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**ASSESSING MOBILE TECHNOLOGIES AS A MODE OF
PEDAGOGICAL ACTIVITIES DELIVERY IN FEDERAL UNIVERSITY
OF TECHNOLOGY, AKURE.**

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ABSTRACT

The emergence of e-learning in education has helped to facilitate pedagogical activities in the universities. In addition to enhancing a student centered approach to teaching increase in interactivity between teachers and students, it has helped to address the challenges of large classroom situations. However, due to the high cost of procurement of personal computers and laptops; inadequate expertise in the use of computers by the students; low internet connectivity and unreliable electric power supply, there is a need to explore the opportunities in mobile technologies to facilitate and enhance pedagogy as a larger percentage of students own smart phones. This study therefore examines the possibilities of mobile learning in teaching and learning in Federal University Technology Akure, specifically the School of Sciences. Questionnaires were given to one hundred and fifty first year students in the School of Sciences to collect data in line with study's objectives. A focus group discussion was also held with five lecturers to assess their perception and acceptance of mobile learning as a pedagogical tool. The findings indicate that the student population is ready for the launching of mobile learning and the lecturers also welcome the idea. This paper argues that mobile learning provides higher levels of flexibility, informality, portability and interactivity.

Keywords: mobile learning, pedagogy, technology, Federal University of Technology, Akure.

INTRODUCTION

The rise of Information and Communication Technologies (ICT) has bred a new generation of students. These students have greater access to digital technology facilitates easy access to information. Prensky (2001) states that these students are no longer the people that the current educational systems have been constructed to teach. Tribe (2004) describes them as the "Generation C" because they produce, share digital contents such as blogs, digital images, audios, videos more than any generation in any period of time. Prensky (2001) notes that "the average college graduates have spent 5000 hours of their lives reading but over 10000 hours of

playing video games. Computer games, the internet, cell phones are an integral part of their lives. The introduction of these technologies also presents a huge relief as the teeming population of students has made the traditional or face-to-face interaction almost very ineffective as the students do not get the best out of the learning because of the large classroom situation, Gaudry-Perkins and Dawes (2011). However, due to the rate of poverty in Africa, the inability to procure devices like laptops and personal computers has led to a shift in the acquisition of mobile or handheld devices, Gaudry-Perkins and Dawes (2011).

Mlearning or mobile learning is the learning that takes place with the help of mobile devices. It involves the use of Ipods, phones, portable digital assistants (PDAs) in the teaching and learning activities. It does not however include the laptop because the laptop, though portable, is not mobile. Mellow (2001), refers to mlearning as media learning or miniature learning. Johnson *et al.* (2006), defines mlearning as a subset of elearning and a very good supplement to traditional or e-learning. Duncan-Howell and Lee (2005) states mobile learning includes SMS (message texting), audio based learning (MP3 player, podcasts), Java quizzes, specifically designed learning modules using m-learning software, media collection and Brown (2005), opines that m-learning is a natural extension of e-learning and has the potential to make learning even more widely available and accessible than what is obtained in existing e-learning environments.

Mobile learning provides mobility; it is portable, it allows an increased mobility of population and lifelong learning, there is opportunity for constant practice and it affords ubiquitous access to the learners. Studies have showed that ranking in the most important needs for a student is the desire to own a mobile phone (GSMA). This affords the availability of online access anywhere. However, we do not proffer mlearning as the solution to all pedagogical challenges, mlearning will never replace t-learning or the role of teachers, it is a tool that can have tremendous impact on making education more accessible and more enjoyable.

Though mobile learning seems like a relative new field, scholars have researched into its impact on education. Sebbowa (2012) examines the role of mobile phone forums in enhancing interactivity in teaching in Makerere University, Uganda. She considers mobile phone forums as appropriate in the large class situations in the African educational situation and her findings indicate that mobile phone forums indeed enhance interactivity and collaboration between lecturers and students. Kweyu and Sevilla (2012) investigate two issues: the assumptions that mobile devices could be used to support and enhance delivery of education in institutions of higher learning here in Africa; and that there is

significant difference in performance between the students who are examined using e-assessment and those who are examined using traditional assessment. Their study was specifically focused on Strathmore University, Kenya and they conclude that implementing learning environment in the university would be benefit students at large.

