Original Article

Teaching and Learning during COVID-19 Crisis: Faculty Preparedness and Factors Influencing the Use of E-learning Platform at the College of Medicine and Health Sciences, University of Rwanda

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Abstract

Background
Towards the beginning of 2020, the COVID-19 pandemic spread worldwide and caused many schools to close. Many educational institutions transitioned from traditional face-to-face or blended to a total e-learning approach. The University of Rwanda rapidly shifted from a blended teaching and learning approach to a total e-learning approach. Thus,this study assessed the faculty preparedness and the factors influencing the use of e-learningplatforms at the College of Medicine and Health Sciences.

Methods
The study used a cross-sectional design. A web self-administered questionnaire was used to collect data from 450 CMHS faculty from June to July 2020, with a response rate of 34.4% (n=155). SPSS was used to describe nominal variables with frequencies and percentages. Similarly, continuous variables were analyzed by calculating median and interquartile ranges. The Chi-Square and Man-Whitney tests were also computed using SPSS.

Results
The majority of participants (93.7%) started using the e-learning approach, and 92.4% attended e-learning training. The top motivator for e-learning use was a personal interest in technology use (93.3%) and the leading barrier to using e-learning was the concern about access to students (77.1%).

Conclusion
This study found that faculty preparedness was significantly associated with e-learning use. The leading motivator and barriers were a personal interest in technology use and concern about access to students, respectively.

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Keywords: E-learning, preparedness, faculty, e-learning enabling factors, e-learning barriers, COVID-19

Background to the study

The coronavirus disease (COVID-19) outbreak constitutes global crisis in the 21st century history. The rapid spread of the pandemic and its increased death toll have called the entire globe to take unprecedented preventive measures to mitigate its reach and impact.[1] These measures include travel restrictions worldwide and locally, quarantines and lockdowns in many countries, hand hygiene, masking, and social and physical distancing measures.[1] Consequently, it was challenging for teachers and students to meet in person for traditional teaching and learning. Therefore, teaching and learning were negatively affected, and this crisis has significantly challenged health professional education in particular.[2]

Rwanda registered its first case of COVID-19 in March 2020.[1] Like the rest of the world, the Rwandan Government instituted preventive measures to limit the COVID-19 spread. A national lockdown period was declared, imposing the closure of schools, cancellation of events, and travel restrictions.[1] With the closure of schools, educational institutions transitioned from face-to-face or blended teaching to a total e-learning approach. E-learning is the use of electronic media and devices for communication and interaction with the purpose of teaching and learning.[3] Total e-learning uses e-learning as the only approach for teaching and learning, while blended learning combines face-to-face and e-learning approaches.[4]

The University of Rwanda, the College of Medicine and Health Sciences (UR-CMHS), has been using an e-learning platform in the blended approach[5] even before the lockdown. With the COVID-19 lockdown period, however, the University of Rwanda (UR) was obliged to shift from the blended teaching and learning approach to total e-learning approach, relying on e-learning as the sole course delivery model. The urgency and speed of the COVID-19 pandemic and its preventive measures did not allow the University enough time to prepare for transitioning from in-person teaching and learning to total e-learning for both students and faculty members. Despite such a quick shift, the university management organized several e-learning training sessions to prepare faculty for using e-learning. Furthermore, in addition to pre-existing e-learning support staff, the University also selected e-learning champions among faculty members to rapidly scale up training to as many faculty members as possible and support other faculty members to use e-learning. Depending on the COVID-19 measures, the training was conducted in person or online. Faculty members responded to the challenge and embraced their new journey toward a virtual learning environment.

