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M-learning and its impact on education system: A case study on degree students of Nagaon town area

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Abstract

Smart phones, laptops and tablets are most popular devices among students, these devices have set a new way to communicate, collaborate and learn. The use of these portable devices has the capability to inspire new approaches in the field of education. therefore, it is important to examine the students approaches about the educational use of mobile technology in supporting their learning process. The main aim of this study is to determine the impact of mobile technology for learning as well as exploring the kind of interaction among the college students of Nagaon town with their portable devices. 240 student was taken as the sample, the responses were collected by the researcher herself by a self-structured interview schedule. The result of the study indicates that student use their devices to exchange education related materials, messages and academic files with their class mates, they use the internet and hold discussions with class mates and teachers through various apps like zoom, google meet etc.

Keywords: M-learning, Mobile phones, handheld devices.

INTRODUCTION

In the decade of digital world, computer and communication technologies have opened tremendous opportunities for learning. The application of these devices has carried a great evolution towards the modern education system in its all aspects. The advent of emerging mobile technologies has integrated in learning system of education is inevitable. E-learning brought a new progress based on the use of mobile phones together with wireless communications for teaching and learning purposes.

M-learning is learning through social and content interactions, using personal electronic devices. It's a form of like distance education, because the learners use mobile devices as their means of education. M-learning technologies include handheld computers, mp3 players, notebooks, mobile phones and tablets. It focuses on the mobility of the learner, interacting with portable technologies. Using mobile phones for creating learning aids and resources becomes a significant part of informal learning. This learning is convenient in that it is accessible from anywhere virtually. The learners can share the materials instantly with anyone using the same content, which leads to the reception of instant feedback and tips. M-learning also brings strong portability by replacing books and notes with small devices, filled with modified learning content.

A good implementation of mobile learning will complement and add value to existing formal learning, assessment and educational administration and management. However, the impact of mobile learning in teaching learning delivery has not been ascertained by all students in many developing countries. This paper seeks to provide a broad assessment of the impact of mobile learning among the higher secondary students and attempts to understand the effects of having lectures, taking notes and slides on mobile phones. To discover workable solutions, the paper will describe different research questions and survey activities carried out and results obtained from the study.

Review literature:

A lots of research, on M-learning have ascertained the adequacy and the potentiality of using mobile phones in education, and the benefits of incorporating them in the classroom for collaborative learning and active students participation. There are many studies that also discuss the effectiveness and integration of M-learning with class-room and e-learning. They stated that mobile learning is one of the developing areas in teaching and learning, and it is getting more accepted with the improved accessibility and major enhancement in the capabilities of handheld devices in terms of processing speed, screen sizes, memory capacity, storage volume and network connectivity. The authors stated that using of these modern mobile devices falls in line with planned educational goals to improve students' study retention and achievement, support segregation of learning needs, reach out to students who would not have use their mobile phones to participate in learning. K. Walker, in his study "Introduction: mapping the landscape of mobile learning", pointed out that the learning activity experienced by the mobile owners is unique because knowledge is received and processed within the context in which the learner is located. The context is completely individual and totally different from the rigid outlay of the conventional lecture room, and science laboratories. S. S. Oyelere, V. Paliktozglou and J. Suhonen, in their ovservational study, "Students attitude and perception towards the effectiveness of mobile learning in King Saud University, Saudi Arabia", also found that m-learning improves retention among university students. A similar study work carried out by Y. Lavy, M. M. Ramimand and A. R. Hachney, on their study, "Assesssing ethical severity of E-learning system security attacks", cited by Z. Talab and A Soohrabi, in" Learning on the move : the use of mobile technology to support learning for university students" showed that students who use mobile technology devices had more motivation for learning than those who do not. Furthermore, web 2.0 also has a positive effect on m-learning as M. Terras and J. Ramsay, "The five central psychological challenges facing effective mobile learning", British Journal of Educational Technology stated by its very nature, not only can Web 2.0 support education but mobile Web 2.0 in particular also has the potential to blur the boundaries between formal (planned, scheduled, structured, facilitated and class based) and informal learning environments (opportunistic, non-facilitated, non-class based and entirely learner driven) and become an integral part of the process of learning and teaching." The effectiveness of m-learning, however, faces some constraints. Reference D.Vogel, D. Kennedy and R.C.W. Kwok, "Does using mobile device applications lead to learning?" Journal of Interactive Learning Research, listed the constraints in three dimensions which are the human dimensions (students and instructors), the design dimension (content and technologies), and the institutional dimension (universities, colleges and schools). The human dimensions include distractions, noise, differing comfort levels, and differing visibility levels. The design dimensions include small screen size, inadequate memory, short battery life, inadequate built-in functions and the complexity of adding applications. The institutional dimensions include network speed and connectivity, content and software application limitations.

