WEST AFRICAN JOURNAL
OF OPEN & FLEXIBLE
LEARNING (WAJOFEEL)

Learners' Attitude to and Use of Mobile Learning in Open and Distance Learning: Experiences from National Open University of Nigeria

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Abstract

The improved access and availability of mobile technology has enabled more students to participate in the learning process. Hence, as mobile phone usage m Nigeria explodes, it offers open and distance educational institutions easy access to a larger number of learners. Mobile technology has the prime advantage of being used anywhere, anytime; hence this study seeks to investigate students' attitude, accessibility and usability towards the efficacy of mobile learning. A survey was carried out using National Open University of Nigeria (NOUN) students in the Department of Communication Technology as participants in the study. The outcome of the analysis indicated that mobile learning has the potential to enhance students' attitude as well as the effectiveness of the available student support system in NOUN. It is hoped that the outcome of this research will help inform all stakeholders, those who are seeking to adopt mobile learning systems with a view to improving interaction and enriching students' learning experiences in their Open and Distance Learning (ODL) institutions.

Keywords: Accessibility, attitude, distance learners, information and communication technologies, mobile learning, mobile phones, open and distance learning, usability.

Introduction

Technology-supported teaching and learning has helped a great deal in overcoming the physical distances between teachers and students *(Valdez, 2005),* thus facilitating the flexible delivery of education at a distance, anyplace and anytime. Recent generations of ICTs have given rise to new opportunities for sharing information, resources, and experiences, as well as

providing networking opportunities with student peers, tutors, and the institution of higher education itself. However, classic distance education (DE) methods of course delivery still represent the most accessible medium for learning in developing countries. Nowadays, the use of mobile devices to enhance ODL systems is starting to take hold, as more and more ODL institutions are using ICT- based instruction either as their primary or supplementary delivery system. In a developing country like Nigeria, the adoption of ICT-based ODL, such as online instruction, is not yet as popular as in developed countries like USA, Canada, the UK, or Australia. Although it is gradually gaining momentum, impediments such as the high cost of owning personal computers and limited availability of ICT infrastructure coupled with limited networking capacity still hamper developing countries. Alternatively, the communication technology on the horizon that has tremendous potential is the mobile phone. Initially, the adoption of mobile technologies in Nigeria remained very slow, primarily due to poor infrastructure and high costs involved in purchasing and using 'mobile phones.'

Government policies and reduction in mobile tariffs have led to explosive growth of mobile phones in Nigeria. Currently, Nigeria accounts for the highest number of mobile connections in Africa with 93 million out of the 650 million mobile subscribers globally as at January 2012 (ITedgenews. 2012). This implies that almost two of every active six mobile phones would be found in Nigeria. These statistics are solid indicators that mobile communication technologies are well positioned to enhance learning in NOUN's ODL system. A primary factor in the development of mobile learning is the increasing and continuous integration of cell phones into our society (Nwaocha, 2010).

Deplorably, the effectiveness of mobile technologies is typically not well researched before adoption in ODL institutions. To this end, a study was undertaken at the National Open University of Nigeria (NOUN) to investigate students' attitude, accessibility and usability to mobile learning in NOUN. The objective of this study was to investigate distance learners attitude, accessibility and usability to mobile learning by focusing or students from the Communication Technology Programme.

Literature Review

Reviews of the related literature indicate that mobile technologies provide support to underpin different types of learning. Chile's mobile computer support collaborative learning (Cortez, Nussbaum, Santelices, Rodriguez, Zurita *et al.,* 2004) and a Pan-European research and development programme (Attewell and Savill-Smith, 2003; Colley and Stead, 2003; Mitchell and Doherty, 2003; Traxler, 2003). According to these researchers, mobile learning via mobile technologies can effectively support a wide range of activities for learners of all ages. Keegan (2002) analysed 30 initiatives that assessed mobile technologies potential use in learning. Keegan (2002) also discussed the potentials and limitations of different mobile devices such as screen phones, PDAs, smart phones, and wireless (WAP) telephones. Four surveys determining students' experiences of the effectiveness of mobile learning were also reported by Keegan (2002). Results of this survey examining learning support using PDAs indicated that some students were enthusiastic, while others were apprehensive; some also indicated that they did not appreciate reading long texts on PDA because of its small screen size (Rekkedal, 2002a; 2002b). Another important research study on mobile learning indicated that 62 percent of learners were enthusiastic about mobile learning and were keen to take part in future learning after they had tried mobile learning (Attewell, 2005).

