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Mobile Learning between Evaluation and Planning in Higher Education: A Case Study on Some Sudanese Universities

التعلم النقال بين التقييم والتخطيط في التعليم العالي: دراسة حالة لعدد من

الجامعات السودانية

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Abstract This study examines the integration of mobile learning in higher education in Sudan, and whether there is a plan for using mobile technology to support learning. The study aims also to identify the obstacles of integrating mobile technology in higher education in the Sudan. The Study used the qualitative method (Case Study), and the interview was used as data collection tool. The sample of the study consisted of (6) heads of educational technology departments and experts in the field from three universities. The results showed that there is no policies or strategic plans for using m-learning in those universities. In addition, some obstacles impeding the use of mobile learning such as deficiency of financial resources and infrastructure, and less consideration to the role of mobile learning from the stakeholders and the academic staff. The study recommends the importance of strategic plan, improving the internet access and speed and involving the stakeholders and the other concerned members in the issues of implementing mobile technology in higher education.

Keywords: Strategic Plans, Higher Education, Information and Communication Technology.

المستخلص

تبحث هذه الدراسة في التعلم النقال في التعليم العالي بالسودان، وما إذا كانت الجامعات السودانية تهتم بتطبيقه كجزء من التعلم عبر التكنولوجيا. كذلك، هدفت الدراسة إلى التعرف على العقبات التي تعترض دمج هذه التكنولوجيا في التعليم العالي. استخدمت الدراسة المنهج النوعي (دراسة الحالة)، حيث تم إجراء مقابلات مع ثلاثة من رؤساء أقسام تكنولوجيا التعليم وثلاثة خبراء في نفس المجال من ثلاث جامعات. أظهرت نتائج الدراسة أنه لا توجد سياسة أو خطة استراتيجية للتعلم النقال، وأشارت النتائج أيضاً إلى وجود بعض المعوقات التي تعيق استخدام أو تطبيق التعلم النقال بالجامعات السودانية، من هذه المعوقات غياب السياسات والخطط لتطبيق التعلم النقال، ونقص الموارد المالية

والبشرية والبنية التحتية، ومحدودية الفهم لدور التعلُّم النقال. أوصت الدراسة بأهمية مراعاة التخطيط الإستراتيجي في دمج تكنولوجيا التعلم النقال في التعليم العالي. وتحسين البنية التحتية، خاصةً تحسين الوصول للإنترنت وزيادة سرعته، وإشراك متخذي القرار والأطراف المعنية في قضايا توظيف تكنولوجيا التعلم النقال في التعليم العالي.

الكلمات المفتاحية: التخطيط الإستراتيجي، التعليم العالي، تكنولوجيا المعلومات والاتصال.

1. Study Problem

1.1 Introduction

Mobile technology has been used in education, socially and for business in terms of online technology including online learning, online banking, online shopping, deliver online training to the health care professionals and services for patients and so on. So, people over the world can use mobile technology to learn, to do diverse daily works and tasks and other activities. This feature provides a huge opportunity for mobile learning, thus, the question is “How mobile learning will shape the future of education?” With taking to account the future progress of mobile devices, and to what extent it will be quite different than today devices. Consequently, the demand for effective learning to the new generations, it must be taken to account planning for mobile learning by higher education (Ally & Prieto, 2014). Sudan is a developing country in Africa trying to use m-technology in education to increase the availability of knowledge, or offering digital learning resources a. Therefore, the researchers investigated the viewpoints of universities, and the departments of educational technology on whether they are planning to make use of mobile learning in the universities. Furthermore, the study aims to investigate the status of m-learning in higher education in Sudan through addressing the existence of policies or plans, and the factors affecting the implementation of such policies, plans or strategies to enable educational technology for users.

1.2. Purpose of the Study

The purpose of this study is to find out whether departments of educational technology in Sudanese universities have plans or are currently planning to apply m-learning. In case of reaching a positive response, the study will investigate what strategies they are using for

implementing these plans. In case of negative response, the researchers will attempt to find out the factors that prevent employing m- learning in higher education in Sudan.