Other previous studies reveal that mobile technology has significant impact in supporting teaching and learning, Zurita and Nussbaum, (2004). Metcalf *et al.* (2008) discusses how it improves students' learning achievement and motivation in subjects like Science and Mathematics while Wierzbicki (2002) argues that wireless technology in education offers solution to the widening digital gap between developing countries and the developed ones as mobile phones and PDA are significantly cheaper than desktop computers.

This study situates mlearning within the constructivist theory of learning. Constructivism construes learning as a process in which the learner actively constructs or builds new ideas or concepts. It is also known as Social constructivism which indicate that knowledge is constructed when individual engage socially in talk and activity about shared problem or task Sunny (2009). Versions of Constructivism include Active learning and Discovery learning. At any rate, the learner is expected to be actively involved, which makes it learner-centred. Mlearning is a learner-centred endeavour, it is collaborative, interactive and constructivist. These features conform to the objectives of constructivism. Isiaka and Adewole (2011) argue that the usage pattern of mobile devices among the students enhances constructivism theory. As students join different forums and networks to share ideas and other resources, post issues, gather information and methods, they could build up (construct) their own knowledge. Motiwalla (2007: 582-583) further argues that 'if leveraged properly, mobile technology can complement and add value to the existing learning models like the social constructive theory of learning with technology.

This study therefore examined the possibility of assessing mobile technology as a tool in the pedagogical activities in Federal University of

Technology, Akure especially in the School of Sciences. The study therefore investigated a randomly sampled population of first year students in the School of Sciences of the Federal University of Technology, Akure with the view to discovering the availability of browse-able mobile devices among students, their perception of mlearning and their willingness to engage in mlearning. This study also interviewed lecturers to know their perception towards this method of teaching and learning.

MATERIALS AND METHODS

The population for this study was 100 level students of the School of Sciences, Federal University of Technology, Akure. One hundred and fifty (150) structured questionnaires were given to first year students who were randomly sampled, though only one hundred and forty one (141) questionnaires were retrieved. The structured questionnaires were used to elicit information on the availability of browse-able

phones among students, their perception about mlearning and their willingness to engage in it. Simple frequency count and percentage was done and some items were co-tabulated with others. Interviews were conducted with five (5) members of staff from the School of Sciences and School of Environmental Technology to assess their perceptions and acceptance as a pedagogical tool.

RESULTS

The results are presented in response to the following issues:

- 1. Availability of phones among students:** In order to provide evidence for this findings for items 4-10 on the questionnaire are summarised in Table 1: Table 1 shows that of the 141 respondents 137(97.2%) owned phones and only 4(2.8%) respondents do not own phones.

Table 1: summary of ownership of phones among students

Possessing Phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	137	97.2	97.2	97.2
	No	4	2.8	2.8	100.0
	Total	141	100.0	100.0	

Table 2: summary of ownership of browse-able phones.

Own Browse-able phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	121	85.8	86.4	86.4
	No	19	13.5	13.6	100.0
	Total	140	99.3	100.0	
Missing	System	1	.7		
Total		141	100.0		

An overwhelming 121 (85.8%) of the respondents possess phones that can browse the internet and only a 19(13.5%) respondents indicate that their phones do not browse the internet.

Table 3: summary of ownership laptop among students

		Own Computer or Laptop			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	37	26.2	26.2	26.2
	No	104	73.8	73.8	100.0
	Total	141	100.0	100.0	

Table 3 shows that 104(73.8%) respondents do not own laptops, while 37(26.2%) of them own laptops. The question was crosstabulated

Table 4: summary of the most convenient Internet access platform among students

		Most convenient internet access platform			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Phone	77	54.6	55.4	55.4
	Laptop	56	39.7	40.3	95.7
	Desktop	4	2.8	2.9	98.6
	Others	2	1.4	1.4	100.0
	Total	139	98.6	100.0	
Missing	System	2	1.4		
Total		141	100.0		

Table 4 presents the summary of the responses on the question of the most convenient Internet access platform among students and 77(54.6%) respondents indicate that the mobile phone is the most convenient platform to access the internet, 56(39.7%) of them choose the laptop, 4(2.8%) indicate the desktop, while 2(1.4%) choose others.