In terms of access, it is obvious that many learners might never be able to afford a personal computer, but they are very likely to afford to own a mobile phone, which in turn will become their 'digital life'. Indeed, according to Attewell (2005), there are several advantages inherent in mobile learning: helps learners to improve literacy and numeric skills; can be used for independent and collaborative learning experiences; helps learners to identify where they need assistance and support; helps to overcome the digital divide; facilitates informal learning; helps learners to be more focussed for longer periods; helps to raise self-esteem and self-confidence.

Taylor, Sharpies, O'Malley, Vavoula and Waycott (2006) in their recent study carried out as part of the MOBIleam project, concluded that “mobile learning is more interactive, involves more 'bustle', more contact, communication and collaboration with people.”. The study also demonstrated a task model for mobile learning (Taylor, Sharpies, O'Malley,

Vavoula and Waycott, 2006). Some researchers have even used mobile technologies for enriching visitors' experience of a museum (Boehner, Gay and Larkin, 2005). In another study, an SMS-based mobile learning system is employed in teaching high school students English Language. In order to determine if there were significant differences between students' success rate, pre-tests were administered to the experimental and control groups. The results of the study clearly revealed that after receiving the SMS-based instruction, the experimental group performed better than their counterparts who had received additional classroom instructions (Nwaocha, 2010).

From these literature reviews, one can conclude that mobile learning can be an effective tool for learning or enhancing the teaching-learning process, because it increases students' accessibility to more facts. Moreover, it can be harnessed anywhere and anytime. Analogous to e-Leaming, mobile technologies can also be interfaced with many other media like audio, video, the Internet, and so forth. In terms of usability of new technologies, there are two viewpoints that must be considered: one 'in support' and other 'against it.' In case of mobile learning technologies, some users may find it not very' conducive to learning (i.e., screen too small; physical environment like being outside in the bright sunlight), while for others, the benefits of being able to learn on-the-move at a convenient location outweigh its optical disadvantages. Clearly, students' individual differences of mobile learning do matter.

On the whole, previous research indicates that providing proactive and more robust student support goes a long way to increase students' attitude, accessibility and usability in ODL institutions (Ashby, 2004). Some recent developments in the field of ODL system indicate that e-Learning supported DE, more-or-less addresses the commonly cited problems listed above; it does so by promoting student retention and successful completion of coursework typically via face-to-face tuition (Knight, 2007). By using email, bulletin boards, or chat rooms, learners can communicate with fellow students, with teachers, or their institutions. Teachers can provide feedback and advice through email. Some institutions are using e-learning for the formative and summative assessments (Byrnes and Ellis, 2006). As mentioned earlier, infrastructure to support complete e-learning programmes, however, are not yet very prevalent in Nigeria. This clearly indicates a critical need to explore viable alternatives to improve retention of

distance learners.

In Nigeria, problems abound in terms of delay and reliability of the postal system, access and cost of using the Internet and computers. As such, cost factors alone often make these media inappropriate for many of the interventions noted above. On the other hand, the increasing and ubiquitous use of mobile phones among Nigerians provides a viable avenue for initiating contact and implementing interventions proactively. Normally, Short Message Service (SMS) is a highly cost-effective and very reliable method of communication. It is less expensive to send an SMS than to mail a reminder through regular postal mail, or even follow-up via a telephone call. Research S Traxler and Riordan (2003) indicates that SMS is very effective, especially if the communication is short, personalised, and focussed.

Method

A questionnaire consisting of 33 items was designed to investigate students' attitudes, accessibility and perceptions with respect to the effectiveness of mobile learning. A five-point Likert scale with 'strongly agree' and 'strongly disagree' as anchoring points was used for main items. A pilot test was carried out on 25 students of B.Sc. Communication Technology, for the purposes of selecting essential items. The data collected from the pilot test was used to further refine and develop the questionnaire, which eventually consisted of 33 items deemed essential.

Content and construct validity tests were carried out by consulting both tutors and students who had access and used mobile phones in order to determine whether the questionnaires asked and provided opportunity to answer the most pertinent questions about mobile learning. Student responses on the pilot administration of the questionnaire were examined in comparison with other feedback that the students provided to the tutors in order to determine whether the questionnaire actually measured the construct of student perceptions about mobile learning. In both cases, the pilot evaluation stood the tests: this instrument demonstrated both content and construct validity. To measure reliability, Cronbach's alpha was applied and the co-efficient for the total thirty-three items was .956 (high internal consistency).