1.3. Study Problem

In time of technology existence in diverse sector of the life and dramatic change of people life style there is a need for technology integration in education to support learners active participation in school and later in life (OECD, 2016). To raise that level, many universities over the world has implemented technology to catch-up with the fast progress of education supported with technological tools. Consequently, the university has formulated policies and plans to lead the implementation process and achieve the related goals. As a result, this study seeks to address the status of mobile learning in Sudan. Furthermore, the study aims to reflect whether Sudanese higher education bodies are a part of this mainstream of technology in education, or still they have to make a vision to integrate m-technology to education. Therefore, the researchers has suggested the following questions to lead the study:

1. To what extent the Sudanese universities planning to implement mobile learning?
2. Are there any strategic plans for applying mobile learning? If yes, how are these plans implemented?
3. What are the obstacles that impede the Sudanese universities to integrate mobile learning?

1.4. The Objectives of the Study

The objectives of this study are to:

1. Investigate the situation of m-learning in Sudanese higher education institutions.
2. Discovering existence of policies which assume to drive m-learning implementation.
3. Unveil the factors affecting the implementation of m-learning.

1.5. The Importance of the Study

The importance of this study comes from the fact that it deals with the subject of mobile learning, which is one of the most important methods of learning that receive wide

attention around the world. This study is also one of the very few studies that dealt with mobile learning in the Sudan, and it may contribute to the knowledge in this area. In addition, this study may help setting up mobile learning policies in higher education institutions. Notable, the results of the study might be useful for leaders in Sudanese higher education institutions as well as policy makers, practitioners, stakeholders and donors to support the educational system in the Sudan to implement m-learning and taking advantage of the huge technological progress and its implications in education.

1.6. Study Limits

1.6.1. Timing and Venue (Geographical) Borders

The study conducted in the period of time from 2016-2017. The data has collected through the interview in the first stage from the head departments during (August to October 2016), and from the experts in the second stage during (August to September 2017). The study inclusive to higher education institutions in Sudan which representative with some universities including Sudan University of Science and Technology (SUST), University of Bahry, and university of Gezera, the study targeted the Colleges of education – departments of educational technology at the mentioned universities.

1.6.2 Subjective and Logical Borders

To understand the idea of this study, the authors believe that investigating the extent of the implementation of m-learning might serve the Sudan to make a good educational progress. Furthermore, the borders of this study in terms of topic is close to the area of technology in education, in particular m-learning in education and higher education inclusively.

1.6. Limitations of the Study

This study has some limitations represent in the less number of the participants. The researchers has met and sent the interview to eight universities departments of educational technology. Addition to distributing the interview to eight experts, however, only three departments and three experts were replied to the interview.

2. Literature Review and Previous Studies

2.1. Literature Review

Planning for mobile technology became a global orientation where the countries have made a good progress in m-learning are already designed ambitious policies and strategies to treatment skills of 21st century which enable best practice of m-learning (UNESCO, 2012). From above mentioned, the study seeks to discover the state of mobile learning in higher education in Sudan and whether there is a view for implementing this technology, in other meaning to what extent there is a planning for using mobile technology to transfer learning in time of extreme use of the smart devices among student's, teaching staff or instructors and even the employees as part of the community progress.

However, how can mobile learning be used to improve education? Mobile device as part of this technology has advanced tremendously starting at the end of the 20th century (Sharples, 2000). There are many definitions of mobile learning. Of these definitions is that mobile learning is "learning [that] can take place in locations" (Attewell&Tribal, 2006, p. 11). Furthermore, mobile learning is a way of facilitating the process of learning and can be regarded as the process of learning anywhere any time (Chu&Cai, 2015). Such a definition confirms that learning can happen anywhere and anytime without being confined to the precincts of schools or universities.