Existing evidence suggests that e-learning in higher learning institutions is associated with many advantages. These advantages include being student-centered, flexible in time and place, improved student-teacher contact, and student-student discussion via forums.[6,7] E-learning also allows reaching learners in remote geographical areas.[6,7] However, the literature associates effective e-learning with a number of factors. The literature indicates that the faculty's enthusiasm for using the e-learning platform, ability to motivate students, e-learning platform self-efficacy, positive perception of e-learning, and teaching style are paramount factors that impact the utilization of e-learning.[8] On the other hand, lack of social interaction in the e-learning approach and limited communication between teachers and students and between students themselves was associated with social isolation, struggles, and frustration that hampers effective e-learning teaching and learning.[9,10]

Thus, to enhance the effectiveness of e-learning, institutional support, training, and technical support for faculty are critical factors for e-learning adoption. The training of the users, availability of the e-learning

help desk, friendliness of the support team, and the availability of the support team affect the use of e-learning.[8,11,12] On the contrary, lack of financial support, lack of adequate policy, lack of training on e-learning and lack of instructional design, and ambiguous policy prevent the utilization of the e-learning approach. [5,9,10,13]

Given the rapidity of the shift from physical to virtual learning during the covid-19 context, it is likely that these requirements for effective e-learning were not secured. Thus, the aim of this study was to assess the faculty preparedness for the use of e-learning and to identify factors that influence their use of e-learning at the College of Medicine and Health Sciences, University of Rwanda.

Methodology

Study Design

This study used a cross-sectional quantitative research design to collect data from faculty about their preparedness, the motivators, and barriers to using e-learning. This study was conducted during the COVID-19 lockdown period when only the e-learning teaching approach was being implemented at UR-CMHS. A web self-administered questionnaire was used to collect data.

Population and Sample

The target population of this study was all full-time faculty of CMHS. According to the human resources office at CMHS, 450 faculty were considered full-time teaching faculty in CMHS in the academic year 2019-2020. Due to an expected lower response rate for the web self-administered questionnaire, the sampling was not done, and all full-time faculty (450) were invited to participate in this study via email addresses. Eventually, the faculty who returned the completed questionnaires (155) were the ones considered as the study participants, of sample size 155.

Instruments for data collection

A survey questionnaire developed by Panda and Mishra,[14] to assess faculty attitudes, motivators, and barriers to using e-learning was used after adaptation to fit the Rwandan context. The questionnaire was also found to be valid and reliable in this study, with Cronbach coefficients of 0.81 on average. [14]

The questionnaire comprised four sections: Section A was made of five questions that assessed participants' sociodemographic characteristics. Section B was composed of four questions that assessed the preparedness of the faculty for the use of e-learning. Section C was made of twelve questions, including eleven Likert Scale items that assessed the perceived motivators to use e-learning and one open question that asked participants to mention any other motivator for the use of e-learning. Section D was composed of seventeen questions, including sixteen Likert scale items which explored the barriers to using e-learning and one open question that asked participants to mention any other barriers to using e-learning. The Likert scale items were made of options of strongly disagree, disagree, neutral, agree, and strongly agree.

Ethical considerations

The study was granted ethics approval by the Institutional Review Board (IRB) of the UR-CMHS. Potential participants were informed about the study through a letter of information sent along with the online questionnaire. The information letter sent to participants explained the study and its purpose as well as the rights of participants of confidentiality, anonymity, and the right to participate or not. At the end of the letter, they were requested to click "Yes" if they consent to participate and "No" if they did not want to participate. Those who clicked "Yes" went ahead and responded to the questionnaire, and for those who clicked "No", the possibility of reaching the questionnaire was stopped. Moreover, the questionnaire did not capture names, email addresses, or other personal identifiers.

Data collection procedure

The study questionnaire was formatted using google forms, and a link was sent to potential participants through their email addresses. Data were collected from June to July 2020. The research team sent two reminders to all 450 faculty at a two weeks interval. Eventually, as already explained, only 155 filled and returned the questionnaires.

