Full Length Research Paper

Stakeholders' Perspectives on Transformative Teaching and Learning in the Face of COVID-19: A Case of Busitema University-Faculty of Science and Education

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ABSTRACT: Following the lockdown as a result of the COVID-19 pandemic, the government of Uganda through the Ministry of Education and Sports (MoES) and the National Council for Higher Education (NCHE) rolled out a policy that required universities and their disparate academic faculties to, among other things, transform from the traditional face to face teaching and learning to the virtual online format. As such, the second semester of the academic year 2019/2020 for undergraduate academic programmes was delivered through distance learning (DL) as opposed to classroom learning (CL). Considering this sudden shift, several issues came into play and this quantitative empirical study that employed a questionnaire survey was carried out to shed some light on how students at the Faculty of Science and Education, Busitema University-Nagongera campus perceived institutional readiness to implement transformative (online) teaching and learning in the face of COVID-19. This study was inspired by concerns highlighted in publications and studies, as well as the voices of various stakeholders, that online teaching and learning inside regional institutions appear to have begun with inadequate preparation. According to the findings, research participants observed gaps in institutional readiness for transformative teaching and learning in the areas of human resources, self-development, technological readiness, and innovation readiness. We urge that lecturers and students be open-minded, adaptable, and motivated in self-development in order to adapt their teaching and learning approaches to the online environment. Campus leadership, through continuous online training programmes are also urged to focus on altering lecturers' and students' mindsets to help them understand that the future of higher education systems involves the online environment, and that online teaching and learning has become the new normal.

Keywords: COVID-19 pandemic, online teaching, and learning, higher education, digital transformation, transformative teaching, institutional readiness

INTRODUCTION

Corona Virus also known as COVID-19 has not only affected the global economy, it has negatively impacted the education sector forcing many educational institutions to close momentarily (Rafiquea, Mahmood, Warraich, Rehman, 2021). As such, the second semester of the academic year 2019/2020 for most academic programmes in Ugandan Universities was delivered through distance learning (DL) as opposed to classroom learning (CL). Similarly, all the schools and colleges discontinued in-person teaching which certainly, has had negative effects on learning opportunities (Dhawan, 2020). As Ugandan universities were struggling to find options to deal with this challenging situation, the Higher Education Commission (National Council for Higher Education-NCHE) and the Ministry of Education and Sports (MoES) mandated that all public and private sector higher educational institutions should conduct all their teaching and learning activities online until the curve

of the spread of COVID-19 was flattened. Consequently, universities in Uganda have been actively trying to transform their pedagogical teaching and learning activities into a virtual model. Online teaching and learning are thus seen as a panacea to counter the learning challenges posed by the occurrence of COVID-19. However, factors associated with e-learning that relate to institutional preparedness, implementation effectiveness, accessibility, and affordability are some of the arguments for online pedagogy. Whereas online mode of learning provides the students with a lot of opportunities and benefits such as convenience (Poole, 2000); flexibility (Chizmar and Walbert, 1999); time-saving, teamwork, and collaborating with others across physical boundaries (Hung *et al.*, 2010); enabling students to have more control over their learning activities and to make decisions about their routine classwork in terms of space, pace, depth, breadth, and time management (Stansfield *et al.*, 2004), it appears that several universities in Uganda were unprepared for the adoption of the same and when they did so, implementation challenges were replete. Among the Ugandan universities that implemented the online Teaching and Learning mode is Busitema University.

As a result, this study draws on students' perceptions on institutional online (transformative) teaching and learning preparation, with a specific focus on Busitema University's Nagongera Campus's Faculty of Science and Education. "How do students at the Faculty of Science and Education, Busitema University-Nagongera campus assess institutional readiness of online teaching and learning in the context of COVID-19?" asked the study. Human readiness elements, self-development readiness, technological readiness, and innovation readiness are used to analyze institutional readiness to online teaching and learning.

The research gap

Several studies have explored readiness for online teaching and learning during the COVID-19 pandemic (Affouneh *et al.*, 2020; Amir *et al.*, 2020; Callo and Yazon, 2020; Naji *et al.*, 2020; Neupane, *et al.*, 2020; Rafiquea, *et al.*, 2021; Shawaqfeh, *et al.* 2020). However, many of the works on students' perception of institutional readiness for online teaching and learning are based on European, American, and Asian contexts. Aristovnik *et al.* (2020) discovered that Higher Education Institutions (HEIs) in developed nations (global North) are better endowed and display greater readiness for online teaching and learning than those in poor countries like Uganda. The funding issues that Sub-Saharan African colleges are facing are likely to have a negative influence on their readiness for online teaching and learning. As a result, there is a research gap on how students view institutional readiness of online teaching and learning in

the face of COVID-19 at such institutions, which is the basis for this study.