In Sudan, there is a policy document for information and communication technology (ICT) (NTC, 2012). This policy document is entitled: A Five-year Plan 2012-2016. Although that policy document call for use of ICT in education in the country, it does not include section related to the use of m- learning. Regarding this point the UNESCO planned to m-learning "new policy related to mobile learning should be established within existing ICT in education policies which many governments already have in place" (UNESCO, 2013, p. 30). This statement emphasizes the importance of formulating a policy for m- learning. Investigating existence of institutional plan for using m- learning has led to finding out no such plan at all. Interviewees, however,

agreed about importance of m- device as part of m-learning. Nevertheless, they reflected their optimism toward using m- learning in the future.

The infrastructure of m-technology or ICT has identified as one of the reasons that contributed to integration of m-technology in universities, to enable effective use of m-learning there is a crucial need to establish the infrastructure. This step may help universities to deliver learning content to the learners in a moveable method. Moreover, another factor also prevents or slows down this process which is the budget that universities spend to build the infrastructure. Furthermore, this situation of the infrastructure and budget also is a part of the overall government funding for education which is low amount comparing to another sectors such as defence and security (Educational conference,2012; 2014).

The coverage of Mobile network has reached about 87% of all the population area in Sudan, so mobile internet has ability to make a transformation in education especially among the higher education students because the availability of Internet packages. So wide mobile internet coverage area with good internet average speed comparatively and mobile broadband access to the internet, all serve as indicators that Sudan's higher education could make a good breakthrough m-technology policies (Nouaman, 2015). Thus, Universities can take advantages of abundance of internet that reached 87% of the country area (NTC, 2015).

In addition, infrastructure consider as influential factor which support making significant progress in education since using of computer and internet has launched in education in particular this progress during the period of 2009-2012 (Drijvers,2014).

The student use of m-device is important factors to provide m-learning. To harnessing potentials of the Smartphone's as supportive tools for learning delivery, where mobile phone is flexible, light to carry, easy to use and connect to the internet to get the learning content(Johnson et al,2010). This flexibility and ubiquity help learners to learn anytime and anywhere via wireless Internet (Anshari et al, 2017; Mtebe&Raisamo, 2014).

2.2. Previous Studies

Mtebe&Raisamo(2014) examined the students' behavioural intention to adopt and use m-learning. The sample included 823 students from five higher learning institutions in Tanzania. The results showed that, four factors: performance expectancy, effort expectancy, social influence, and facilitating conditions had significant positive effects on students' m- learning acceptance with performance expectancy being the strongest predictor. These results serve who wants to implement mobile learning to develop mobile services that are relevant and acceptable to learners.

In a study aimed to address three different collaborative learning environments to evaluated students' engagement, critical thinking, and attitudes toward collaborative learning in Abilene Christian University in the United States. The findings of the study indicate that m- technology is associated with positive student perceptions of collaborative learning with increased disengagement by students during class. Also, the level of students' critical thinking was more closely associated with the tools used to build written responses than with the collaborative learning environment style. Students constructing paragraph responses on m-device demonstrated significantly less critical thinking than those who used computer keyboard or wrote responses by hand (Heflin; Shewmaker; & Nguyen, 2017).

Above studies showed a good potential of m-device in the student learning which means the appeal is to the universities to increase use for m- devices in education.

3. Study Methodology

The researchers have used the qualitative approach, (Case Study), a semi-structured interview was designed and conducted with interviewees, who are three head of educational technology departments. Also there were three experts in the field in different universities.

The interview has done with three educational technology departments in three universities, Sudan university of Science and technology (SUST), University of Bahry, and University of Gezera- College of education-Hantoub, as well as three experts of educational technology. After getting the data, the researchers transcribed the interview

and made some codes and segmented the codes. Then coding process are led to identifying some themes which has shown and discussed in the data analysis.

4. Findings and Discussion

In this section authors showing the responses of the participants to the questions of the study. Themes below reflect the participants' responses as a study results.