Table 5: summary of the most frequent platform to access the Internet.

		Most frequent access platform			
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Phone	117	83.0	84.8	84.8
	Laptop	14	9.9	10.1	94.9
	Desktop	4	2.8	2.9	97.8
	Others	3	2.1	2.2	100.0
	Total	138	97.9	100.0	
Missing	System	3	2.1		
Total		141	100.0		

Table 5 summarises the respondents position about the most frequent platform they access the internet: 117 (83%) respondents indicate the mobile phone as the most frequent access platform, only 14

(9.9%) specify the laptop as the most frequent access platform and 42(2.8) indicate the desktop and 3(2.1%) choose other options.

2. **Perception of mobile learning among students:** to provide evidence for this issue, respondents positions on table 6 are summarised below:

Table 6: summary of students’ perception of mobile learning

Perception of learning through Mobile Phone		
Good Count	Undecided count	Bad count
92	39	4

Table 6 shows students’ perception to the idea of learning on their mobile phones: 92 respondents believe it is a good idea, 39 are undecided, while only 4 think it is a bad idea.

Table 7: Summary on whether mobile learning will promote interaction among students.

Mobile learning promoting academic interaction among students

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	121	85.8	86.4	86.4
	Undecided	4	2.8	2.9	89.3
	No	14	9.9	10.0	99.3
	4.00	1	.7	.7	100.0
	Total	140	99.3	100.0	
Missing	System	1	.7		
Total		141	100.0		

Table 7 presents the responses to the question of the implication of mobile learning for interactivity among students: 121(85.8%) respondents agree that mobile learning will promote interactivity among students, 4(2.8%) respondents are undecided, while only 14(9.9%) take a contrary position. The next table focuses on the question of interactivity between students and their lecturers.

Table 8: Summary on the implication of mobile learning for student-lecturer

interaction

Mobile learning improving interaction & interactivity between students and Lecturers

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	109	77.3	77.9	77.9
	Undecided	9	6.4	6.4	84.3
	No	22	15.6	15.7	100.0
	Total	140	99.3	100.0	
Missing	System	1	.7		
Total		141	100.0		

Table 8 above shows that 109(77.3%) respondents believe that mobile learning will improve interaction between students and their lecturers, 9(6.4%) respondents are undecided, while 22 (15.65%) respondents think it will not.

Table 9: Summary on the implication of mobile learning for face-to-face interaction/e-learning.

mobile learning sufficient enough that face-to-face interaction not needed

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	35	24.8	25.0	25.0
	Undecided	19	13.5	13.6	38.6
	No	86	61.0	61.4	100.0
	Total	140	99.3	100.0	
Missing	System	1	.7		
Total		141	100.0		

Table 9 presents the students' views on the implication of mobile learning for face-to-face interaction between students and lecturers/e-learning: 35(24.8%) respondents agree that mobile learning will affect face-to-face interaction between students and lecturers/e-learning, 86 (61%) respondents disagree, while 19(13.5%) respondents are undecided.

- 3. Students' willingness to engage in mobile learning and the most preferred format:** to establish whether students are willing to engage in mobile learning are summarised in tables 10 and 11 below

Table 10: summary on students’ willingness to engage in mobile learning

Willingness to engage in mobile learning

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Yes	122	86.5	87.1	87.1
	Undecided	7	5.0	5.0	92.1
	No	11	7.8	7.9	100.0
	Total	140	99.3	100.0	
Missing	System	1	.7		
Total		141	100.0		

Table 10 shows students’ response to the question of their willingness to engage in mobile learning: an overwhelming 122(86.5%) respondents indicate that their willing to engage in mobile learning, only 11(7.8%) respondents specify their unwillingness, while 7(5%) respondents are undecided.