Context

Despite the benefits of online teaching and learning and the outbreak of COVID-19, which necessitated its quick implementation, e-learning at Ugandan universities is still in its early stages. Nonetheless, e-learning is making its way into universities and is thought to have enormous potential as the government struggles to meet the rising demand for education despite a shortage of skilled teachers, limited teaching materials, poor network infrastructure, a lack of ICT knowledge and skills among some academic staff and students, and the high cost of internet data.

Although there is no statistical data on the level of proficiency in the use of online learning platforms among academic staff and students, anecdotal evidence shows that majority of them are not experienced and proficient in the use of technology-assisted platforms such as Zoom, Google Meet, LMS, Google Classroom, and ERP. The above notwithstanding, Busitema University-Faculty of Science and Education adopted online teaching and learning. However, at the time the University adopted online teaching and learning, its level of readiness seemed too low, for instance, at Nagongera Campus, human readiness in terms of having well-trained staff and students in online teaching and learning seemed inadequate. It is also the case that Campus leadership was yet to adequately expose staff and students to training in online teaching and learning. Given that online teaching and learning in Ugandan universities is increasingly becoming the norm rather than an exception, it is necessary to ascertain students' perceptions of institutional readiness of online teaching and learning in the face of COVID-19.

Literature review

Measuring institutional level of online teaching and learning readiness (OTLR) has been the preoccupation of researchers ever since the advent of online teaching and learning (Rafiquea *et al*, 2021). In their pioneering contribution to the realm of online teaching and learning readiness, Warner, Christie, and Choy (1998) defined online learning as students' preference for classroom instructional method against face-to-face learning; students' confidence in using different kinds of technology, internet, and especially computer-mediated tools for communication in online learning; and students' engagement in their autonomous learning. In a 13-item scale that measured students' preparedness for online learning, McVay (2000, 2001) considered students' attitudes and behaviour as predictors of online teaching

and learning success. Smith, Murphy, and Mahoney (2003) extended McVay (2001) readiness for online learning questionnaire by adding students' self-management of learning and their level of comfort with e-learning as key factors that predicted their success. However, McVay and Smith *et al* (2003) factors did not comprehensively cover all dimensions of institutional readiness towards online learning as their major focus was on students' readiness.

To extensively comprehend the core of institutional online teaching and learning readiness, scholars developed more dimensions that would allude to all the vital elements of online teaching and learning. Along these lines, Peng *et al.* (2006) found that the technical skills needed to perform computer and computer-based tasks were an indispensable determinant of teachers' and students' performance in a web-based learning situation. Teachers' and students' appreciation of the internet and their ability to manage their time were also related to their attitudes and behaviour towards online teaching and learning (Rafiquea *et al.*, 2021; Tsai and Lin, 2004). While the aforementioned scholars were lauded for providing elements that vitally shape teachers' and students' perceptions of institutional readiness for online teaching and learning. Hung *et al.* (2010) developed a more comprehensive scale to measure teachers' and students' readiness for online teaching and learning. The computer/internet self-efficacy measure, which related to all components of OTLR, contained the following strands: self-directed learning, motivation for learning, and online communication self-efficacy. Some of the aforementioned factors provided an analytical framework for this study, allowing it to comprehend students' perceptions of institutional readiness for online teaching and learning in the context of COVID-19.

Computer and internet self-efficacy

The idea of self-efficacy is associated with Bandura (1977, 1986, 1997) and refers to a person's particular set of beliefs that determine how well one can implement a plan of action in prospective situations. Because online teaching and learning are delivered through online networks, it is imperative to ascertain the perception of teachers and students about ICTs and to measure their capabilities in using these technologies for online teaching and learning. Self-efficacy is informed by the social cognitive theory which recognizes that self-efficacy beliefs can be understood through cognitive, motivational, affective, and decisional processes (Bandura, 1977, 1986, 1997). Consequently, numerous scales have been developed to measure the computer and internet self-efficacy of individuals. For instance, using a 10-item tool, Campeau and Higgins (1995) found out that computer self-efficacy had a significant impact on computer-use outcomes, computer users' emotional reactions, and

actual computer use. Along similar lines, Eastin and LaRose (2000) noted that internet self-efficacy was more than uploading or downloading files and that it is related to the ability of an individual to apply his/her higher-level skills in troubleshooting and problem-solving technical problems while using the internet as well. Tsai and Tsai (2003) also opined that students with high internet self-efficacy performed and learned better during online learning.