4. 1. Theme One: Absence of Mobile Learning Policy

To get the result of the interview, the interviewees responses has categorized to the codes under themes below:

Mobile learning policy, implementation frame work, appropriate strategic plan, m-learning awareness, financial support, plan requirements, technological priority.

Theme One Discussion

In addition to the lack of policies, still there are other factors impeded the application of m- learning. These factors are lack of financial resources, infrastructure, and less understanding of the role, characteristics and capabilities of mobile learning.

Interviewee "A" believes that the factors that have led to absence of m- learning in his university is envelopment of the university administrations in issues of m-learning in terms of planning. In this theme the study discuss the above mentioned about the interviewees' responses of the interview. The paragraphs below reflect the importance matter to be understood about m- learning.

In this regard, interviewee "A" identified the importance of the administrative role in the planning for the university in particular planning for technology and the methods of implementing technology to support learning. M-technology as a topic has getting attention of diverse sectors and institutions globally and the education as well. The interviewee "A" thought that:

"Administrators are also need to contribute in planning for their universities how to use technology as a whole, and m- learning as part of this technology".

Such a statement indicates that university administrator staff need to be aware of uses and planning of m- learning. It also implies the significance of training among university administrators towards the use of m- learning.

The interviewee “**B**” introduced m-learning from the perspective of m- device for learning. As a result he indicated issues of necessary, functions and potentials of m- devices as one of the issues should be considered to planning for this kind of learning. Moreover, he stated that:

“We need to understand necessary of mobile technology as one of set of technologies that can lead to developing education in Sudan. We need to understand functions and potential of the m- device to deliver learning”.

This reflects the importance of understanding m-learning functions among administrators to contribute formulating a strategic plan to implement this technology.

Meanwhile, interviewee “**C**” confirmed that:

“I think mainly we need to raise awareness of educational leaders about the m-learning that in order to promulgate an appropriate policy to support using mobile for learning process, e.g.: Now Sudanese student in higher schools are not allowed to use mobile for learning inside campus, and there is no formal policy, but it seem to be like that”.

The statement of interviewee “**C**” supports the ideas of interviewees A and B that raising administrators' awareness and understanding of the importance of m-learning is essential and would lead to policy planning to implement such technology.

The second matter related to the planning for m-learning is that some factors are preventing that step. Parts of these factors are the infrastructure, and the technological environment.

To conclude this theme, the interview with educational technology departments has revealed that there is no policy or plan for m-learning as emerging trend in education in Sudan. Higher education in Sudan particularly administrators or directors of educational technology seem they lack support and training for planning to m-learning. The understanding of m-technology, characteristics and features, and the way of uses this

technology. Consequently, the need is for the preparation of the policy maker and planner in the universities with association of educational technology departments to join the policy formulation and providing an implementation plan to employing such type of technology.

4.2. Theme Two: Mobile Usage and Accessibility of Internet (ICT Infrastructure)

To address the usage of m-devices in Sudan the study categorized the interviewee's responses to get the open coding as follows:

Technological and social progress, effective network, save time & money, mobile applications, software, hardware, learning management systems (LMS), student digital literacy, learning content, digital literacy, technical support, education for all, bring your own device (BYOD).

Discussion of Theme Two

This theme shows the usage of m-devices and ICT infrastructure and to what extent that might contribute to deliver m-learning. In terms of mobile usage there is a huge number of smartphone's among both students and teaching staff members. This abundance expected to help the universities to make m-learning implementable. Below the study briefly shedding light on the mobile usage and ICT infrastructure as well as the role that each one can play to support delivery of m-learning and then discuss the view points of the study participants about that.

To illustrate the situation of m-learning in Sudan the study shows the viewpoints of the interviewees below; interviewee "A" said that:

"There is a need to realize using m-learning in higher education institutions, we need to provide the classrooms with portable devices (PC, Smartphone, iPad, and tablet etc.), to engage student in real learning situation, but this requires the university to integrate m- technology in the curriculum, to develop student's digital skills, to cope with the educational progress which is happening in the neighbor African countries".