Data Analysis

The data collected were analyzed using SPSS version 25. The study used descriptive and inferential statistics. Before running the statistical tests, data were cleaned for out-of-range values, and coding errors were checked for missing data and tested for data distribution. The primary predictor of interest was attending the e-learning training (yes/no), a binary variable. The primary outcome was the use of e-learning (yes/no), which was also a binary outcome. Covariates included sociodemographic characteristics such as age (continuous variable), sex [male/female] as categorical, teaching experience in years (continuous variable), school (school of health sciences, school of dentistry, school of medicine and health sciences, school of nursing and midwifery, and school of public health) as a categorical variable, and faculty rank (tutorial assistant, assistant lecturer, lecturer, senior lecturer, and full professor) as a categorical variable, preparedness, such as the number of training (continuous variable) and online teaching experience in months (continuous variable), motivator and barriers (continuous variables). For descriptive statistics, the frequency and percentage were used for categorical variables. The median and interquartile ranges were also used for continuous variables because they were not normally distributed. As it has been done by the developer of the questionnaire [14] used for this study, the Likert scale items for motivators and barriers were categorized as binary variables (yes /no) for ranking them. The ranking was based on the frequency of "yes" responses to the items. The "yes" responses were generated by responses on agree and strongly agree options, and the "no" was generated by responses on strongly disagree, disagree, and neutral options. The mean score on each Likert scale item was also computed to find the strength of each motivator or barrier. The question about others, was qualitatively analyzed, and the themes emerged were analyzed for their frequency and percentage. As part of the inferential statistics, pre-test criteria were assessed for the chi-square and t-tests. After ensuring that n in each cell is equal to or higher than five, the chi-square test was used. The homogeneity of variance, n-quota, and normality of the sample were all tested for t-tests. Because the sample was not normally distributed, a non-parametric test of Mann-Whitney test was used in place of t-test. An alpha of .05 was used to assess the significance of all statistical tests.

Results

Sociodemographic characteristics of participants

Of 155 were returned, equivalent to 34.4%, only 142 were duly completed without missing data, and therefore only these (142) were finally used in the analysis. Results presented in Table 1 show that, 93.7% (133) of the faculty used the e-learning approach, and their median age was 38 with an interquartile range of eight years. More than half of the participants (n=80, 56.3%) were female. This study also found that median years of teaching experience were nine years, with an interquartile range of six years. More than half of the participants (n=80, 56.4%) were from the school of nursing and midwifery, and 52.8% (n=75) were assistant lecturers. The use of e-learning was the same across the sociodemographic characteristics, except for the school of provenance ($p<0.001$).

Table 1. Sociodemographic characteristics of participants and the analysis results of chi-square and Man-Whitney tests

Variables	Overall	E-learning use		
		Yes	No	p-value
	n= 142	n= 133	n=9	
Age in years, median (IQR)	38 (8)	38 (10)	38 (8)	0.48*
Sex, n (%)				
Male	62 (43.7)	56 (42.1)	6 (66.7)	0.15**
Female	80 (56.3)	77 (57.9)	3 (33.3)	
Teaching experience in years, median (IQR)	9 (6)	9 (5)	5 (5.5)	0.07*
School provenance, n (%)				
School of Health Sciences	39 (27.5)	34 (25.6)	5 (55.6)	
School of Dentistry	8 (5.6)	8 (6.0)	0 (0.0)	
School of Medicine and Pharmacy	7 (4.9)	3 (2.3)	4 (44.4)	<0.001**
School of Nursing and Midwifery	80 (56.4)	80 (60.1)	0 (0.0)	
School of Public Health	8 (5.6)	8 (6.0)	0 (0.0)	
Faculty rank, n (%)				
Tutorial Assistant	34 (24.0)	31 (23.3)	3 (33.3)	
Assistant Lecturer	75 (52.8)	72 (54.1)	3 (33.3)	
Lecturer	26 (18.3)	23 (17.3)	3 (33.3)	0.61**
Senior Lecturer	5 (3.5)	5 (3.8)	0 (0.0)	
Full Professor	2 (1.4)	2 (1.5)	0 (0.0)	

Notation: n= frequency, *p-value for Man-Whitney test, **p-value for Chi-square test, IQR: interquartile range

The UR-CMHS faculty's preparedness for the use of E-learning

The study found that 92.4% (122) of the participants attended the e-learning use training (Table 2). This high attendance rate had a statistically significant relationship with e-learning use (p=0.01). The participants who used e-learning participated in a median of two e-learning training sessions with an interquartile range of one session. In contrast, the participants who did not use e-learning attended a median of one e-learning session with an interquartile range of zero. The number of e-learning training sessions was also statistically significantly associated with e-learning use (p=0.005).