Consequently, the 33 items were used to measure students' attitudes to, and

perceptions of, the effectiveness of mobile learning. The questionnaire was administered to students of Bachelor of Science in Communication Technology enrolled in NOUN. Of the 100 questionnaires sent, 65 responses were received; yielding a 65 % response rate. Of the 65 respondents, 49.2 % (w = 32) were female and 50.8 % *(n* = 33) male. 81.5 % of respondents' ages ranged between 20 and 25 years.

Results and Discussion

The results of the study revealed that only 29.2 % of the respondents were aware of mobile learning. When surveyed on the use of different communication tools at home, 61.5 % *(n* = 40) of the respondents reported that they owned a radio; 83.1 % *(n* = 54) owned a mobile phone; 86.2 % (n = 56) owned a television; 43.1 (/? = 28) % owned a computer; and 23.1 % (n = 15) reported having access to the Internet.

The finding that 54 of the 65 respondents reported owning a mobile phone suggests that mobile technologies are rapidly becoming more accessible to i larger number of learners in Nigeria. This finding agrees with that of Ezra and Mushi (2011) for Tanzania. Responses to the item, 'How often do you use different technological tools?' indicate that of those students surveyed, most were using mobile phones for receiving and sending SMS. Very few reported that they were using it for Web-browsing, receiving MMS, for learning purposes. These findings indicate that SMS can be viewed as a viable teaching/ learning tool to improve communication between ODL institution and its learners, between learners, or between teachers and learners, particularly in terms of providing information and system- related alerts.

The survey and national statistics data on the availability of mobile phones as shown in Table 1 clearly indicate that mobile phone technologies hi e prospects for ODL in Nigeria. This statement is further supported by the rapid growth of mobile phone systems in the country.

The Table below is the quarterly summary of telecoms subscribers in Nis from March to December 2011. This Table shows a steady growth of mi telephony for three major providers: MTN Nigeria communication Globacom Limited and Celtel Nigeria Limited.

OPERATORS	Mar-11	Jun-11	Sep-11	Dec-11	Q1-Q2	Q2-Q3	Q3-Q4
MTN Nigeria Communication	40,211,404	40,540,281	41,107,494	41,641,089	0.82	1.40	1.30
Globacom Limited	19,997,077	19,488,756	19,854,111	19,886,014	(254)	1.87	0.16
Celtel Nigeria Limited	16,115,073	15,969,943	16,683,946	18,028,385	(0.90)	4.47	8.06

Source: NCC Consumer Portal http://www.ncc.gov.ng/industry-statisticsZoperator-data.html

Several indicators in the survey that relate to the effectiveness of mobile earning are shown in Table 2.

Table 2: Students' Attitudinal Responses to Mobile Learning

Item No	Questionnaire indicator	Strongly Agree	Agree	Undecided	D is agree	Strongly Disagree	Not responder	Total	Mean Scores
1	Mobile learning can be an effective means of learning and provides instant support	1.9 (29.2)	26 (4 0. 0	10 (15.4)	05 (07.7)	03 (04.60)	02 (3.1)	65	3.84
2	Mobile learning will offer novel learning opportunities	(3 0.8)	27 (41. 5)	10 (15.4)	5 0 7.7)	2 (3.1)	1 (15)	65	3.91
3	Mobile learning will be a more flexible method of learning as it can be done anytime, any here	(27.7)	30 (46. 2)	7 (10.8)	2 (3.1)	2 (3.1)	6 (9.2)	65	4.02
4	Mobile learning will enhance interaction between student and teacher	1 6 (24.6)	21 (32. 3)	8 (12.3)	8 (12.3)	1 (1.5)	6 (9-2)	65	3.80
5	Mobile learning is a quicker mode of getting feedback in learning	(27.7)	25 (3 8. 5)	10 (15.4)	3 (4-6)	1 (1.50)	8 (12.3)	65	3.98
6	Mobile learning cannot be use d for learning due to:								
	a. Inaccessibility of mobile phones with a larger number of students	(0 7.7)	3 (4.6)	9 (13.8)	14 (21-5)	21 (32.3)	1 5 (20.0)	65	2.17
	b . Mobile learning costs	(21.5)	3 (4.6)	9 (13.8)	24 (36.9)	2 (3-1)	13 (20.0)	65	3.06
	c. Poor networking in the city	(16.9)	10 (15. 4)	9 (13.8)	1 8 (27.7)	3 (4.60)	14 (21.5)	65	3,16
7	NOUN should adopt mobile learning	1 9 (29.2)	16 (24. 6)	12 (18.5)	6 (9.2)	2 (3.10)	10 (15.4)	65	3,8