Using m-learning requires availability of such devices among the learners and teachers. Taking advantage of that may support universities to implement that technology.

Interviewees “B” call for using m-phones for learning once they usable for social communication

He Believe that:

“As general perspective we can see students are almost having m- devices- smart phones- PC for part of them. However, if we look closely to their use of smart phones it is for social interaction more than educational use, as a result why universities do not take the initiative and make the use of these devices for learning with taking advantage of the Internet availability and make online platforms to deliver learning”.

Interviewee “C” agreed with interviewee “B” about availability of m- devices and importance of that to support learning delivery and enable outdoor learning not just make it close to the classroom environment. In reality, learning is not confined to classrooms only but also it can take place anywhere (Davies, 2017).

In this matter interviewee “C” identified availability of internet access in diverse packages (Mobile Broadband) that offered by the telecommunication companies. The Interviewee reported that: *“m-devices particularly m- phone (smart phone, tablet, I pad, etc.) and PC are available among teaching staff members and somehow large number of students. However, students may tend to use these devices for social interactions more than educational purpose, this might imply that learning could happen through using m- phone, consequently universities could design the learning to be accessible to those students by transfer learning content through m- phones as well”.*

The above responses reflects the necessity of training teachers to deal with m- learning as they use it for different purposes as well. This goes in line with the worldwide attempts to exploring the potentials of m- learning among teachers as well as students (Yousri et al. 2014).

Based on the researchers' knowledge, students are also need to be aware of the technical use of mobile device. They need to master the use of multimedia files, and deal with blogs, groups, and/or learning management systems that can be established by universities (Gikas; & Grant, 2013).

Using m- device to deliver learning is needed to “facilitate learning in a new and innovative ways” (UNESCO, 2013, p. 5). Although there is no so strong internet connectivity to increase using m- learning in Sudan, there is a support of using m- device for learning among teaching staff members. Moreover, instructors agreed on necessary of availability of a good Internet to facilitate using m-learning. Interviewee “A” stated that

“We need a good and effective network to be able to work in the environment related to m-learning, and support the students' progress”.

This response supports the importance of internet accessibility in using m- learning. (Kukulaska, et al, 2005) defined that accessibility is one of the necessary requirements for the enhancement of m-learning.

4.3. Experts' Interviews Analysis

In addition to the interview with the head departments of educational technology in some universities. The authors interviewed three experts as a previous leaders in higher education institutions and some planners who may part of the government planning bodies or committees to provide the study with some useful information. The study discuss responses below

What do We Need to Understand?

The experts were asked to share their ideas about the current situation of m-learning in the country and the important aspects that we need to understand about this topic and to what extent there are some innovative uses for m-learning could be used in education.

They identified a group of issues to be understood represent in characteristics and capabilities of m-technology, how to use m-technology, and types of learning that m-

learning could support (distance learning, face to-face learning). Below the discussions of these issues.

Understanding features of m-technology helps to employ it particularly for teaching and learning process through integrating the curricula. It also helps instructors to make the classroom more effective by using software and tools to make diverse actions and activities which are more motivational and more interesting comparing to traditional classroom activities. However, what are the specific characteristics of m-technology? Part of these features has described by Ozdamli and Cavus as below

“The core characteristics of mobile learning are ubiquitous, portable size of mobile tools, blended, private, interactive, collaborative, and instant information. They enable learners to be in the right place at the right time, that is, to be where they are able to experience the authentic joy of learning” (Ozdamli & Cavus, 2011).

Benefits from features and capabilities of m-technology could introduce wide support to education such as enable learners to access the learning resources, participate in lessons and doing tutorials, receive lectures if it is archived or live. M-technology also offers accessibility to multimedia and enable learners to read asynchronous postings. Moreover, m-technology contribute to enable students' to exhibit their work, join virtual learning communities such as webinar, online conferences, discussions groups, etc., which means m-technology can support distance and face to face learning (Hashemi et al., 2011). Regarding this point the interviewee “E” believes that:

“In Sudan we need to understand the characteristics of m-technology and what is available, what part of education is it suitable for? For example tutorial and exercises tests, and how the materials should be presented on m- devices”.