The participants who used e-learning had a median of three months of online teaching experience with an interquartile range of seven months. On the other side, participants who did not use e-learning had a median of zero months of online teaching experience with an interquartile range of zero months. The online teaching experience was associated with e-learning use (p=0.03).

Table 2. Preparedness of UR-CMHS faculty for the use of the e-learning platform and the analysis results of chi-square and Man-Whitney tests

	E-learning use		
	Yes	**No**	**p-value**
UR e-learning platform training's attendance, n (%)			
Yes	122 (92.4)	6 (66.7)	
No	10 (7.6)	3 (33.3)	0.01*
Number of training attended, median (IQR)	2 (1.0)	1(0.0)	0.05*
Online teaching experience in months, median (IQR)	3 (7.0)	0 (0.0)	0.03*

Notation: n= frequency, %=percentage, *p-value for Man-Whitney test, **p-value for Chi-square test, IQR=interquartile range

Perceived motivators for UR-CMHS faculty to use the e-learning approach

The study showed that participants used the e-learning approach because of various motivators (Table 3). The top five motivators for using the UR-e-learning platform included personal interest in technology use (n=112, 93.3%), curiosity to explore (n=92, 76.7%), self-gratification(n=88, 73.3%), intellectual challenge (n=83, 69.2%) and the friendliness of the e-learning platform to cover the workload (n=76, 63.3%).

Table 3. Perceived motivators for UR-CMHS faculty to use the e-learning approach

Rank	Motivator	Frequency	percentage	Motivator strength, mean (SD)
1	My personal interest in technology use	112	93.3	4.4(0.9)
2	Curiosity to explore	92	76.7	4.1(1.0)
3	Self-gratification	88	73.3	3.8 (1.1)
4	Intellectual challenge	83	69.2	3.8 (1.1)
5	Friendly and easy to cover the workload	76	63.3	3.7 (1.1)
6	Easy monitoring of student learning	72	60.0	3.7(1.2)
7	Professional incentives to use e-learning	70	58.3	3.5 (1.2)
8	Easy interaction with students	65	54.2	3.5 (1.2)
9	Improved infrastructure deployment	61	50.8	3.5 (1.2)
10	Accumulate credits toward promotion	48	40.0	3.1 (1.2)
11	Peer recognition, prestige, and status	46	38.3	3.1(1.1)

SD=Standard Deviation

The study also used open-ended questions to allow faculty to provide any other motivating factors for using e-learning. Eleven themes emerged from 34 participants who responded to the open-ended question. These themes were quantified (Figure 1). Most of the respondents (12 out of 34) reported that they used the e-learning approach because it was helpful during COVID-19 (n=12). Other frequent themes were that the use of the e-learning platform made it easy to work (n=6) and easy to provide feedback to students (n=3).

