)	6.32
SSW111 Introduction to Social Work	3.72(0.89)	4.29(0.784)	4.55

To calculate means, letter grades were converted to numerical values: A = 5, B = 4, C = 3, D = 2, E = 1. An independent sample *t*-test was conducted to compare the learning performance of the students in the non-blended and blended groups. Table 4.12 shows the means and standard deviations for the courses in blended groups and non-blended groups and their associated *t* values. These were achieved at a *p* value of 0.001. For ACR 222 Annual Crops, the blended group had a mean of 4.0 while the non-blended group had a mean of 3.72, which implies that the blended group performed better than the non-blended group. For BCA111 Financial Accounts 1, the blended group had a mean of 4.5 while the non-blended group had a mean of 3.68, implying the blended group performed better. For BCO111 Introduction to Business Management, the blended group had a mean of 3.556 while the non-blended group had a mean of 3.6, suggesting the non-blended group performed better. For BIT 113 Fundamentals of Programming, the blended group had a mean of 3.67 while the non-blended group had a mean of 3.71, implying the non-blended group performed better. For BIT 212 Introduction to Databases, the blended group had a mean of 3.5 while the non-blended group had a mean of 2.8, suggesting the blended group performed better. For CSC116 Electrical Principles, the blended group had a mean of 4.2 while the non-blended group had a mean of 3.7, implying the blended group performed better. For CSC217 Introduction to Artificial Intelligence, the blended group had a mean of 3.41 while the non-blended group had a mean of 3.82, implying the non-blended group performed better. For CUT211 Instructional Methods and Strategies, the blended group had a mean of 3.75 while the non-blended group had a mean of 3.35, suggesting the blended group performed better. For CUT219 Introduction to Teaching and School Operations, the blended group had a mean of 3.5 while the non-blended group had a mean of 3.67, implying the non-blended group performed better. For ENG313 Special Methods in English, the blended group had a mean of 3.89 while the non-blended group had a mean of 3.98, implying the non-blended group performed better. For MAA212 Calculus II, the blended group had a mean of 3.1 while the non-blended group had a mean of 3.5, implying the non-blended group performed better. For MBA813 Technology and Operation, the blended group had a mean of 4.0 while the non-blended group had a mean of 3.12, implying the blended group performed better. For SCH111 Introduction to Inorganic Chemistry, the blended group had a mean of 3.85 while the non-blended group had a mean of 3.90, implying the non-blended group performed better. Finally, for SSW111 Introduction to Social Work, the blended group had a mean of 4.29 while the non-blended group had a mean of 3.72, suggesting the blended group performed better.

Table 4.12 shows that there was a significant difference in performance in eight out of 14 courses: ACR 222 Annual Crops, BCA 111 Financial Accounts 1, BCO 111 Introduction to Databases, CSC 116 Electrical Principles, ENG 313 Special Methods in English, MBA 813 Technology and Operation, SCH 111 Introduction to Inorganic Chemistry, and SSW 111 Introduction to Social Work.

On the other hand, students in the non-blended group for the courses BCO 111 Introduction to Business Management, BIT 113 Fundamentals of Programming, CSC 217 Introduction to

Artificial Intelligence, CUT 211 Instructional Methods and Strategies, CUT 219 Introduction to Teaching and School Operations, and MAA 212 Calculus II performed better than in the blended group.

Good performance in the eight courses mentioned above could be attributed to the fact that faculty teaching the courses designed them with weekly discussion forums and encouraged learners to participate in the forums, whereas the six other courses had no discussion forums.

4.4 Students' Course Participation Comments

Students were asked to give their views concerning the blended course they participated in. This open-ended question elicited significantly positive feedback from the students. With the current Covid-19 pandemic, all students appreciated the existence of blended learning, since they could access learning materials from anywhere at any time. This is further explained in the following extracts from their comments:

> *Blended teaching is much important to the current world pandemic. It can enable a learner to learn from where he/she is.*
>
> *I am having the very first experience with blended learning, this should be fully implemented in KIBU.*

Two of the respondents commented on relationships among students in the blended course.