While the interviewee “M” identified that:

“We need to understand the capabilities of m-technology in order to be able to use it for educational purposes that we should also be adapted in the pedagogical framework and establish supportive policy for that. This situation will enable us to benefit from this technology and best serve our educational system to support our nation future”.

Obstacles Hindering the Use of M-learning

Using m-technology in education is a modern way to support learning process through m-devices, and help the students or learners to look at the opportunities which could be presented by the use of digital media on those devices (Mehdipour; &Zerehkafi, 2013). Currently the educational institutions need to support the strategic planning to benefit from the opportunities and meet the demands of m-learners, the education and training sector needs to be informed about the actual use of m- devices in the classroom or workplace learning, and also the potentials as well as the future trends in m-technology (Peters, 2007).

The interviewees identified some factors that hindering m-learning in Sudan. Part of these factors is teachers' experiences of using m-technology. Where teachers may teach for a time and get teaching experiences in his major and that one of the way to increase his knowledge and experiences and make him/her more confidence with teaching. However, the teaching with technology also has different experiences and skills for teacher to improve his professional development.

Interviewee "E" believes that teaching staffs need to be skilled trained and be familiar with technology, that will help them to effectively employ technology in teaching to develop students learning and experiences as part of technology implementation process. Additionally, he has made out reflections below:

"Dealing with technology in the teaching process over time have a good impact on the teachers progress, it could enhance the teachers' knowledge, skills, increase their productivity of teaching and make it more effective. Accordingly, higher education institutions need to enable teaching staff with technology implementation skills, to assist the efforts of technology integration and teachers' technological skills should be a central component of professional development courses, activities or training whatever it called if more effective use of educational technology is to be achieved otherwise the change may takes a long time and teaching experiences may also not developed as it must be".

Addition to the teacher reflections above, the interviewees added the lack of software for m-learning to be part of the training courses for teaching staff which provide by the university. The training assume to provided package of the applications related to the m-technology in particular and how teachers can employ that in the learning transfer and the benefit they will gain as a result. Interviewee “M” said:

“Using m-technology require training teachers how to integrate it for educational purposes, and to convince them that mobile learning could enhance the teaching and learning process ,could help them better do their job and adopt good strategies for their teaching practice”

Implementing m-technology in higher education in Sudan should think about teaching staff development as a main issue to integrate technology. Addition to increase and support the teaching staff to not ignore using mobile features in their teaching, that also need to be provide them with software and applications. Universities also have to offer free or possibility for software update for teachers and students and subscribe in international database such as Science Direct, Springer, Web of Science, Wiley online library, etc. These repositories offer good update knowledge for the scholars and students and that will make them aware of the international progress in their fields and their future career as whole.

Policy Implementation Requirements

Formulating ambitious ICT policy and perfect implementation strategy is important for Sudan to make areal progress in education as whole and in technology in specific to enable m-learning to contribute to that progress under extremely constrained financial resources (Kozma & Vota, 2014). Nevertheless, these policies assume to lead the next steps of incorporating m-learning to comprehensive use. Therefore, universities could adopt m-learning to survive student needs using the learning management system (LMS), however the studies argue that although LMS is a critical factor to the success of m-Learning (Alrasheedi, Capretz & Raza, 2016), a study about the effect of LMS on student academic achievement showed that use of LMS positively influenced online students' academic achievement (Han & Shin, 2016). The findings from this empirical study

present a better understanding of students' usage of m- devices in higher education. Usages of m-learning are diverse but it's expected to contribute serving university management system and support the successful of the student and knowledge building, skills development and competences employment toward creativity and innovation as a one of the main goals for higher education institutions to adopt m-learning.

Furthermore, participants of the study have added the network connectivity as important factor that need to be taken to account. They believe that universities should cooperate with the companies of telecommunications as operators of the internet services in the country.

