

MOBILE TECHNOLOGY FOR ENHANCING TEACHING AND LEARNING AT THE COLLEGE OF BUSINESS EDUCATION, TANZANIA: AN EXPLORATORY STUDY

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ABSTRACT

Mobile phone technology has increasingly been used as an important gadget for enhancing teaching and learning in higher education institutions, Tanzania in particular. However, despite the fact that many students in Tanzanian higher education institutions have access to mobile phones in the learning context, little is known about how those mobile phones are effectively used to enhance teaching and learning process. This study aimed to explore the extent to which mobile phone technology particularly smartphones are used for enhancing effective teaching and learning process at the College of Business Education in the campus of Dar es Salaam. The study collected data through structured and open-ended questionnaires. Purposive and stratified sampling techniques were used to obtain one hundred and five (105) student respondents from the department Business Administration, Accountancy and Marketing. The data were analysed and interpreted using descriptive analysis techniques. The findings indicate that, students use mobile phones to facilitate learning including communicating with their fellow students and lecturers on academic issues, downloading materials and accessing student information related to examinations results. Also, the study revealed that poor cellular networks, cost of purchasing airtime and handset are the main challenges hindering the effectiveness of mobile phones usage for enhancing learning and teaching in higher education institutions. The significance of this study is highlighted in the development of technology in the field of education for enhancing teaching and learning.

Keywords: *Mobile Technology, Mobile Learning, Higher Learning Institutions*

INTRODUCTION

Background information

Recently, there has been a tremendous increase in mobile phone subscribers in the world. The Global System for Mobile Communication Association (GSMA) estimated that up to August 2018, the world had 8.7 billion mobile connections of which, 5.1 billion were unique subscribers. In the Sub-Saharan Africa, there were 444 million unique mobile subscribers (Avle, Quartey, & Hutchful, 2018). For the case of Tanzania, a report by Tanzania Communications Regulatory Authority (TCRA) indicated that mobile subscriptions increased by 8.8% from 40,080,954 registered subscriptions in 2017 to 43,621,499 in December 2018 (TIC, 2019). This increase in mobile subscribers has given more opportunities to the majority of people to use mobile phone technology for different purposes including those related to learning in higher education institutions (HEIs) (Anshari et al., 2017; Kifumbu, 2018; Iqbal, 2017).

According to Wang, Wu & Yuan (2019), mobile learning (M-learning) refers to any kind of learning which helps a student to acquire knowledge everywhere at any time by using mobile devices such as cell phones, personal assistants, smartphones, and digital audio players. It is also considered as the use of all portable electronic devices to access knowledge (Uhail, 2019). However, in the current study, M-Learning is referred to the use of android phones (smartphones) to facilitate teaching and learning in higher learning institutions. In fact, there has been an increased number of students in HLIs everywhere who have access to smartphones for learning purposes (Kifumbu, 2018; Mahenge & Sanga, 2016; Ruvuta & Ongus, 2016).

Regarding the United States of America (USA), for instance, the data obtained from survey covering 1,211 college students aged between 18-30 indicated that (1029) 85% of college students in 2015 owned smartphones and used them for different purposes including those related to learning (Poll, 2015). Likewise, in Bangladesh, Hossai & Ahmed

(2016) amplified that at the University of Dhaka, a vast of students have been using smartphones for academic purposes although there are differences in terms of gender, place of origin, and age. In addition, at the University of Hong Kong and Tsukubai (Japan), Dukic, Chiu & Lo (2015) reported that most students use smartphones for learning, and they have been using them regularly. In Nigeria, Liad (2014) amplified that student aged between 17-27 years of age use smartphones for learning purposes.