> *This course enables learners to know how to relate with each other.*
>
> *The participation by students in the forums was very good as it helped me to know what is expected of a particular topic.*

Several students loved the way the courses were presented. Some of the comments were:

> *The course was good, it provided detailed information that enabled me to learn new ideas and it enhanced a positive attitude towards my career.*
>
> *Course objectives were well presented by the lecturer in every topic. Lectures were well presented by the lecturer.*

One student experienced some difficulties in the blended course and suggested an improvement in the learning management system interface:

> *Improve the e-learning interface for easy access to material, assignment and objectives.*

4.5 Lecturers' Experience of Blended Teaching and Learning

Lecturers were interviewed on their experience with blended teaching.

4.5.1 Internet access

This interview question elicited information about where the lecturers accessed the Internet. A total of 35% indicated home, while 65% accessed it at the university. This is attributed to KIBU's unlimited, free and stable Internet accessibility.

4.5.2 Devices used to access the Internet

Lecturers were asked about the types of devices they used to access the Internet, with the largest portion (45%) using a laptop. Interestingly, 30% accessed the Internet using a smartphone, 15% used desktop computers, and 10% used all three options. KIBU has a policy of ensuring that all lecturers are provided with desktop computers, while also encouraging the bring your own device (BYOD) concept.

4.5.3 Comfort with using ICT in teaching

When asked whether they were comfortable using ICT in teaching, the majority of the interviewed lecturers (85%) indicated that they were comfortable, with only 15% not being comfortable. This is further demonstrated in the following quotes:

> *COL trained us to use ICT tools in teaching, why should I not be comfortable?*
>
> *Since I am perfectly trained in using ICT tools, it makes me comfortable using them while teaching.*

4.5.4 Technology supporting teaching

When asked whether technology supports their teaching, all the lecturers (100%) agreed. Some of the reasons provided to support the agreements were: technology brings about automation, which makes it easy to incorporate students all over the nation in your class; technology makes open educational resources available for both students and lecturers; and reference works and technology support online teaching and learning. Some of the lecturers' statements were:

> *Technology helps me and learners explore more.*
>
> *Technology incorporates students all over the nation.*
>
> *Technology brings flexibility in teaching and learning.*

4.5.5 Experience with KIBU Moodle LMS

This question required lecturers to state how they used KIBU's LMS and describe both positive and negative experiences they had had. Lecturers stated that they used it to upload course content, manage classes and assess students. Some positive experiences were noted, including the flexibility of the environment, as students and lecturers can attend the class from anywhere, the enhancement of digital content design skills, and the ease of managing a class with many students. Some of the quotes on positive experiences are:

> *We had chats, I input content for students to access freely, assignments and chats were online.*
>
> *I uploaded notes, videos, pictorials, lectures online to teach.*

Negative experiences were also registered, and they included: the use of the LMS for teaching relies heavily on Internet connectivity, the attendance of online classes was at times not satisfactory, and some students lived in denial because they did not like the use of technology in learning.

4.5.6 Training on the use of the KIBU Moodle LMS

When asked to state whether they had received training on using the Moodle LMS, all the sampled lecturers (100%) agreed. They were further prompted to state how the training contributed to the delivery of the blended course they had taught. The responses included: enhancement of skills in designing and delivering interactive digital content; knowledge on how to upload learning materials to the platform; setting and marking quizzes and assignments; improving skills in video development; and enabling learners to access more learning materials in advance. Some of the quotes are:

> *I was taught how to upload learning materials on the platform, how to set quizzes and mark.*
>
> *It enhanced my digital skills on how to design online courses.*

4.5.7 Blended learning goal

When lecturers were urged to state the goals or benefits they were seeking through the use of blended learning in their course delivery, they stated that the most immediate reason was to minimise physical contact between the students and the lecturers during the Covid-19 pandemic. Some of the lecturers stated that the reason for using blended learning was to reach out to as many students as possible and have students learn at their own pace. Also, flexibility in course delivery helped them cover the syllabus faster and enabled them to handle many groups of learners at a time. Finally, technology-enabled learning is the way to go in the 21st century and in Fourth Industrial Revolution. Some of the extracts from the interviewees were:

> *To reach as many students as possible and have students learn at their own pace.*
>
> *Flexibility in delivery of course, helps to cover syllabus faster and can handle many groups at a time.*

When asked about their views on the use of blended learning and its relevance as a pedagogical practice, lecturers stated that it enhances teaching, since tools exist to select effective learning activities and resources relevant to their courses. As blended learning is learner centred, it allows room for self-paced learning, so students can access resources at their convenience. In summary, blended learning was deemed to be very relevant.