Notable, M-learning require stable internet connectivity, online platforms to transfer digital learning content and then students and instructors could access. Interviewee "M" Believe that:

"As a result of adopting 4G service and the internet improvement, I believe the universities can benefits from that and support the practice of m-learning. Students also can get wider access to the learning content and download the learning materials, interact as peers, interact with instructors and get timely feedback, addition to that the learning management systems also could take advantage of the network and improve the service they provide and make the instructions of the process fast and understood, this step will offer more time and reduce the cost of printout materials which is one of the important services for the good management systems".

Furthermore, the interviewee "E" stated that:

"By the coordination between the telecommunication companies and the universities there is a good opportunity to best serve the integration of m-technology. When the internet services become a stable the learning and management process will be better, the learning will be easy to transfer , learning materials will be accessible, student practice, knowledge and confidence to m-learning will also be increased, as well as the good solutions and choices that will be offered to the learning management systems. So with these bilingual advantages universities can make wide infusion for m-learning and open light point to the future of higher education in Sudan".

4.4. Theme Three: Future Directions/ Solutions

In this theme, the researchers present the future of m-learning based on the interviewees' expectations. What institutions of higher education in Sudan need to adopt m-learning in the future is shown in the following discussion:

Regarding the usage of m-learning the study participants stated their inside about the future of m-technology and to what extent the need is to consider the requirements of applying these directions. The view points of the interviewees has shown as follows

Interviewee "A" said that:

"We need to activate this technique, employing a considerable number of personnel trained staff because of importance of the field". The interviewee also think that m-learning may have a good future for Sudan,he stated below

"Conveying the technological progress in the world, and facing challenges of the life in Sudan".

Interviewee "B" believes that:

"It is important to train teachers, and offering internet to take advance of potential of m- device for learning and the contributions of that in the future of education of Sudan.

Accordingly he stated that

"Teachers training, internet access and the technical support, are all important to be offered to make useful implementation of m-technology. By enabling such features of m-technology it will be one of the effective tools inthe future of higher education by transfer learning. Addition to the advantages of m-devices to be used by learners and instructors because it is light, easy to use, and fast connected to the internet can be".

This implies that there are many issues should be considered for using m- learning in the future but most importantly is the access to internet and training of teachers.

Interviewees "C" mentioned that

“formal learning that maybe need a time, informal pattern could be done by individual teachers to enhance learning and teaching process, specifically using the social software and websites like Facebook, and WhatsApp. Sudan has affected by war that has some reflected negatively on the Sudanese community like displaced, refugees and pastoralist. So, all those people could be supported by some projects of mobile learning in order to reduce the general enrolment (GER) among the children out of the basic education system”.

The above statement of the interviewees “C” highlighted new dimensions or task that m-learning can achieve, not just for learners in higher education but also learners in general education including people dropping out of schools.

5. Conclusion and Recommendations

5.1. The Results of the Study

1. Mobile learning is not applied to higher education in the Sudan, and does not receive the necessary attention from the departments and the academic staff.
2. There are no any strategic plans for applying mobile learning in the Sudanese higher education institutions.
3. There are some obstacles that may impede the Sudanese universities to integrate mobile learning in the educational systems, these obstacles include:
 - a. The absence of strategic planning for implementing mobile learning.
 - b. Non-allocation of budgets for the application of mobile learning.
 - c. The weakness of infrastructure and computers networks.
 - d. The lack of interest in mobile learning, and lack of awareness and training of faculty members on its importance and how to benefit from it in teaching and learning.

5.2. Recommendations

Base on the above results, the researchers recommend the following:

1. The institutions must pay attention to mobile learning, and aware about its importance in teaching and learning.
2. Institutions must provide training to faculty members on mobile technologies and their use in education.

3. There must be strategic plans for applying mobile learning in higher education in the Sudan, and the institutions must improve the infrastructure to support mobile learning, and provide suitable budget for mobile learning and its technologies.

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