4. On the most preferred format for mobile learning content delivery. Table 11 below presents the summary of our findings:

Table 11: summary on the preferred format for content delivery

Format of learning material

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	SMS	41	29.1	30.6	30.6
	Video(U-tube)	63	44.7	47.0	77.6
	Games	15	10.6	11.2	88.8
	Audio	15	10.6	11.2	100.0
	Total	134	95.0	100.0	
Missing	System	7	5.0		
Total		141	100.0		

41(29.1%) respondents indicate they prefer the SMS format for course content delivery, 63(44.7%)respondents specify video (you-tube) as their preferred format for content delivery. 15 (10.6%)respondents indicate games as their preferred format and 15(10.6%) respondents also prefer audio format for course content delivery.

Table 12: Summary of attitude of students towards losing their mobile phones.

feeling at loosing phone

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Very Sad	78	55.3	55.7	55.7
	Sad	42	29.8	30.0	85.7
	Indifferent	13	9.2	9.3	95.0
	Happy	3	2.1	2.1	97.1
	Very Happy	4	2.8	2.9	100.0
	Total	140	99.3	100.0	
Missing	System	1	.7		
Total		141	100.0		

78(55.3%) respondents are very sad at the thought of losing their phones, 42(29.8) respondents are sad at the thought of losing their phones, 13(9.2%) respondents are indifferent to the thought of losing their phones while 3(2.1%) and 4(2.8%) respondents are happy and very happy respectively at the thought of losing their phones. In order to get the lecturers' perspectives on whether mobile technologies will enhance pedagogical activities in The Federal University of Technology, 5 members of staff were interviewed and their responses are presented below. The questions asked them bordered on their perception of mobile learning and their willingness to engage in it.

Respondent 1

Mobile facilities are very good. In fact I use it with my students (graduate students), I think it will be a convenient way to relating with my students but I however think it is not good if the teaching method is largely through the mobile facilities. If it is then there is a need to review the purpose in which the degree was awarded (the degree is awarded on the basis of teaching and character. How can the character of the student be ascertained through the mobile teaching?

This respondent is a Professor and he indicates that mobile learning is good. He claims to have

used some form of mobile learning and asserts that it could be a convenient way to relate with his students. However, the respondent stresses that teaching should not be solely done through mobile technologies as this will require a review of the purpose of university degrees as a whole. Of course, it should be understood the mobile learning is only supplementary and should never be relied on as the only means of teaching and learning. The next respondent is a GA in the School of Sciences.

Respondent 2:

I do a bit of mobile learning but it depends on a number of factors: good internet connection, financial implications. I will be more than willing to build mobile contents because it will also help me in building my materials for the future.

Respondent 2 claims to have done a bit of mobile learning with his students. However, he indicates that for a full and proper implementation of a mobile learning programme, some factors must be considered; good and reliable internet connection and finance. The researchers agree completely with this respondent as these factors are basic to mobile learning. It therefore behooves the school management to commit to providing reliable internet connectivity within the university

environment. Furthermore, bulk SMS can be used for academic purposes and this will require some finance commitment on the parts of those involved. The next response is from a lecturer from the School of Science

Respondents 3

It appeals to me and I will be willing to develop mobile content (we already have it in the e format) because it is more accessible, faster and ubiquitous and learning ought to be autonomous, progressive and continuous, it will help achieve that purpose. It will help them to research on their own, to develop skills of critical thinking.

Respondent 3 says the idea of mobile learning appeals to her and she is willing to develop content material for m-learning. She says the mobile facility is more accessible, faster and ubiquitous and it will make learning autonomous, progressive and continuous. She further observes that mobile learning will help students develop critical thinking skills.