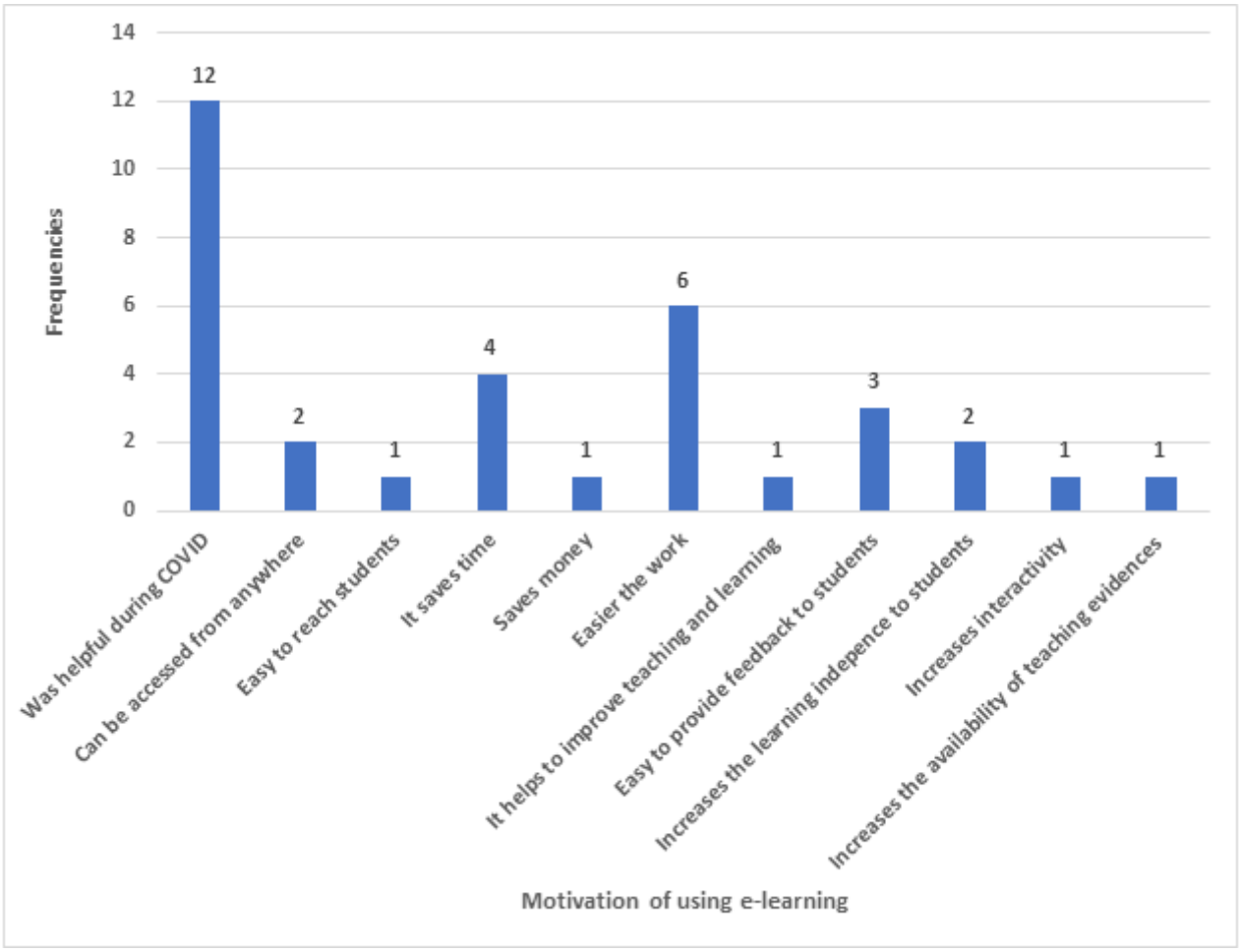

Figure 1. Other motivating factors to use the e-learning platform for UR-CMHS faculty

Perceived barriers for UR-CMHS faculty to use the e-learning approach

The study showed that participants experienced barriers to using the e-learning platform (Table 4). The participants reported the top five barriers to use the e-learning platform, which included concern about access to students (n=101,77.1%), poor interactivity with students (n=87, 66.4%), limited internet access (n=86, 65.7%), inadequate availability of hardware and software (n=73, 55.7%) and concern about security issues on the internet (n=55, 42.0%).

Table 4. Perceived barriers for UR-CMHS faculty to use the e-learning approach

Rank	Perceived barriers	Frequency	Percentage	Barrier Strength, mean (SD)
1	Concern about access to students	101	77.1	4.1 (1.1)
2	Poor interactivity with students	87	66.4	3.7 (1.2)
3	Limited access to the Internet	86	65.7	3.8 (1.3)
4	Inadequate availability of hardware and software	73	55.7	3.5 (1.3)
5	Concern about security issues on the Internet	55	42.0	2.9 (1.4)
6	Lack of technical support	53	40.5	3.1 (1.3)
7	Concern about the quality of e-courses	51	38.9	3.1 (1.2)
8	The unfriendliness of the platform	49	37.4	2.9 (1.3)
9	Lack of incentives to use e-learning	46	35.1	2.8 (1.4)
10	Lack of training	46	35.1	2.9 (1.3)
11	Lack of time to develop e-courses	39	29.8	2.7 (1.3)
12	No role models to follow	39	29.8	2.7 (1.3)
13	Lack of institutional policy for e-learning	38	29.0	2.8 (1.2)
14	Lack of professional prestige	36	27.5	2.6 (1.3)
15	Self-intimidated by technology	34	26.0	2.4 (1.3)
16	Lack of credit for promotion	28	21.4	2.5 (1.2)

SD=Standard Deviation

The study also used open-ended questions for faculty to provide any other factors hindering them from using e-learning. Eleven themes emerged from participants who answered the open-ended questions, and the themes were quantified (Figure 2). The most frequent themes were lack of familiarity with e-learning (n=10), poor internet connection (n=8), and lack of students' orientation (n=5).