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Some scholars pointed out that m-learning can neither replace nor displace classroom or other learning approaches, but only complement and add value to the existing learning methods , therefore, efforts should be directed at integrating m-learning with other learning methods. The integration of m-learning with classroom and e-learning is considered as a form of blended learning strategy. Blended learning

as described by U. Kose, "A blended learning model supported with web 2.0 technologies", combines classroom instruction with e-learning or m learning to optimize the benefits of both face-to-face and online methods of education. Three techniques are used in integration of m-learning devices with mainstream of pedagogical instruments. An m-learning device can be a supportive tool, an instructional tool and an assessment tool. As a supportive tool, a mobile device can be used to support communication between learners and their instructors, as a file sharing mechanism, a discussion medium, as well as for information search. As an instructional tool, mobile device can be used by instructors to give learners e-books, educational content, and other learning materials.

Little research has been carried out to determine the effects of having lectures notes and slides on mobile devices to help students learning and whether m-learning has real impact on students‟ academic performance in universities of India. Consequently, any study on the effects of m-learning on students 'academic performance from learners' perspectives in a developing country like India can never be underestimated. The purpose of this research work therefore, is to discuss the impacts of mobile learning on students‟ understanding of learning materials and subsequent academic performance on their courses, by providing justifiable answers to the following research questions.

1. Does having course materials such as slides and lecture notes on a mobile device make learning easier?

2. How does using a mobile device for learning improves students‟ academic performance?

3. Are university students willing to use or continue to use their mobile device for learning on a regular basis?

METHODOLOGY

This study employed a quantitative research method using a random sample population of students from four colleges of Nagaon town such as Nowgong College, Nagaon Girls College, A.D P. College and Khagarijan College including all stream, ages from 16-24 years . The data collection method involved delivering a set of questionnaires to 250 randomly selected students.

The questionnaire comprised of single and multiple choice questions divided into two sections. The first section was on demography to collect personal information about the respondents. Questions in section two were concerned with the mobile devices used by the respondents and the type of activities they were being used for. It also gathered data on m-learning awareness, educational activities, and if m-learning improves students‟ learning skills and academic performance.

The questionnaires were given out to the students during the 2020-21 academic year after fair consent was required and obtained for the survey through the researcher, while the respondents were assured mystery. 240 questionnaires were returned to the researchers, a 96% response rate which is an expected rate for such surveys. The data collected was analyzed and presented using frequency distributions, pie charts, histograms and simple percentage. Most of the participants were undergraduate students, studying for a Bachelor degree (72%), with a small amount (28%) studying for a Masters degree as shown in Fig. 1. Table 1 also shows the demographic information about the participants.

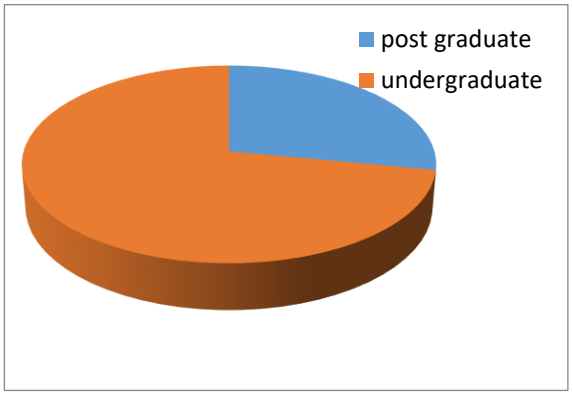

Fig. 1. *Percentage of participants*

Table 1. *Participants Demographic Information*

gender	Age			Total
	16-18	19-21	22-24	
male	35	44	23	102
female	43	59	36	138

total	78	103	59	240

Results and Findings

The findings of this study are organized into three sections in order to provide answers to the research questions as analyzed below:

A. Research Question 1: Does having course materials such as lecture slides and notes on mobile device makes learning easier?