4.5.8 Development of blended course

When asked whether they had developed a blended course before, all interviewed lecturers (100%) agreed. They were asked to state the tools, platforms, software and any other means they used to develop their blended course. They indicated PowerPoint, YouTube, Moodle, Microsoft Office, Latex, Mathematica, and Ispring.

4.5.9 Significance of blended learning

When asked to state the significance of blended learning in their teaching profession, lecturers stated that digital content can be reused when teaching different groups of learners. Further, it had enabled the continuation of academic learning during the pandemic. It also makes learning convenient, since one can access learning materials in advance. Finally, one can reach as many

groups of students as possible despite limited resources, such as lecture space. This is illustrated in the following statement:

> *Blended learning is a good thing, recorded videos and interactive lectures can enhance effective teaching and learning.*

4.5.10 Perceptions of blended courses

When asked about their perception of blended learning, the interviewed lecturers stated that it requires self-discipline in the lecturer and the learner. Most of the lecturers stated that it is the future for the education system and the best approach for current learners, since they are constantly online. Lecturers also stated that it was an effective mode of teaching and learning and hence needs to be embraced:

> *Good approach for current learners who are more online.*

4.5.11 Barriers to the development of blended courses

When asked to state the barriers they face in the development of blended courses, interviewed lecturers reported that the digital divide among students was a great challenge, since the use of blended learning may not be all-inclusive because some learners do not have access to the basic infrastructure — specifically, electricity and devices — required to access learning content. Internet instability, unaffordable data bundles, and inadequate technical expertise were also mentioned as challenges:

> *Internet, limited resources, some students lack devices to use access blended courses.*

> *Network connectivity, appropriate tools and software to design not affordable.*

4.5.12 Open educational resources use

When asked whether they ever used open educational resources (OER) in their courses, 55% of the interviewed lecturers agreed that they had used them, while 45% had not.

4.5.13 Knowledge of copyright

When respondents were asked whether they had had knowledge of copyright law with respect to educational materials before the development of the blended course, 75% agreed while 25% disagreed. Some of the lecturers who agreed stated that copyright law allows reusability and fair distribution, one stated that he teaches a course on information technology ethics and thus it is part and parcel of what he teaches. Copyright law is adhered to by masters and doctorate students when conducting research. One interviewee stated:

> *The university has intellectual [property] rights policy which is well articulated to staff and students*.

4.5.14 Effect of blended teaching

When asked whether the blended course had changed the way they teach, all the lecturers (100%) agreed. When prompted to state the extent to which the blended learning approach had changed their teaching practice, most lecturers stated that it had changed to a large extent, since

blended teaching was a paradigm shift from the face-to-face approach they were used to. They noted it limited physical contact hours in a course, and that one could use various teaching approaches, making it easy to cover the syllabus. It also enabled them to involve their students more in content delivery. One stated:

Teaching online is a new experience, I was used to old traditional face-to-face.

4.5.15 Impact of the blended approach on learners

When asked how their blended approach impacted their students' learning experiences, interviewed lecturers stated that it catered for learners with different learning abilities, since they could access content at their convenience and thus were motivated. Also, students were able to do class assignments from the comfort of their home and network through forums and chats. One lecturer stated that some students were struggling to embrace technology in learning, and thus were living in denial. Two lecturers stated:

It has positively impacted learners with various learning abilities and approaches.

They are able to follow up classes on their own and through forums and chats.

4.5.16 Students' view of the blended approach

When asked whether their students liked the blended approach, 90% of the interviewed lecturers agreed while 10% disagreed. Those who agreed stated that the blended course was very interesting, interactive and self-driven, since students felt in control and content was available at their convenience. Those who disagreed stated that some of the students were still resistant because of digital illiteracy, lack of devices to access content, and lack of affordable, student-friendly data bundles to access online resources. Some of them stated:

Interactive and self-driven, students feel they are in control.