In Tanzania, the intervention of information and communication technology (ICT) in the education sector is directly linked to the Tanzania Development Vision (TDV) 2025 which recognizes education as an important agent for social transformation for the creation of a well-educated society of Tanzanians (URT, 2007). Tanzania development vision 2015 emphasizes the use of ICT in all sectors as an important catalyst to enhance the development of various sectors in the nation (Swarts & Wachira, 2020). In line with the Tanzanian Development Vision 2025, the National ICT Policy of 2003 pointed out that, ICT is an important component for enhancing and improving learning in schools, and it advocates for the introduction of e-learning in the education sector. In addition, the policy insists on the use of ICT in basic education to offer new opportunities to enhance and improve the quality of delivered education (URT, 2007). However, despite the fact that there are several studies which have been done in Tanzania to investigate the progress of M-Learning in HEIs as far as the use of smartphones is concerned, little is known about how those smartphones are effectively used by students for learning. In addition, the available studies done in Tanzania such as (Ghasia, Machumu, & Musabila, 2018; Mtebe & Raisamo, 2014; Kifumbu, 2018), are focusing on addressing students' smartphone ownership and accessibility rather than addressing on how smartphones are effectively used for the academic purpose. Therefore, the current study aimed to explore the extent to which mobile phone technology particularly smartphones are used for enhancing effective teaching and learning process at the College of Business Education in the campus of Dar es Salaam. The study thus embarked to answer the following questions:

- *RQ₁. To what extent are mobile phones used for effective learning in HEIs?*
- *RQ₂. What are the challenges facing students in using mobile phones for effective learning?*
- *RQ₃. What are the strategies for improving mobile phone usage for effective learning in HEIs?*

The findings of the current study are of paramount importance to the management of HEIs in Tanzania, CBE in particular, to enhance teaching and learning process through the use of mobile phone technology. In addition, the paper provides insight about strategies of improving M-learning based on several challenges facing students while using mobile phones for learning purposes in Tanzanian context.

LITERATURE REVIEW

Teaching and learning through mobile technologies.

Research has shown that the use of smartphones as a part M-Learning seems to play a vital role in enhancing teaching and learning process (Foen et al., 2017; Kaliisa, 2017; Mshana, 2014). Several studies inside and outside the Sub-Saharan Africa has shown that, the use of smartphones among higher learning students facilitate learning in different ways.

In Malaysia, for instance, there was a quantitative study conducted by (Foen Ng, Che Hassan, Mohammed & Malek, 2017) to examine the extent to which smartphones were used in learning among the higher education students in Malaysia. In the study, 176 students were studied by recording the frequencies of smartphone usage in learning for six days. It was observed that students were using smartphones in conducting different academic activities such as solving mathematics problems, download materials, practice pronunciation, assess online quizzes, view course videos, record classroom presentations and searching for word meanings. The study further found that there were significant differences in smartphone usage depending on the course to be studied. Though the study by Foen Ng et al (2017) indicates different uses of smartphones in academic purposes, the question of challenges associated with smartphones usage for learning was not addressed.

Another similar study was done in Bosnia and Herzegovina by Latif et al. (2019). The study aimed at reviewing the use of smartphones and social media in medical education. The results of the study found that smartphones were used by higher education students for different academic purposes. The students used smartphones in taking notes, accessing online lectures, reading online books, performing medical calculations, conducting medical podcasts, and communicating among themselves academically. The study further found that, WhatsApp, Facebook, and Edmodo were commonly social media used applications due to the multiple benefits. Despite the fact that, the study by Latif et

al (2019) succeeded to investigate on commonly used applications in the smartphones, the study doesn't present challenges that might be connected to smartphones usage for learning.

At the Borneo Island, in Brunei, with the aid of questionnaires, interviews and focus group discussion, Anshari et al (2017) examined the extent to which smartphones are used to facilitate learning. The findings indicated that smartphones help students in accessing teaching and learning materials, interact with teachers outside classes and manage their assignments. Likewise, in the previous cited studies, the information about challenges associated with smartphones usage for learning was not addressed.

Through a systematic review of studies published between 2010 and 2016 about M-learning in Africa, Sönmez et al (2018), found that M-Learning enhances academic collaboration between students and lecturers. In addition to that, it provides immediate communication, effective students' participation, and engagement in learning, making learning reflection and fostering learning communities.

In Kenya, at the University of Mount Kenya, the study about how smartphones influence student's self-direction in relation to learning activities, the findings indicated that the use of smartphones play a great role in self-direction among students. Smartphones helped students to perform independent tasks by accessing the materials required for research activities (Ruvuta & Ongus, 2016). Though the study was done in the context of East Africa, the area of challenges on smartphones usage was not investigated effectively.

In Tanzania, several studies were conducted with respect to M-learning in higher education institutions. For example, Ghasia et al (2018) studied about stakeholders' perceptions of M-learning deployment in HEIs. The study found that even though stakeholders are ready to implement M-Learning in their HEIs, still there are several challenges facing M-learning. Some of the identified challenges are those related to policy, network coverage, high purchasing prices and lack of qualified staff to prepare m- learning lessons. In fact, though the study by Ghasia et al (2018) had a theme related to M-learning, it was purposely organized to study the stakeholders' perceptions about M-learning in HEIs rather than investigating the effectiveness of smartphones usage for learning.