The above strand of computer and internet self-efficacy coheres with Rogers (2003) people/human readiness factors which are important in shaping teachers' and students' perceptions of online teaching and learning. He argues that the more skilled an organization's human resources are, the more likely the organization is to be successful. He adds that individuals who have a higher level of education tend to have higher computer and internet self-efficacy and as such, are more likely to adopt an innovation than others. It, therefore, appears, in line with Carnell and Shank (2003), that the knowledge and skills levels of teachers and students in technology-based teaching and learning can be used as one of the predictors of e-learning readiness. Other people/human factors shaping perceptions of online teaching include the availability of experienced staff who organize and evaluate online teaching and learning and the existence of a training department that organizes and evaluates online teaching and learning training for students and staff (Gilley *et al.*, 2002; Jacobs and Washington, 2003)

Self-directed learning (SDL) is defined by Knowles (1975) as the process of taking the initiative to comprehend one's learning needs, create learning goals, detect human and material resources needed for learning, select and implement the best learning strategy, and assess learning outcomes. Anchored on Knowles' work, Guglielmino (1977) developed a scale, the Self-Directed Learning Readiness Scale (SDLRS), to help determine teachers' and students' learning needs and personality traits, as well as promote their autonomy. Garrison (1997) also developed a comprehensive model of SDL and defined SDL as "an approach that helps stimulate students' assumption of personal responsibility and collaborative control over the cognitive (self-monitoring) and contextual (self-management) processes in constructing and confirming meaningful and worthwhile learning outcomes" (p. 21).

Thus, self-directed learning, also known as self-development by Aydin and Tasci (2005), has been identified as a component of assessing an organization's readiness for e-learning. This means that universities that are willing to set aside funds for organizational and individual self-development initiatives, whose managers believe in the power of self-development, and whose employees have a positive attitude toward self-development can more easily adopt innovations like e-learning than those that do not have these important characteristics. As a result, it is unavoidable that when

students use e-learning, they become proactive, operate as autonomous learners, and prepare themselves for the experience (Rafiquea, *et al.*, 2021).

Lin and Hsieh (2001) argued that during online learning, successful students made decisions on their own to meet their needs by utilizing their existing knowledge and learning goals. It helps self-directed students take responsibility for their learning and be more enthusiastic about their learning activities. Issuing from the above, it can be deduced that self-directed learning results in students' self-development as opposed to the traditional mode of learning, where students have direct access to textbooks and other physical forms of information, they have more options, flexibility, and freedom in the e-learning environment. For instance, they can control the content, sequence, and pace of learning (Reeves, 1993). Hung *et al.* (2010) and Wang and Beasley (2002) found that self-directed learning influenced the task performance of students in a web-based learning environment. Thus, those students who were empowered by their own learning decisions showed better performance during the online learning setting than those who were not.

Learning motivation

It is widely recognized that in any educational setting, students' motivation significantly informs their attitude and behavior towards learning (Fairchild *et al.*, 2005). According to Pintrich and Schunk (2002), active learning involves cognition and motivation. Students who are motivated intrinsically and extrinsically tend to perform better academically compared to those who are not. Motivation does not only enable a student to develop cognitively, physically, and socially but it is also related to lower dropout rates, higher-quality learning, better learning strategies, and obtaining high academic grades (Deci and Ryan, 1985). However, to sustain their motivation, students must become active learners with a strong desire to learn (Candy, 1991). Ryan and Deci (2000) reported that students felt free to determine their learning paths in an online learning environment as a result of their motivation.

Ryan and Deci's submission above coheres with Rafiquea *et al.* (2021) later finding. In a study that investigated the readiness for online learning during the COVID-19 pandemic among Library and Information Science (LIS) students in Pakistan,

Rafiquea *et al.*, (2021) found out that the students were sufficiently prepared for online learning during the COVID 19 lockdown in the country; motivated to learn online, receptive to new ideas, learned from their mistakes, and were willing to interact and engage with their fellow students while learning online. These findings re-echo those of Hung *et al.* (2010), Saad´e, *et al.* (2007), and Hsu *et al.* (2019) who shared that motivation played a

vital role in shaping students' perceptions of institutional readiness of online teaching and learning.

Readiness towards online teaching and learning during the COVID-19 pandemic

The prevalence of the COVID-19 pandemic has forced universities in most countries to transform their learning and teaching activities from a physical to an online model.

Since then, scholars have preoccupied themselves with establishing the factors that could inform institutional readiness and that of academic staff and students towards online learning.

As such, various researchers have made scholarly contributions to the topic in recent months (Callo and Yazon, 2020; Naji *et al.*, 2020; Neupane *et al.*, 2020; Shawaqfeh *et al.* 2020).

Naji *et al.* (2020) study on engineering students to determine the factors that affected their readiness towards online learning during the COVID-19 pandemic revealed that initial preparedness and motivation for online learning; self-efficacy beliefs about online learning; self-directed online learning; and support for online learning influenced their level of readiness.