Not really: some are still resistan[t] because of digital illiteracy, lack devices, no affordable student-friendly [data] bundle purchases to use access online resources.

4.5.17 Policies/regulations supporting blended learning

When asked whether KIBU has policies/regulations supporting blended learning, 60% of the interviewed lecturers stated that they exist, while 40% were not sure. Those who agreed stated the existence of ODEL and TEL policies. ODEL and TEL policies are being fully implemented at KIBU.

4.5.18 Blended learning support

When asked how blended learning was supported at KIBU, the interviewed lecturers reported that technical support, the LMS platform (Moodle) and the Internet were available on campus. Some lecturers noted the existence of the ODEL Directorate, which supports staff during content development by providing regular training sessions. Also, the university's management gives its full support, including financial support for training staff and students and maintaining the e-learning platform. Some lecturers stated:

There is a directorate and support staff to aid during content development.

Management gives it full support, including financial support for training and maintaining the e-learning platform.

4.5.19 Collaboration

When asked whether they consider collaboration to be important for the development of blended learning courses, 95% of the interviewed lecturers agreed, while 5% disagreed. Those who agreed stated that with collaboration, they share experiences and can gain new ideas and insights. They also noted that designing courses collaboratively using OER saves time.

4.5.20 Mechanisms to encourage blended learning

Interviewees were urged to state any mechanism(s) they think might encourage other instructors to use the blended learning approach. They stated that lecturers need capacity building on digital literacy. Also, KIBU needs to provide enough infrastructure, such as computers and bandwidth. KIBU also should consider having workshops to encourage lecturers to adopt blended learning. Finally, KIBU should introduce rewards for every blended course developed.

5. Conclusion and Recommendations

5.1 Conclusion

The results of the study on lecturers' perceptions of the role played by technology in teaching and learning revealed that lecturers have an overall positive perception of the role of technology in teaching and learning and view it as a "good approach for current learners who are more online." Students also rated the blended courses significantly positively, because they provide a safer learning environment and increase student engagement hence ensuring autonomy within the course; 94.5% students agreed that the overall course experience was excellent. Blended learning is an approach that blends face-to-face classroom learning and online learning. Students noted that the approach has improved their learning experience, improved their time management skills, and hence drastically improved their performance.

Blended learning can have different configurations of face-to-face classroom learning and online learning in different contexts. Students appreciated the lecturers' ways of capturing their attention in a blended course environment, as indicated by 46.1% of the students. Lecturers used interesting varieties of teaching techniques to make students feel enthusiastic about the subject matter of the course.

Blended learning was observed to be convenient and more engaging and therefore relevant for students in a given course. This was because 94.5% of the students enjoyed working through the course and were comfortable with the grades they received. This finding confirms the importance of collaboration between the lecturers and students in a blended course environment.

Students' performance while using the blended learning mode was noted to be better compared to their performance while using the non-blended mode of learning, with a mean of 60.590 for

the blended group compared to a mean of 52.013 for the non-blended group. There was a significant difference in student performance in eight out of 14 courses.

All lecturers received training on the use of the KIBU LMS. Educators should incorporate learning activities that fully engage students to further foster active learning and should effectively include open educational resources in their blended courses.

5.2 Recommendations

After careful consideration of the study's findings, the following recommendations are presented.

- The university should continually renew training in digital literacy in terms of digital competence, digital know-how and digital use among students and lecturers, since digital technology evolves over time. One of the digital skills needed is C-DELTA, which is available at https://cdelta.kibu.ac.ke/.
- Training on TEL should be regularly done so faculty can become acquainted with relevant new knowledge. This will improve the quality of course design and delivery.
- The university management should also on a regular basis monitor and evaluate the effectiveness of blended learning in relation to the needs of students and lecturers in terms of resources. It should also consider improving Internet connectivity, including addressing bandwidth issues and device provision for learners and lecturers. In this way, technology will be made accessible to everyone who needs it.
- Faculty should enrol in the TEL community of practice at https://www.telcop.net/, where they can interact with peers about TEL-related issues and acquire and share more knowledge.

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