A similar study in Tanzania was done by Rowntree (2019) to investigate ICT for e-learning in three higher education institutions in Tanzania. The study identified challenges such as high smartphone purchasing costs, airtime costs, and internet problems. Indeed, in Tanzania, the gap related to what extent smartphone as a tool for Mlearning facilitates learning among higher learning institutions is of great demand to be filled. Though the study by Rowntree (2019) seems to have the content related to challenges associated with M-learning, the study was not specialized for smartphone usage in learning rather than M-learning in general.

Based on the above reviewed studies from outside and inside Tanzania, one would notice that the question of how smartphones are effectively used for academic purposes is not well documented in Tanzania. In addition, most studies on effective smartphone usage for learning are from outside Tanzania. Therefore, the current study was embarked to explore the extent to which mobile phone technology particularly smartphones are used for enhancing effective teaching and learning process at the College of Business Education in the campus of Dar es Salaam.

Theoretical underpinnings of the study

The current study employed the Unified Theory of Adopting and Using Technology (UTAUT) steered by (Venkatesh et al, 2003). This has been one of the most common theories used in several studies related to how technology is adopted and used (Iqbal, 2017; Venkatesh et al, 2003). The theory combines ideas from eight theories to examine various factors that influence people to adopt and use technology. The combined theories are the Theory of Reasoned Action (TRA), Motivation Model (MM), Technology Acceptance Model (TAM), Social Cognitive Theory (SCT), Model of PC utilization (MPCU), Innovation Diffusion Theory (IDT), Theory of Planned Behaviour (TPB) and combined TAM and TPB. According to UTUT, there are four main constructs which contribute someone to adopt and use a certain technology effectively. The constructs are (i) performance expectancy (it is a belief that using the technology will help in improving the learning and teaching process), (ii) effort expectancy (it is a belief that the technology is easy to use), (iii) social influence (it is a belief that other people include peers will influence someone to use technology), and (iv) facilitation condition (it is a belief that there is a supportive environment/ infrastructure to use technology. According to Venkatesh et al (2003), besides those four mentioned constructs, there are other variables

that can affect each of the mentioned constructs either in a positive or negative manner to achieve an effective behavior intention (adaptation and use of technology).

In the context of the current study, performance expectancy refers to students' academic performance resulted from smartphones usage in HEIs; while effort expectancy refers to the simplicity of smartphone technology in facilitating students' learning, and social influence refers to contributions made by students themselves through peer interactions and other people around in HEIs by encouraging effective usage of smartphones for learning purposes; and facilitation condition is referred to as the extent to which the overall environment in HEIs supports students using smartphones for effective learning. Thus, the combination of performance expectancy and effort expectancy was used in investigating the extent to which smartphones are used for effective learning in HEIs. On another side, social influence, and facilitation condition was used in investigating challenges encountering students in using mobile phones for effective learning, and various improvement strategies for improving smartphones usage for effective learning and teaching in HEIs.

RESEARCH METHODS

Research site and approach

This study was conducted in Dar es Salaam, at the College of Business Education. The college was chosen because it is among the HEIs in Tanzania, and many students own mobile devices including smartphones which are ideal for enhancing teaching and learning process. Given the nature of the relationship between mobile technologies, teaching and learning, a quantitative analysis strategy was used to study mobile phone technology for enhancing the teaching and learning process in HEIs in Tanzania.

Study population and sampling strategy

The population of the study was bachelor students at the College of Business Education (CBE), in Dar es Salaam Campus. A stratified and purposive sampling techniques were used to select a sample of one hundred and five (105) student respondents from three departments including Accountancy, Business Administration and Marketing, of which, 35 respondents were selected randomly from each department. Those selected respondents participated in the explorative study about the extent to which mobile phone technology particularly smartphones are used for enhancing effective teaching and learning process. In fact, since the participation of respondents was aimed at stimulating views concerning effective use of smartphones for learning, the availability of students with smartphones prejudiced the choice of the sample size. Participants were recruited from bachelor students having more than one year of experience in using smartphones for various purposes. Purposive sampling strategy was employed to select the participants that were best in providing the information required to respond to the research questions and attain the objectives of the study (Cresswell, 2014).