Additionally, Callo and Yazon (2020) shared that familiarity and capability regarding online learning, device and connectivity, self-efficacy, and prior experience with technology significantly impacted Polytechnic students' readiness for online learning in the face of COVID-19.

Shawaqfeh *et al.* (2020) reported in another study that investigated the online distance learning experience of pharmacy students in the Kingdom of Saudi Arabia during the outbreak of COVID-19 that, despite some challenges such as a lack of motivation and digital skill, the students had an open attitude toward online learning during the lockdown.

Additionally, Kalkan (2020) study, which examined the e-learning readiness of university students in Turkey using the e-learning readiness scale developed by Yurdugul and Demir (2017), discovered that computer, internet, and online communication self-efficacy was the factor that had the greatest impact on students' e-learning readiness, followed by self-learning, learning control, and motivation.

In contrast, Allam *et al.* (2020) study on communication and media studies students' preparedness for online learning during the COVID-19 outbreak revealed that while they possessed computer/internet literacy, their motivation to learn online and engage in self-directed learning was very low.

Even though the aforementioned research all hinted at factors influencing perceptions of institutional preparation for online teaching and learning, their settings varied, hence the current study concentrated on a university campus in sub-Saharan Africa.

METHODOLOGY

The study was conducted at the Faculty of Science and Education of Busitema University -Nagongera Campus using a sequential explanatory mixed methods methodology. Second-year students of the 2019/2020 academic year pursuing bachelor's degree programmes in science and arts education in 2021 were selected as a unit of analysis. The inclusion criterion was exposure to online learning as a modality for continued learning during the COVID-19 lockdown as opposed to their counterparts in the first and third years. A sample size of 166 participants was randomly drawn from a population of 290 students as guided by Krejcie and Morgan (1970) table of sample determination.

A three-section self-report questionnaire was developed to collect data on students' perceptions of the level of online learning readiness at the faculty. The first section included demographic characteristics of the participants such as age, gender, programme of study, and subject combination.

The second section contained closed-ended items measuring online teaching and learning readiness with four sub-scales, that is, human resource readiness, self-development, technology, and innovation. Each of the sub-scales was measured using items constructed basing on Rogers' (2003) diffusion of innovation theory which provided the theoretical basis.

The subscales for human readiness, self-development, technology, and innovation had six, seven, nine, and two items respectively; scored on a five-point Likert scale, 1 (*Strongly disagree*) to 5 (*Strongly Agree*) to measure the level of readiness.

The third section was open-ended and sought additional explanations of issues that the participants had noted during the implementation of online teaching and learning. The questionnaire was piloted and its Cronbach alpha reliability was 0.807, which exceeded the Cronbach's (1952) reliability criterion of.70 for acceptability.

The filled questionnaires were sorted and coded and the quantitative data from Sections 1 and 2 were entered in Statistical Package for Social Scientists (SPSS) Version 20 for analysis. The overall scores for the different sub-scales were interpreted as in (Table 1).

The data from the third section (qualitative data) were copy-typed in MS-Word and analysed thematically. Seven themes emerged on the challenges experienced during the process of online teaching and learning and the corresponding mitigation measures.

The study followed all due ethical considerations as stipulated by the institutional REC (research ethics committee). This included seeking consent from the participants to answer the questionnaire, observing confidentiality and anonymity, and informing them of their right to withdraw at any point in time. The participants were identified using codes instead of their names.

RESULTS AND DISCUSSION

Demographic information on the participants' age, gender, programme of study, and the subject combination is represented in (Table 2). Results in (Table 2) show that nearly all (99.4%) of the participants belonged to the age category of 21 – 30 years. The faculty is science-biased with most (84.3%) participants pursuing science subject combinations. Also, about two-thirds (66.9%) of the participants were male while the other one third (33.1%) female. This result confirms Manyiraho *et al.* (2020) findings that there are generally more male teachers of science in Eastern Uganda and that learners taught by teachers of their gender excel in the subjects of those teachers. The disparity may also be attributed to the low efficacy in science and mathematics for girls at the lower school levels as compared to the boys (Hand *et al.*, 2017).

Students' perception of Level of institutional readiness

The students' perception of the level of institutional readiness for online teaching and learning at the faculty was examined under four variables which included human resource readiness, self-development, technology, and innovation. Descriptive statistics of minimum, maximum, mean, and standard deviations were computed and the results are as shown in (Table 3).

Results in (Table 3) show that generally the human resource readiness level was low (M = 12.759, SD= 4.915), self-development level was moderate (M = 15.735, SD = 5.967); technology level was moderate (M = 23.018, SD = 6.533); and Innovation level was moderate (M = 6.368, SD = 1.964). The overall level of institutional readiness was also moderate (M = 57.880, SD = 15.671). This means that the participants perceived gaps in institutional readiness which need to be addressed to enable effective transition from face-to-face instruction to online learning. Further analysis of the responses to the items of the individual sub-scales is presented in (Tables 4, 5, 6, and 7).