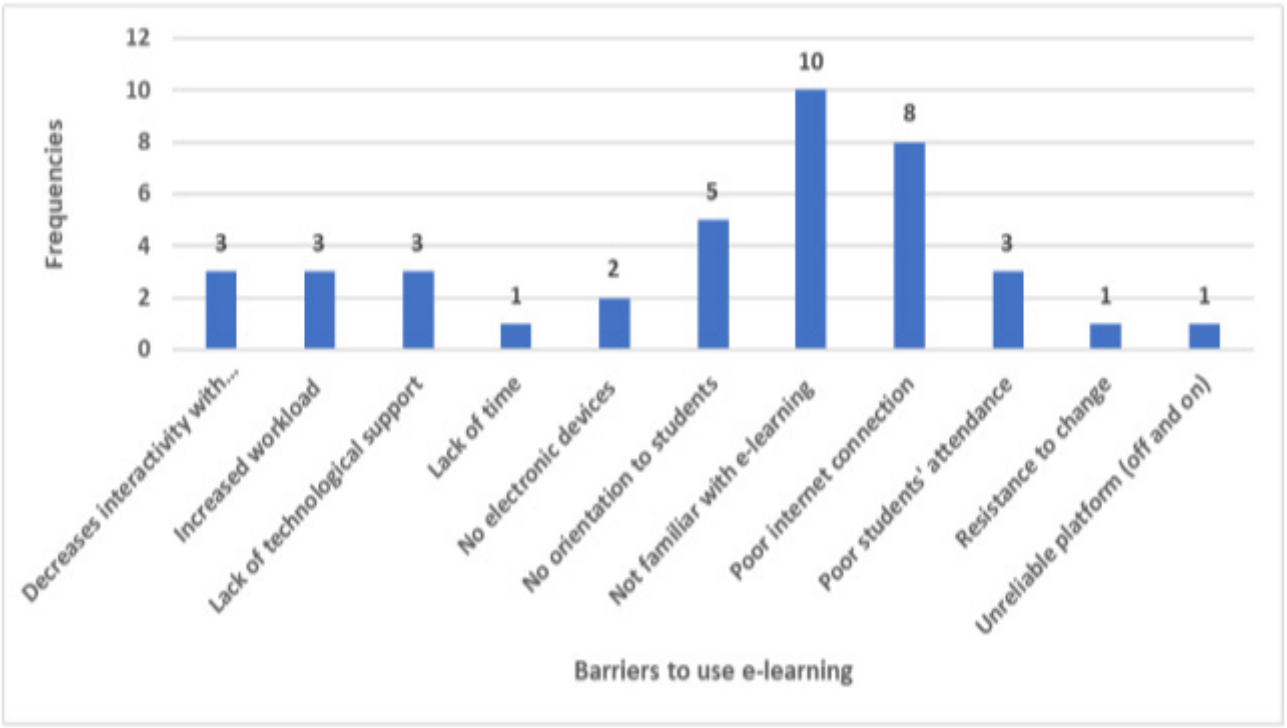

Figure 2. Other barriers to using the e-learning platform among UR-CMHS faculty

Discussion

This study aimed to assess UR-CMHS faculty preparedness and factors influencing the use of e-learning. This study found that, generally, faculty were relatively well prepared as 93.7% of the faculty had started using the e-learning approach, and 92.4% had benefited from the e-learning training session. Attending the e-learning training was associated with e-learning use (p=0.01). These findings support Naveed and colleagues who assert that faculty who had training and technical knowledge used the e-learning system to a greater extent compared to those who were not trained. [10]

In this study, the use of e-learning was similar across the sociodemographic characteristics of the participants except for the school of provenance, where the school of nursing and midwifery had the highest rate (60.1%) of e-learning use, and the school of medicine and pharmacy had the lowest rate (2.3%) of e-learning use (p<0.001).