Research Instrument and data collection

The researchers used different information to guarantee validity and consistency, thus the research instrument would yield similar results when employed by different researchers. The researchers developed an instrument of data collection guided by the study objective and the prevailing studies. Document review structured and open-ended questionnaires were used in data collection. The primary data for the study were collected through structured and open-ended questionnaires to get in-depth information on their perspectives regarding challenges, opportunities, and strategies of enhancing teaching and learning through usage of mobile technology. The questionnaires were clustered in theme: i) biographical information ii) role of mobile phones in teaching and learning, iii) challenges of mobile phone usage in teaching and learning, and iv) strategy for enhancing mobile phone usage in teaching and learning. A five-point Likert scale that established the degree of agreement from strongly agree to strongly disagree was employed to capture students' perceptions about the role of mobile technology for enhancing teaching and learning in higher education institutions.

Secondary data were collected by reviewing journal articles and books in different database such as Google search, conference proceedings, websites, EBSCO, and Science Direct. The purpose was to obtain detailed information about the role of mobile technology for enhancing teaching and learning in higher education institutions.

Data Analysis

The data were analysed and interpreted using descriptive analysis techniques whereby the SPSS version 24 was used. Descriptive analysis techniques were used in this study in order to guarantee pictorial representation that is easy to

construe and understand because with the presence of tables, figures, and statistics enabled researchers to explore, present, describe and examine relationships and trends of the research data (Cresswell, 2014).

Results

Demographic characteristics

Table 1: Distribution of respondents by demographic characteristics

Demographic characteristics		Number of participants
Age (in years)	Below 25	72(68 %)
	25-34	27 (26%)
	Over 35	6 (6%)
Gender	Female	55 (52%)
	Male	50(48%)
Year of study	First year	36 (34%)
	Second year	34 (32%)
	Third year	35 (33%)
Types of phones owned	Ordinary phone	12 (11%)
	Smartphones	93(89%)
Experience of mobile phone usage	Below 1year	6 (6%)
	1-5 Years	63 (60%)
	Over 6 Years	36 (34%)

Source: Field data, 2020

The findings of this study as shown in Table 1, were derived from the semi-structured and open-ended questionnaires using a total of one hundred and five (105) respondents volunteered to fill in the questionnaires during the collection of data. General characteristics of the sample in terms of age, gender and year of study are presented in table 1. The participants were below 24 years old (72 out of 105). In regard to gender, female (55 out of 105), and year of study, thirty-six (36) were the first year, thirty-five (35) third year of study, and thirty-four (34) second year of study. These characteristics were important in our study as they provide information of the respondents that could determine experience in using mobile technology for accessing learning materials and in turn enhancing e-learning process. In regard to the experience of mobile phone usage and types of phones owned by the respondents, 63 (60%) had experience of 1year-5 years of using smartphones, thirty-six (36) (34%) had the experience of over six years, and six (6) (5.7%) had the experience of below one year. Regarding mobile phones ownership, 93(88.5%) own smartphones, while 12 (11.4%) own ordinary phones which do not support androids' applications.

Usage of Mobile Phone for Teaching and learning Purposes

In an attempt to explore information from the respondents, the research question was set out to identify the usage of mobile phones for learning purposes in the higher learning institutions. The objective was to identify how students use their mobile phones for effective learning. The study presented the participants with a five-point Likert scale. The participants were asked to express their opinion by indicating the level of agreement with the statements whereby 1= strongly agree and 5=strongly disagree. The results emanating from the inquiry are summarized in statement 1 up to statement 5.

Statement 1: Mobile phone is used to communicate with other students on academic issues

As illustrated in Table 1, the majority 95 (94%) of the respondents strongly agree with the statement that the mobile phone is used to communicate with other students on academic matters including the issues related to tests and collections of individual and group assignments. However, few respondents 6 (5.7%) did not agree that the mobile phone is used for communicating with other students other than for social ties.

Statement 2: Mobile phone is used to communicate with lecturers

Regarding the usage of mobile phone to communicate with lecturers on academic matters, the results in Table 1, shows that over half of the respondents agreed with the statement. This shows that the mobile phone is used to communicate with lecturers in inquiring issues related to their missing marks of coursework or final examination results. However, about 14% of the respondents were unsure whether this statement is true, whereas over 31% of the respondents disagreed with it.