Table 4 indicates that the majority of the participants had negative perceptions (strongly disagreed or disagreed) about institutional readiness concerning human resource readiness. Notably, they disagreed that the faculty; hired external online teaching and learning specialists, 136 (82.0%); had a training department for online teaching and learning, 134 (80.7%); and that students and staff had adequate knowledge and skills of online teaching and learning, 141 (85%). The highest mean as seen in Table 4 was attached to the FSE having a member of staff who is a champion of online learning and can facilitate its implementation but even then, only 64 (38.6%) of the participants agreed to this. The open-ended responses from some participants also confirm the

Table 1: Interpretation of scores.

Sub-scale	No. of items	Low	Moderate	High
Human readiness	6	6 - 13	14 – 21	22 - 30
Self-development	7	7 - 15	16 – 25	26 - 35
Technology	9	9 - 20	21 – 32	33 - 45
Innovation	2	2 - 4	5 – 7	8 - 10
Overall	24	24 - 55	56 – 87	88 -120

Table 2: Participants' demographic characteristics

Characteristic	Category	*n*	%
Age	21 – 30	165	99.4
	31 – 40	1	.6
Gender	Male	111	66.9
	Female	55	33.1
Programme	BSCE	142	85.5
	ELS	21	12.7
	IT	3	1.8
Subject Combination	N/A	3	1.8
	Physics/Math	12	7.2
	Biology/Chemistry	15	9.0
	Math/Chemistry	45	27.1
	Physics/ICT	3	1.8
	Math/ICT	9	5.4
	ICT/Economics	16	9.6
	Entrepreneurship/Economics	1	.6
	Math/Economics	15	9.0
	Agriculture Double Main	11	6.6
	English Double Main	22	13.3
	Geography/ICT	11	6.6
	Biology/PE	3	1.8

Table 3: Levels of Institutional readiness

Online teaching and learning readiness sub-scales	Minimum	Maximum	Mean	SD	Level
Human resource readiness	6.00	30.00	12.759	4.915	Low
Self-development	7.00	35.00	15.735	5.967	Moderate
Technology	9.00	43.00	23.018	6.533	Moderate
Innovation	2.00	10.00	6.368	1.964	Moderate
Overall Score	24.00	112.00	57.880	15.671	Moderate

Table 4: Human resource readiness.

Items	SD	D	U	A	SA	M	SD
Students and staff at the Faculty of Science and Education (FSE) have adequate knowledge and skills in technology-based teaching and learning.	78 (47.0)	63 (38.0)	4 (2.4)	14 (8.4)	7 (4.2)	1.849	1.093
At FSE we have experienced staff members who organize and evaluate on-line teaching and learning trainings for students and academic staff.	50 (30.1)	59 (35.5)	7 (4.2)	37 (22.3)	13 (7.8)	2.421	1.331
At FSE we have a Training Department that organizes and evaluates on-line teaching and learning trainings for students and academic staff.	93 (56.0)	41 (24.7)	9 (5.4)	18 (10.8)	5 (3.0)	1.801	1.135
At FSE there is a member of staff who is a champion of on-line learning and can facilitate the implementation of on-line teaching and learning initiatives.	53 (31.9)	33 (19.9)	16 (9.6)	35 (21.1)	29 (17.5)	2.723	1.524
Majority of our lecturers are experienced in and proficiently use technology-based/or assisted platforms (such as zoom, LMS, Google Meet, etc.) to facilitate teaching and learning.	58 (34.9)	56 (33.7)	4 (2.4)	31 (18.7)	17 (10.2)	2.355	1.388
The Faculty hires external online teaching and learning specialists such as content experts, project managers, instructional designers, computer programmers to help the campus understand and implement online teaching and learning.	107 (64.5)	29 (17.5)	19 (11.4)	10 (6.0)	1 (.6)	1.608	.952
Overall Mean						2.126	1.237

Table 5: Self-Development.