This first single choice question of the survey is to determine if lecture slides and notes on m-learning device makes learning easier based on student's opinion or experience. An overwhelming 88.2% of the female and 83.3% of the male participants agreed or strongly agreed that having slides and materials makes learning easier as shown in fig. 2 below.

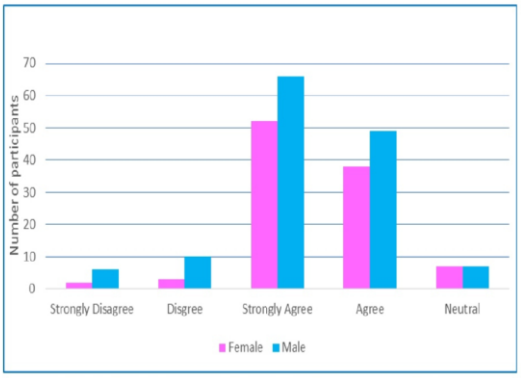

Fig.2. *Having lecture slides and notes on mobile devices*

A very low percentage of the survey (4.9 % and 11. 6% of female and male participants respectively) disagreed or strongly disagreed that having learning materials on portable devices makes learning easier while 6.9% of the male and 5.1% of the female are neutral on this statement.

B. Research Question 2: How does using a mobile device for learning improves students' academic performance?

The findings from this research question indicate that majority of the participants (92.6%) are of the view that their performance has improved or could improve by using their portable device for learning purposes. The result shows that eight out of ten students indicate their learning and grades improves significantly in courses in which they engage in m-learning activities such as practising online exercises. In order to determine which m-learning activities students engaged in their studies that eventually led to improved performance, some online activities were itemized in the questionnaire having multiple choice options to pick from them, as shown in table 2 below. The result of the analysis of the online activities is shown in fig. 3 below, that studying and researching are the most educational activities that students agreed or strongly agreed to engage with when using mobile devices for learning, which is followed by communicating with fellow students and online exercises that are related to their courses. Downloading and sharing educational materials and information are also agreed or strongly agreed activities being performed by the student on mobile learning devices.

Table 2:

Item no	Item description
1	Taking notes in the class
2	Studying and Researching
3	Downloading and storing learning material
4	Sharing materials & information
5	Practising online exercises
6	Communicating with fellow students
7	Receiving grades and feedback

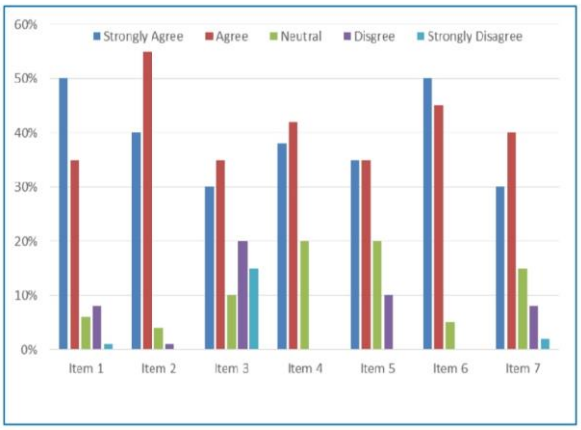

Fig.3. *Participants view on m-learning activities.*

Descriptions of item 1 – 7 are given in table 2 above.

Engaging in all or most of the m-learning activities above with classroom learning is likely to improve student's academic performance in their courses as revealed by this research study and supported by previous research which are cited in the discussion section below.

C. Research Question 3: Are university students willing to use or continue to use their mobile device for learning on a regular basis?

This single choice closed question of the survey determines the sustainability of m-learning by asking if the students are using their device for learning on regular basis and will continue to do so in future. A large proportion of the participant's population (88%) indicated "Yes" while 9% and 3% of the sample stated "Not sure" and "No" respectively as shown in fig. 4 below.