Statement 3: Mobile phone enable in downloading learning materials

As the results in Table1 indicates, over 90% of the respondents agree with the statement that the mobile phone is used to download learning materials. This shows that mobile phones are important gadget in learning as it helps to download learning materials. However, few respondents 5% disagree with it.

Statement 4: Mobile phone enables to access examination results through the students' admission and registration information system (SARIS)

As demonstrated in Table1, most of the respondents agreed with the statement that mobile phone enables access to various reports through SARIS- examination results system. However, 11% of the respondents were undecided about the statement, while 3% showed general discontent with the contribution of mobile phone in accessing various reports via SARIS- examination results system.

Statement 5: Mobile phone facilitate social communication

As demonstrated in Table1, the majority 91% of the respondents believed that mobile phone is for social communication ties through WhatsApp and messaging. This shows that the mobile phone plays an important role in connecting the society. However, 3% of the respondents were undecided about the statement, while 6% showed general discontent with the role of mobile phone in facilitating social communication.

Challenges of Mobile Phone Usage for Learning Purposes

To address the research questions about strategies for improving smartphones usage for effective learning in HEIs, the analysed data revealed that, there are several strategies to enhance learning through mobile phones owned by students.

Firstly, our findings show that, reduction of mobile handset costs will enable more students to use it for learning purposes. High costs of purchasing handset were raised as the major obstacle for many students in the Higher Learning Institutions. The availability of cheaper handset is a prerequisite for improving mobile phone usage for effective learning.

Secondly, the provision of free WI-FI for students is important. The study found that the availability of free Wi-Fi is of paramount importance to enable students to access learning materials everywhere and every time (ubiquitously). Availability of reliable internet foster effective and interactive learning through mobile phone platforms. Also, with respect to training, we found that training students is important in order to change their mindset that mobile phones are important learning gadgets other than for communication ties. As it was revealed that, most students 105 (100%) use mobile phones for social communication with friends and relatives than for academic purposes.

Thirdly, the development of a mobile blended application for enhancing learning and teaching in HEIs is important. The study found that the development of mobile application contextualised to the needs of students in HEIs is of paramount importance in order to enhance learning and teaching interactions. Through a mobile blended application, this could enable students to interact with instructors and learning materials ubiquitously.

Discussion of results

The main contribution of this study is unveiling the role of mobile phones in enhancing learning and teaching in higher learning institutions. This study set out to investigate the usage of mobile phones for enhancing teaching and learning in HEIs. Participants in this study included respondents from different age groups, gender, and year of study. From the sampled students, respondents of age cohort below 25 years dominated the population of the study-likely because most of the students at this age join University studies. Also, from the sampled students, respondents were equally representative in all years of study in the first year up to the third year of study respectively -36(34%), 34(33%), and 35(33%). With respect to the year of study of respondents, it was imperative to identify their level, it ought to influence the usage of mobile phones for learning in higher learning institutions.

With regards to mobile phone ownership by the respondents, this study revealed that, many respondents 93(89%) own mobile phones which support various android applications. In the developing economies, mobile technologies usage by students has dramatically increased as learning and teaching gadget in higher learning institutions (GSMA 2017; Mwandosya, Suero Montero and Mbise 2019). The role of the mobile phone has been transformed from social communication ties to educational tool for enhancing learning and teaching in higher learning institutions (see also, Mwandosya, Suero Montero and Mbise 2019). Data analysis also, revealed that the participants in this study had vast experience in mobile phone usage with over 1 year in practice. Our results suggest that there is a close relationship between demographic characteristics and students to use mobile phones for learning purposes.

Regarding the usage of mobile phones for learning and teaching purposes, the results of this study revealed that, majority of participants 95(94%) strongly agree that they use mobile phones to communicate with fellow students on academic issues. Our findings are in line with those of Kaliisa and Picard (2017), who affirmed that mobile phones (both smart and normal cellular phones) are the most common mobile devices used by students for learning purposes. The results of our study show that, most respondents use mobile phones for learning and teaching purposes, for instance, downloading learning material, access various reports in the Students' Academic Register Information System (SARIS), and also to communicate with other students on academic issues such as class assignments. The use of mobile phone technology improved the availability and accessibility of learning content, which enhance the motivation and learning opportunities for students. (Mahenge & Sanga, 2016).