Items	SD	D	U	A	SA	M	SD
FSE has greatly exposed me to online training	62 (37.3)	49 (29.5)	5 (3.0)	38 (22.9)	12 (7.2)	2.331	1.368
I voluntarily joined online learning training at my campus	59 (35.5)	45 (27.1)	8 (4.8)	39 (23.5)	15 (9.0)	2.433	1.407
I spend at least 60 minutes daily enhancing my skills in online learning.	85 (51.2)	46 (27.7)	8 (4.8)	19 (11.4)	8 (4.8)	1.910	1.205
My lecturers believe that self-development of students in the use of online learning platforms enhances the delivery of lessons at the Faculty during the COVID-19 pandemic.	51 (30.7)	39 (23.5)	14 (8.4)	48 (28.9)	14 (8.4)	2.608	1.396
The majority of my fellow students believe that training in the use of online teaching and learning platforms will improve the public image of the university.	51 (30.7)	63 (38.0)	28 (16.9)	20 (12.0)	32 (19.3)	2.542	1.496
FSE was ready for online teaching and learning at the time we reported back to campus after the outbreak of COVID-19	92 (55.4)	42 (25.3)	2 (1.2)	19 (11.4)	11 (6.6)	1.886	1.272
My Lecturers were ready for online teaching at the time we reported back to campus after the outbreak of COVID-19	77 (46.4)	46 (27.7)	15 (9.0)	18 (10.8)	10 (6.0)	2.024	1.240
Overall Mean						2.248	1.341

inadequacy in human resource readiness, to enroll for online learning sessions (participant 155, April 2021), getting exposure to all subjects (participant 165, April 2021), and being equipped with knowledge and skills to work with online learning tools (participants 106; April 2021). To emphasize this, participant 115 (April 2021) on how to enhance online teaching and learning noted, "integrating ICT in other disciplines first before this thing of online" as one of the needs.

These findings imply that the transformation from face-to-face learning to online learning needed thorough preparation through workshops and training for both students and lecturers so that they can cope with technology tools. However, the break-off and lockdown during the COVID-19 pandemic were so sudden. The sensitization and prior training may have not been very effective because they were conducted online. The above results concurred with those of Junus *et al.* (2021) who found out that lecturers who previously only taught face-to-face with no prior online teaching experience were less prepared for class planning, time management, and online communication. However, the results are inconsistent with those of Neupane *et al.* (2020) who in their descriptive cross-sectional web-based survey found out that study participants (students) had positive perceptions of institutional human resource readiness for online learning and that majority were ready for online classes during the COVID pandemic.

Results in (Table 5) generally show that majority of the participants had a low perception about the items hence they were in disagreement. For instance, the highly perceived item, which was lecturers' belief that self-development of students in the use of online learning platforms can enhance lesson delivery, had only 62 (37.3%) of the participants in agreement. The above findings imply that many of the participants were not adequately trained for online learning. Majority 123 (74.1%) disagreed that lecturers were ready for online

teaching meaning that even the lecturers did not invest good effort in self-development. For instance, participant 14 (April 2021) urged, "Always inform lecturers to also have efficient knowledge on the online learning because we face problems in submitting assignments." Besides, participant 31 (April 2021) expressed that serious training is needed for both lecturers and students.

Results in (Table 6) show that most 139 (83.8%) participants disagreed with having access to computers at the faculty. Also, 132 (79.5%) participants disagreed with having the ability to access the internet outside the campus. From the open-ended responses, participants expressed a lack of gadgets for online learning and failure to afford the internet as some of the key challenges (participant 160, April 2021). Concerning possession of basic computer skills and basic internet skills, participants' perceptions were moderate with 101(60.8%) and 91 (54.9%) participants in agreement respectively. The above results are in line with Wakahiu and Kangethe (2014) earlier finding that half of the participants that enrolled in the Higher Education for Sisters in Africa (HESA) program, an online teacher education program that attracted women from Kenya and Uganda, had moderate ability to use computers. In their study of the challenges facing e-learning initiatives in African Universities, Gunga and Ricketts (2007) also found out that internet connectivity in tertiary institutions in Africa is inadequate, expensive, and poorly managed and that the three pillars of the ICT revolution, that is, connectivity, capacity, and content, are yet to be realized in Africa.

Results in (Table 7) show that the majority 99 (59.6%) of the participants disagreed about students and lecturers at FSE readily accepting any organizational change. The majority 126 (75.9%) further agreed that some internal or external issues have acted as barriers to the adoption of online teaching and learning. These findings may explain why the general institutional readiness to online learning

Table 6: Technology.