The highest rate of using e-learning in the school of nursing and midwifery may be explained by the fact that the school of nursing and midwifery is one among the schools of CMHS that had started using e-learning in 2012, long before the COVID-19.[15] Moreover, results showed that e-learning use was significantly associated with attending training sessions (p=0.005) and online teaching experience (p=0.03).

In addition, this study examined the factors that motivate faculty to use e-learning in teaching and learning, and the most common motivators were personal interest in using technology, curiosity to explore, self-gratification, intellectual challenge, friendliness, and ease of use. In addition, the study found that the faculty used e-learning because it was helpful during COVID-19. When studying why university teachers use e-learning systems, earlier studies found that teachers' motivation for e-learning was strongly associated with their determination and willingness to incorporate technology into their teaching.[16]

In this study, the findings indicate that 89.5% of faculty had attended at least one training on the use of e-learning. The determination and willingness to attend e-learning use training may have prepared them with the skills to navigate the e-learning platform, as well as increased their motivation to use it.[17–20] While one can argue that the COVID-19 pandemic pushed faculty to use e-learning since it was their only option, at the same time, this study found a positive correlation between the training faculty received and their motivation to use the e-learning teaching approach.The results indicate that more than 92.1% of faculty who participated in this study used the e-learning teaching approach, and 51.7% reported logging into the e-learning platform at least once a day.

However, the quality of the e-learning teaching approach was still in a critical stage since participants reported barriers to accessing students, lack of e-learning hardware, and poor internet connectivity. It was found that almost 75% of respondents were concerned about accessing students, 50.3% were concerned about e-learning hardware availability, and 70.5% struggled with internet connectivity. Although these three factors are barriers to using e-learning, at the same time, they indicate a lack of environmental preparedness. In normal circumstances, the e-learning approach should start when all hardware and internet connectivity is in place.[17,19,21-23] The findings of this study are not in isolation; most have studies reported the lack of preparedness when the e-learning approach was started during COVID-19.[24,25] Part of this lack of readiness relates to the urgency of shifting from traditional to digital learning as the only available instructional way during the pandemic.

Hodges et al. warn that during an emergency shift of educational approach, careful planning, decision, and implementation for e-learning of instructional design are often overlooked, as the Universities' priorities focus on keeping teaching and learning activities ongoing with minimal disruption possible.[26] This emergency shift was also felt at the UR-CMHS during the COVID-19 lockdown period. Learning materials and resources that had been otherwise designed for traditional face-to-face or blended learning were shifted to total e-learning teaching. Within a short time, the UR-CMHS organized and conducted several training sessions and workshops to transform traditional teaching materials into online teaching materials. This emergency shift during the covid-19 pandemic indicates that academia has realized the need for digital transformation in course delivery.On the other hand, the evidence indicates that higher learning institutions were not fully prepared for this crisis response for learning activities to continue during the pandemic. [27] Recent evidence highlights "emergency online learning" as significantly different from a well-prepared online instructional course design.[28–30] The latter implies an existing well-established institutional infrastructure supporting online teaching and learning. In contrast, the former implies a rapidly improvised approach initiated to maintain course delivery during a crisis such as the covid-19 pandemic, where the existing infrastructure was not appropriately designed for online teaching. [26] Studies suggest that e-learning often fails because institutions and faculty are not fully prepared, hence ill-prepared for the transition.[31,32]

In this study, faculty reported different barriers to utilizing the e-learning approach. Concern about poor interactivity with students, limited internet access, inadequate hardware and software, and concern about security issues on the internet were the top five barriers. On one side, faculty reported the possibility of interacting with students through e-learning, but they also noted it as a significant concern. They reported decreased interactivity with students as the most challenging factor that hindered them from using the e-learning adequately. The faculty indicated that not all students could join the class, and they hypothesized various reasons, including but not limited

to poor connectivity or the lack of electronic devices on the side students. One faculty reported that "*One cannot expect the desired student-faculty interaction which normally leads to an effective learning if students do not have proper access to e-learning infrastructure.*" These findings may be valid because, in 2016, the Wi_Fi coverage was 48% at UR campuses, and the student to computer ratio was 9:1. [33] Though the ministry of youth and ICT launched a laptop purchase program for university students on March 18, 2016, [33] the picture may not have changed significantly. The lack of accessibility limited the students' autonomy and ability to set time and manage goals and be the owner of their learning process.[33] This makes a call to UR-CMHS leadership and its partners to eliminate the identified barriers to using e-learning effectively.