According to our findings, the usage of mobile phones for enhancing teaching and learning were confronted with several challenges. The major challenge raised by the participants of the study was high costs of purchasing the handset, especially those phones which support android applications. Our results are consistent with Ghasia, et al. (2018) who studied in Tanzania where the researchers found that deployment of mobile phones for learning in higher learning institutions faces a challenge of high costs of purchasing the handset. However, with the increase of mobile subscribers, the prices of the handset will decrease soon due to the competition among suppliers themselves. The benefits of mobile phones in learning and teaching outweigh the challenge of purchasing the handset (see also, Kapinga, Suero Montero, & Mbise, 2017).

With respect to lack of knowledge of using mobile phones in learning and teaching, the results show that, the majority disagree with the statement since they have enough skills and knowledge of using mobile phones, for instance, WhatsApp and Facebook applications. However, lack of awareness of deploying mobile phones as an important gadget for enhancing learning rather than a tool for communication ties, is the major challenge encountered by the students in higher learning institutions (Mshana, 2014). Our findings suggest that, higher learning institutions should improve their curricula which will accommodate mobile learning and create consciousness to students on the importance of integrating mobile phones into learning perspective.

In addition, our findings revealed that poor mobile networks hinder an effectiveness of mobile phones usage in the learning realm. The study by (Mshana, 2014; Mtenzi, Chachage, & Ngumbuke, 2008) amplified that students complain about unreliable internet connectivity in the higher learning institutions. Our study suggests that poor networks affect the usefulness of mobile phones as a learning and teaching tool. The presence of a reliable network is of paramount importance to mobile phone users in order to support learning and teaching activities.

With respect to transformation strategies, our findings revealed that the provision and availability of free Wi-Fi is important for students to engage in learning ubiquitously. The study by Ghasia et al., (2018) amplified that, provision of relevant resources to support mobile learning is important to enhance learning and teaching. Our study suggests that higher learning institutions should give priority to M-learning by providing resources needed to enhance the learning environment.

Furthermore, with respect to changing mindset of students towards the use of mobile phones for learning purposes. Our findings suggest that training is needed to change the mindset of students and management of higher learning institutions towards deploying mobile phones for enhancing learning and teaching rather than communicating with friends and relatives. Mobile phone technology has increasingly been used as a tool for enhancing learning and teaching by smooth sharing information in the developing economies (see also Mwandosya, Suero Montero, & Mbise, 2019).

Last but not least,, our findings suggest that development of mobile phone application that contextualizes the needs of learners for sharing information and enhancing teaching innovation is of paramount importance in the developing economies. The mobile phone technology is a favorable tool for teaching and fosters effective learning.

CONCLUSIONS

Mobile phone technology can play a significant role in enhancing teaching and learning in higher learning institutions if utilised effectively. Mobile phone technology could enhance the learning process by sharing information between learners and instructors, for instance, accessing notes and assignments. Our study highlighted the deployment of a DSR project through technology initiative to improve learning and teaching processes.

Our study revealed that the mobile phone is used to communicate with other students and lecturers on academic matters. In addition, students use mobile phones for downloading materials and accessing their various information, for instance, fee status and semester results. Furthermore, our study revealed that the cost of purchasing airtime, costs of the handset, and poor cellular network were the major challenges of enhancing learning and teaching processes in higher learning institutions. However, the participants in our study seeming that the challenges could be well-adjusted by the benefits that mobile application solution could offer. This lay down foundations of our DSR project for developing a mobile technology application for enhancing learning and teaching in higher learning institutions. The result of this study is envisaged to contribute to the development of technology in the field of education.

Limitations and Future Work

Although the study has explored the usage of mobile phones for enhancing learning and teaching, the sample was limited to only one higher learning institution and only the students in degree levels. Nonetheless, the results of the study should be construed with thoughtfulness due to the small sample size used. The study has focused on the initial stage of Design Science Research (DSR), i.e. problem identification. Our next steps in the study will involve a detailed user requirements assessment and design and development of the technological intervention. Focused group discussion was used to collect in-depth information that can be simplified by mobile technology application and suggest the technological innovation for enhancing learning and teaching. The aim of collecting user requirement information is to help a mobile software developer to incorporate information according to the expectations of learners and lecturers in higher learning institutions.

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