Items	SD	D	U	A	SA	M	SD
I have access to computers at FSE to use individually for online learning.	105 (63.3)	34 (20.5)	13 (7.8)	9 (5.4)	5 (3.0)	1.644	1.039
I have access to free internet at FSE for online learning.	44 (26.5)	34 (20.5)	8 (4.8)	66 (39.8)	14 (8.4)	2.831	1.408
I can access the Internet outside the campus (from home, Cafe, etc.) for online studies.	102 (61.4)	30 (18.1)	8 (4.8)	22 (13.3)	4 (2.4)	1.771	1.169
I possess the basic computer skills (keyboard use, using the mouse, creating, saving, editing files, etc.) required for online studies.	37 (22.3)	18 (10.8)	10 (6.0)	62 (37.3)	39 (23.5)	3.289	1.498
I possess the basic Internet skills (e-mailing, chatting, surfing, etc.) required for accessing online information.	36 (21.6)	32 (19.3)	7 (4.2)	64 (38.6)	27 (16.3)	3.162	1.671
The majority of my student colleagues willingly use technology (computers) in routine/daily academic tasks.	55 (33.1)	51 (30.7)	18 (10.8)	26 (15.7)	16 (9.6)	2.380	1.342
The majority of the lecturers accept any technological innovation (e.g. start using digital documents instead of hard copies) in routine/daily tasks.	38 (22.9)	39 (23.5)	32 (19.3)	45 (27.1)	12 (7.2)	2.723	1.282
FSE leadership (Dean and HoDs) think positively toward the technological interventions in daily/routine tasks.	33 (19.9)	34 (20.5)	44 (26.5)	42 (25.3)	13 (7.8)	2.807	1.240
I would highly rate my Faculty/Campus in terms of investing in online teaching and learning.	58 (34.9)	47 (28.3)	15 (9.0)	27 (16.3)	19 (11.4)	2.410	1.402
Overall Mean						2.557	1.339

Table 7: Innovation constructs.

Items	SD	D	U	A	SA	M	SD
The majority of the students and lecturers at FSE readily accept any organizational change or any change in a daily task (e.g. changing from physical to online teaching and learning, etc.)	61 (36.7)	38 (22.9)	20 (12.0)	38 (22.9)	9 (5.4)	2.374	1.328
Some internal or external issues have acted as barriers to the adoption of online teaching and learning at FSE	24 (14.5)	10 (6.0)	6 (3.6)	29 (17.5)	97 (58.4)	3.994	1.475
Overall Mean						3.184	1.401

was just moderate with human resource readiness being low. The above results cohere with Gunga and Ricketts (2007) recommendation that there is a need for capacity building to empower technical users (system administrators, web designers, programmers, and database administrators) and end-users (lecturers, students, administrators) to embrace organizational changes that include innovations. The authors further opined that it may also be necessary to create an autonomous e-learning centre with efficient flexible management and delivery systems that can respond swiftly to the inevitable ICT innovations in education.

Other issues of interest in enhancing online teaching and learning

The participants cited out several challenges and their mitigation measures which were typed out and analyzed thematically. The challenges are presented in (Table 8).

Institutional related Challenges

The participants cited several challenges which were administrative or institutional related and these included

poor organization leading to failure by many of them to be registered or enrolled on zoom and LMS (participant 155, April 2021), timetabling issues, and failure to cater for individual differences of the learners such as special needs cases (participant 68, April 2021). This implies that some of them were left out of the online lectures and therefore missed which was disadvantageous to them. Moreover, some courses such as English were not facilitated during online learning (participant 165, April 2021). This perhaps suggests that the concerned lecturers were either not technically able to upload content or were resistant to change.

Internet-related challenges

The responses presented on challenges with the internet accounted for 137 (82.5%) of the participants and were mainly about the weak internal network (WI-FI) signal and poor access. The internet was limited and unstable. As a result, there was poor performance of the LMS and Zoom platforms which would take longer to load. About accessibility, participants who were trying to engage in online learning at campus complained that the network does not cover the whole campus and that it could not be

Table 8: Challenges during the implementation of online teaching and learning.

Themes	No of responses	%	Ranking
Institutional related/ administrative challenges	25	15.0	5
Internet-related	137	82.5	2
Technical challenges	24	14.5	6
Socio-economic	164	98.8	1
Psychological	09	5.4	7
Learner related	40	24.1	3
Human resource	29	17.5	4

accessed in some lecture rooms. During the lockdown at the start of online teaching and learning programme, students in remote areas or villages were completely cut off because of no or poor network (participant 46, April 2021). This implies that the faculty did not make provisions to cater for this category of students which impaired the effectiveness of the programme.

Technical challenges

The technical challenges experienced in online learning were a result of failure to deliver some subject content that is practical especially the science subjects (participant 135, April 2021). It was difficult for the lecturers to explain the practical aspects online. The participants also complained that understanding some concepts especially mathematical ones was very difficult online. The mode of assessment for learning was also not clear. Moreover, for some subjects, the notes on Moodle did not rhyme with those on zoom and face-to-face lectures (participant 149, April 2021).

Socio-economic challenges

The majority of the participants 164 (98.8%) presented socio-economic challenges ranging from expensive internet bundles especially when they were still at home, inconsistent power supply both at home and at the campus, and failure to access gadgets/tools for online learning (participant 91, 154, 160, April 2021).