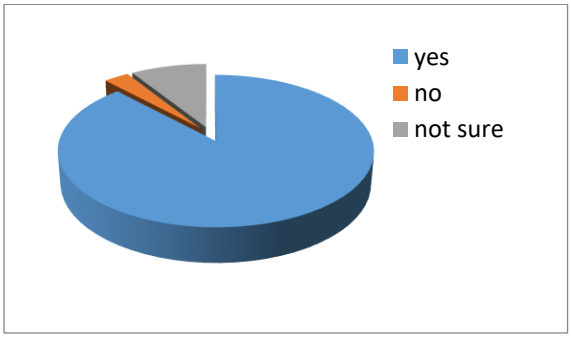

Figure 4. *M-learning*

DISCUSSIONS

The perceptions of the learners remain very important in the adoption, implementation and use of any mobile innovation in education system. Thus, the primary purpose of this study is to investigate mobile device use in tertiary education based on student's perceptions. In particular, it is interested to study how students use mobile technology and if the technology can help improve their academic performance. Since almost every student has access to smart phone for personal use, adapting the device for learning is not a bad idea through social media-based learning platform . The finding from research question 1, fig. 2, shows that having course materials such as lecture slides and notes on a mobile device makes learning easier for the students, as they can use their device to study at anytime, anywhere. This enables the students to engage in learning activities even when they are outside their classrooms and improves flexibility for self-study. By making academic courses more accessible through mobile devices, the amount of information retained from the personal study is often greater, which results in increased information retention and grade performance. This outcome is consistent with the study conducted by S. M. Jacob and B. Issac, "Mobile learning in transforming higher education", in which 74% of the participants indicated that their mobile devices gave them easy access to learning resources and online repository. It is also supported by R.A. Aderinoye, K.O. Ojokheta and A.A. Olojede, "Integrating mobile learning into nomadic education programmes : issues and perspectives", who noted that mobile phones are widely used by students to access and support learning. It is therefore, appropriate to conclude that mobile technologies offer extensive access opportunities for learners, particularly in researching and learning.

It is clear from the result of the research question two that using mobile device for learning have significant impacts in improving students grade and performance in their study since the device is augmenting classroom learning. The result is consistent with the study, which indicates 86% of studies reported favourable outcomes as a result of using m-learning while only 4% and 1% respectively reported neutral and negative experiences and 9% are non-applicable. Another interesting research is finding out how the m-learning activities help students to improve on their performances. The first learning activity is using smart phones and tablets to take notes in classes, which around 85% of the participants agreed or strongly agreed on. The students consider that writing with a stylus pen is more intuitive and they are therefore inclined to use tablets for note- takings in classes. In addition to note-taking, many learners also use their mobile devices for recording of lectures and class material . Other learning activities for which mobile devices are used are studying, researching and downloading learning materials as claimed by 65% - 95% of the participants. This result is in line with the work of many academic researchers. Practicing online exercises and self-assessment questions are other learning activities that students can use their portable devices for, which 70% for the

agreed or strongly agreed with. Communicating with fellow students and getting feedback on assessments and grade are some of the activities that mobile devices are also used, which are widely agreed upon by 70% to 95% of the students as shown in figure 3 and many researchers are in support of learning opportunities through text messages and chatting . Faculty members can utilize mobile technology to deliver content to students and provide them with timely feedback. Communication is a lot easier with teachers and classmates making learning encouraging as students can chat with their colleagues to clarify doubts. This also indicated that students used smart phones for secondary reasons, including data storage and to obtain information about attended lectures, test dates, homework assignments, grades and schedules. Thus, using mobile devices can allow students to manage their personal information.

CONCLUSION AND FUTURE WORK

This article discusses the impact of mobile devices for learning in Higher Education Institutions in Nagaon town, which is expanding the possibilities of open and distance learning education. The analysis of student's perceptions on m-learning points to the fact that mobile learning is widely embraced by the students and they are also willing to embrace the use of their mobile devices for learning purposes not only to augment classroom lectures but also to achieve the globalization. Student's interest and expertise are of great potential for m-learning if integrated into their learning curriculum . Therefore mobile phones can provide students with a means of individualised learning through searching the internet and library for education-related materials, and there is no need for lab or library PCs to be free before they can engage in quality study and research activities. This omnipresent learning is made possible because students are keen to use all available sources of m-learning approaches through palmtops, tablets, smart phones and to access knowledge and information anytime and anywhere. In conclusion, college students in Nagaon are using their smart phones and tablets to support learning inside and outside the classroom. The article ends with recommendations and future research work. First, this study should be extended to more university students in Assam in order to better understand mobile device usage in education. Second, more research should be carried out regarding tablets and smart phone usage in order to make available in-depth information to academics and non-academics, so they can provide quality education to students. Third, since mobile learning is spreading rapidly and likely to become one of the most efficient ways of delivering higher education instruction in the future, it is necessary to look into ways to adapt the device easily for learning and other curricula activities. It is also important to examine the implication of adopting mobile learning in terms of privacy and security.

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