Responses to each of the indicators in the questionnaire on mobile learning were measured on a Likert scale of 1 to 5, ranging from 'strongly agree' to 'strongly disagree.' Scores greater than 3.2 indicate positive attitudes, below 3 indicate negative attitude; a score of 3.0 to 3.2 shows it to be neither positive nor negative. Table 1 and Figure 1 provide an overview of these indicators for the sampled population as a whole.

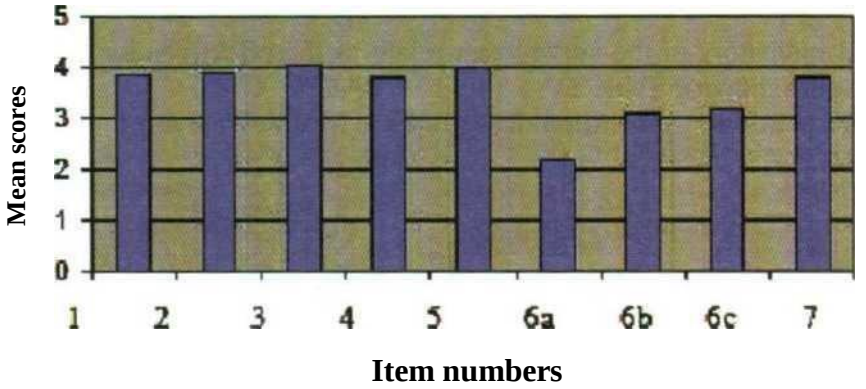

Fig. 1: Indicators of Students' Attitude to Mobile Learning Mean Score*

Mean scores for the sample indicators strongly support mobile learning as an effective method for learning. This data indicates that mobile technologies are more flexible and enable students' have greater freedom of learning anyplace, at anytime. Responses to a question on the availability of mob: e phones showed that respondents did not agree with the suggestion that mobile phones are unavailable to larger number of students. Responders also did not agree with the suggestion that there would be high cost involve; in owning and using mobile devices for mobile learning. Respondents did, however, report apprehension regarding the quality of networking presently available to them.

These findings clearly indicate that mobile phones can provide better two-way communication support to NOUN's students. Mobile technologies such as mobile phones can be used to enrich students' learning environment by providing timely information. In sum, more than 50 % of the responders strongly supported, in principle, that NOUN should adopt mobile learning.

Respondents were also asked to give their preferences on where mobile teaming can be effectively used in their B.Sc. Communication Technology Programme.

Results in Table 2 and Figure 2 indicate that mobile devices are an effective tool for providing short information, such as: 'receiving feedback on assignments' (item 1); 'information regarding important dates' (item 2), schedules of counselling (item 3) and laboratory sessions' (item 4), and ‟grades and examination results' (item 5). Results were not very clear, however, when students were questioned on 'receiving their study guides' (item 6) on mobile phones; a larger percentage of respondents (35.4%) indicated that 'receiving their study guides' was not desirable.

Table 3: Students Preference for the Use of Mobile Phones

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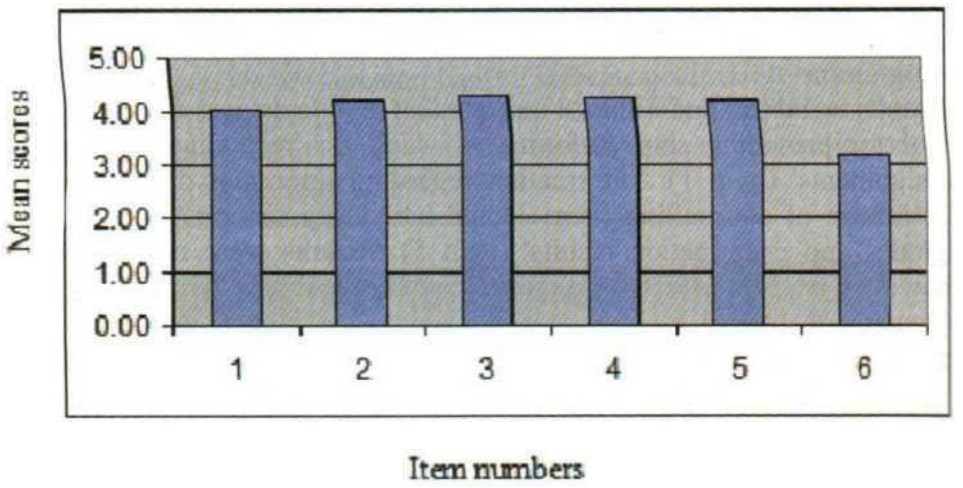