Furthermore, the open questions that were condensed into meaningful categories for quantitative analysis revealed several perceived challenges associated with e-learning, including high workload, lack of technical support, lack of time, lack of electronic devices, lack of familiarity with e-learning technology, poor internet connectivity, resistance to change, and an often malfunctioning e-learning platform. For the analysis, these revealed challenges were grouped into two: the challenge of familiarity and technical support. This study indicated that e-learning is still in the novice stage. Some views have been expressed before as to how one moves from novice to expert level in a practice model. [34] Throughout the process, a novice needs help and guidance to avoid frustration. Logically, faculty should have the role of engaging students in the e-learning process. However, the reported challenge of e-learning familiarity, lack of support, and perceived lack of time by faculty indicate that they are still struggling with effective e-learning; they are in a novice stage. This calls for technical support and tools that should be availed to accompany the faculty on this journey of getting them to the expert level.

Supporting tools should be adequate internet connectivity and appropriate electronic equipment, while technical support should be in the form of technical assistance by experienced staff and continuous regular training.

Study limitation

Even though this study has many strengths and substantial contributions to the literature on the e-learning approach during COVID-19, it also has some limitations. The study used a cross-sectional design that is not adequate for establishing causal effects between faculty preparedness and e-learning use. Furthermore, this study used descriptive statistics and bivariate analysis, which did not control for potential confounders in using the e-learning. The study also used the web self-administered questionnaire to collect data, which resulted in very low response rates. This may indicate the lack of a representative sample for the population; therefore, the generalizability is not feasible.

Conclusion and Recommendations

A regular assessment of preparedness, motivation, and barrier factors is necessary for a practical approach to e-learning in order to demonstrate characteristics that can be used when formulating strategies for maintaining the smooth implementation of e-learning. In this study, the findings revealed some factors that indicate e-leaning preparedness. This study found that most UR-CMHS faculty were prepared for e-learning use, which was significantly associated with e-learning use. The e-learning use was not similar across the schools of the college. The number of e-learning training sessions and the experience in teaching with e-learning were associated with the e-learning use.

Moreover, this study found that motivating factors for e-learning use were personal-related factors such as personal interest in technology use, curiosity to explore, and self-gratification.

The barriers that hindered e-learning use were related to the poor interactivity with students, limited access to the internet, and the unavailability of adequate electronic hardware and software for e-learning.

This study recommends that the UR-CMHS put strategies to redesign the teaching-learning environment that integrates e-learning technologies as part of normal instructional designs to minimize the panic in learning and teaching that may result from other emergencies like COVID-19. Time and resources must be put in place to train and support all college faculty using e-learning. The UR-CMHS should encourage the faculty to continue using e-learning after the COVID-19 pandemic to sustain and strengthen faculty preparedness.

Moreover, the University of Rwanda/CMHS should collaborate with the stakeholders to eliminate the modifiable barriers to maximizing e-learning use, such as limited internet access and inadequate hardware and software availability, to eliminate the concern about accessing students and poor interactivity with students. Moreover, the faculty should be trained to ensure their materials' security on the internet. The UR_ CMHS should also strengthen the technical support for the faculty to minimize the frustrations they may experience when technology fails. Finally, the UR-CMHS faculty should be innovative enough to overbalance the motivators over the barriers in regard to e-learning use.

Conflict of interest declaration

There is no conflict of interest to declare about this study.

Authors' contribution

All authors in this research were fully involved and participated in the conception of the research topic, proposal writing, data collection, analysis, and manuscript writing.

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