Psychological

A few participants observed some psychological challenges such as poor attitude, a low commitment by both students and lecturers, low conceptualization of online subject matter, and disruptions at home. One participant noted that it was difficult for them to attend online lectures because their sponsors would not understand them being on the phone all the time instead of attending to household chores.

Learner related challenges

Participants expressed that some of them were uncomfortable with using technology tools during online learning due to a lack of practical computer skills. Yet, successful online learning requires that students embrace technology tools and should possess technological knowledge. However, prior training for the students was done using online technology and was not so successful since many of them could not cope. They, therefore, had a gap in communication and free interaction with lecturers which affected their learning.

Human resource

Finally, some participants expressed challenges related to the personnel handling online lectures. These participants shared that some of the lecturers were not interested in online teaching. According to them, only a few lecturers were equipped with computer skills and knowledge in technology. Yet, to teach comfortably online, one needs two basic skills beyond subject knowledge, that is, technology skills and comfort with technology tools, and pedagogical practice (Vaughan *et al.*, 2013). The lecturers, therefore, needed three primary forms of knowledge to teach their subjects with technology, that is, technological knowledge, content knowledge, and pedagogical knowledge. Many of them lacked the technology and pedagogical knowledge hence posing a challenge.

Mitigation measures to the challenges

Following the challenges highlighted above by the participants, the study recommends the following as mitigation measures. For the future success of the online teaching programme, the administration should draw a clear timetable catering for all subjects to be followed and consider mass registration of all the learners. The lecturers handling the sessions should ensure that they check online attendance by the students (Participant 154, April 2021). They should also try to cater to individual

learner needs through constant interaction and follow-up by email, social media platforms, and physical phone calls. Participants suggested the need to increase the bandwidth so that the wi-fi signal can cover the whole campus (participant 46, April 2021). There might still be a need to blend online learning with physical learning to cater for practical and mathematical concepts which cannot be handled easily. Participants proposed that tutorial videos, soft copy notes, and other lecture materials could be uploaded in time so that they can easily follow. However, due to some of these technical challenges, participant 32 (April 2021), expressed, "face-to-face learning should continue as we observe the SOPs on COVID-19." Participants suggested zero-rating for both zoom and moodle; financial facilitation to buy internet bundles while at home and free access to the computer laboratory especially for those who do not have laptops and smartphones. There is a need for sensitization of all concerned and counseling students before engaging in online teaching since it is a new mode of teaching. The lecturers should also try as much as possible to motivate the students and appreciate the challenges that they face.

Conclusion

In light of the results that showed that participants perceived gaps in institutional readiness in the areas of human resource (M = 12.759, SD = 4.915), self-development (M = 15.735, SD = 5.967); technology level (M = 23.018, SD = 6.533); and Innovation level (M = 6.368, SD = 1.964) readiness (Table 3), it is concluded that the faculty/campus was inadequately prepared for Transformative Teaching and Learning in the Face of COVID-19. Efforts to meet the new challenge were minimal. Many students that would wish to join online classes from their homes do not have access to all online technology because they come from less affluent families. As such, they continue losing out as online classes go on. Such students cannot meet the heavy costs associated with digital devices and internet bundles. This enduring digital divide is likely to widen the income gap between the affluent North and the struggling South. Technical capacity to provide optimal conditions for online learning remains one of the most difficult issues to tackle at the campus. In line with the results, the majority of the participants perceived low levels of investment in online teaching and learning (63.2); access to computers at the Faculty to use individually for online learning (83.8%); and access to free internet for online learning (78%). Still, students' and lecturers' willingness to use technology and to accept technological innovations remain low/and or moderate with 63.8% and 46.4% of the participants reporting that their colleagues rarely use technology (computer) in their daily tasks and that some of their lecturers hardly accept any

technological innovation (e.g. start using digital documents instead of hard copies) in routine/daily tasks respectively.

Human resource readiness in terms of knowledge and skills required in technology-based teaching and learning remains low implying that some lecturers are not experienced in the use of technology-based/or assisted teaching and learning platforms (such as zoom, LMS, Google Meet, etc.). Issuing from the above, lecturers and students will have to be open-minded, flexible, and interested in developing themselves. Those who manifest resilience towards learning how to use new tools or continue to use, during the courses, only the basic functions of the online learning platform are bound to lose out. It is also important to note that technical skills alone may not be the panacea. Lecturers have to adapt their methods of teaching to the online environment.

From the results, it can be inferred that the main challenges that the higher education system in Uganda has to face today are: many lecturers' and students' reluctance to adapt to change and the shifting students' perception towards online learning. University leadership, through continuous online training programmes for lecturers, will have to focus on altering lecturers' and students' mindsets to help them adapt to the changes and to help them understand that the future of higher education systems involves the online environment, that it is unlikely that the system will return to how it was before the pandemic, and that online teaching and learning has become a new normal.

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