Fig. 2: Students' Preferences for Use of Mobile Phone

Another point to be noted is that of the 65 respondents who completed the questionnaire, most students indicated that most were comfortable with SMS format, while a few (20.5%) indicated that they could Web-browse on their mobile devices. Further, because PDAs are still very costly to own and use i> Nigeria, the study found that devices that support download of large textual material could be an issue.

Previous surveys carried out on students' dropouts from NOUN's B.S; Communication Technology programme revealed that the major factors under the category of personal reasons' responsible for their withdrawal was mainly due to the 'absence of interaction with fellow students. This factor, however, can be addressed by encouraging students to own mobile phone and by designing and promoting collaborative learning activities, such 25 forming 'self-help' groups. Mobile phones can also be useful for meeting and for locating fellow group members.

One of the main advantages of ICT-based m-Learning is that it support collaboration among students, a dynamic that underpins effective distance learning (Swan, 2006; Naismith *etal.*, 2005). Collaboration enables students studying at a distance to interact, socialise, and develop feelings of

connectedness and community (Rovai, 2002). Thus, not only can mobile phones provide a viable platform for collaboration and interaction, they are becoming increasingly ubiquitous as more and more students buymobile phones. These facts alone make mobile technologies a logical media to support interaction between and amongst students and their institution and teachers.

Mobile phones have become more ubiquitous, they are arguably well positioned to play a more central and effective role in providing students with much needed information, that is, schedule of counselling and/ or laboratory sessions; and other relevant information related to their studies. Consequently, using increasingly ubiquitous and accessible technologies - such as mobile phones - will improve and strengthen the role of student support at NOUN, helping to make significant qualitative and quantitative improvements in NOUN's ODL system. This view agrees with Ipaye's observation that support services could be further enhanced through the use of mobile phones since a high percentage of NOUN students has mobile phones (Ipaye, 2005).

Mobile learning can also provide good support to micro-learning, a new way and effective way of learning (Habitzel, Mark, Stehno, & Prock, 2006). It has been observed by Habitzel and colleagues (2006), for example, that people can learn more effectively if 'information' is broken down into smaller, more easy-to-comprehend units. It is suggested therefore, that mobile learning is an ideal medium simply because it supports a 'new way' of learning via the use of SMS, pre-recorded MP3 files, and so forth.

Conclusion

Mobile technologies are perceived by the participants in this study to be an effective tool in improving communication and learning. In developing countries like Nigeria, where WAP and PDA-based mobile technologies are not yet popular due to the costs involved in owning and using such higher-end mobile technologies, less expensive SMS-based mobile technologies such as mobile phones, however, do hold tremendous potential, which can be strategically used to support and improve teaching-learning process.

Limitations

The study reported in this paper has some limitations. The sample size was restricted to students admitted into NOUN's B.Sc. Communication Technology programme. Nevertheless, the fact that the investigation was carried out in NOUN's Lagos Study Centre, where student population is highest, provide promising indications and clues on students' attitudes and perceptions towards the effectiveness of mobile technologies for student support. Indeed, the finding reported here could be useful to guide other ODL institutions seeking to adopt mobile learning to provide better communication and learner support.

Suggestion for Future Research

It can be said with some certainty that mobile technologies do appear to have huge prospects in developing countries, like Nigeria. A similar study in Tanzania (Ezra and Mushi, 2011) reported in the maiden edition of i Journal also provides support for this point of view. In fact, mobile phones one of the less expensive, most accessible and popular media among students of all ages. In Nigeria, however, there is still a long way to go before an entire course can be delivered via mobile phones. This research, however, indicates that mobile phones are relatively inexpensive, accessible, and positioned for the delivery of student support interventions. Further co experiment should be carried out to explore the use of micro-learning blended with DE system using mobile systems for support.

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