Respondent 4

We are in a digital age; we have to explore every opportunity that the age presents to us. We cannot focus on the challenges it is giving. I think however that these technologies are reducing us to mere machines and people who can't do anything on their own. However, it should be made to work together with the t-learning and it should be well explained to the students so that they won't down play the face to face learning. M-learning should however be designed with the type of society we are in view (that's why we can't rely on it totally) for example what if there isn't any electricity and I can't charge my mobile device? What happens? It will however enhance my teaching because already in class, when I ask some questions, I see my students flipping through their mobile dictionaries and when they bring out a point, I too as the lecturer see something from that point which they brought out. I don't mind putting my course online but many students will boycott classroom because they are lazy, what assurance do I have that they will sit up? If we

can develop a lot of hardworking students, then I will put my materials up.

The fourth respondent is a lecturer in the School Of Science. He argues that the digital age presents us with a number of opportunities and mobile learning is one of such opportunities which must be explored. He suggests that it has to be combined with t-learning and must be designed with our societies in view. He raises a number of issues: unstable power supply, the possibilities of students boycotting classroom etc,

Respondent 5

I would like to engage in mobile learning of enhance learning. However, there are a whole lot of issues involved. Developing content of m-learning isn't difficult, as long as one can develop the e-learning content however; the mobile has a smaller screen, so fitting my contents into mobile format has to do with the modification of the fonts to fit into the mobile phone. Problems: reliability of the networks and cost of running it. If these issues can be dealt with the mobile learning will be effectively implemented. Mobile learning shouldn't affect face to face interaction. There are two separate but supplementary platforms. They both have their advantages. Phones in class could disruptive but it needs not to be. Students however need to know the rules of engagement if m-learning will be successful in the face to face situation.

The fifth respondent is a Reader in the School of Sciences. He believes in the workability of the m-learning. He argues however that if the issues of fluctuating network and the cost of running the programme (in the case of SMS) are dealt with, m-learning will be a good learning platform for students. Also he states that it should not interfere or disrupt the face to face interaction if the students know the rules guiding the use of the phones especially in the classrooms.

DISCUSSION

One of the objectives of the paper was to establish the availability of browse-able phones among the student population and our findings indicated a large percentage of the respondents possess browse-able phones. Furthermore, in relation to laptop ownership, only 37 respondents specified that they own laptops, while an overwhelming 122 respondents said they possessed phones. This means that for every one (1) student that owns a laptop, more than three (3) students own phones. The respondents also specified the mobile phone as the most convenient and most frequent platform to access the internet. The implication of these findings to mobile learning is huge. The findings make it safe to conclude that student population has the facility: browse-able mobile phones, which is necessary for the launching of a mobile learning programme.

On the issue of students' perception of learning on the mobile phone, a greater percentage of the respondents believe it is a good idea. They further indicate that mobile learning will promote academic interaction among students and improve interaction/interactivity between students and their lecturers; this resonates with the findings of Attewell *et al.* (2009) in their study on the impact of mobile learning in teaching and learning in the United Kingdom.

As to whether mobile learning will render e-learning and face-to-face interaction between students and lecturers irrelevant, a larger percentage of the respondents disagreed. The findings suggest that the students have a positive perception of mobile learning and they view it as a good supplement to face to face interaction and/or e-learning.

In addition, the students indicate their willingness to engage in mobile learning, as 122 respondents chose the 'yes' option. The respondents' specified the video (you-tube) format as their most preferred format for delivery of mobile learning contents, followed by SMS. At any rate, the students are willing to engage in mobile learning. In determining their emotional response to the thought of losing their mobile phones, a greater percentage(85.1%) indicated that they would be sad, (9.2%)percentage were indifferent to the thought

of losing their phones while (4.9%)percentage stated their happiness at losing their phones.

From the realisation of the objectives above, it is obvious that the students already are acquainted with the mobile phone and have come to view it as a part of their lives; they are also willing to explore the possibilities of learning through this platform but do not view it as an adequate supplement to the face to face interaction or e-learning. Therefore, it is a wise thing for educators to implement this mode of learning in their style of teaching to make learning a worthwhile venture to today's student, Ktoridou and Eteokleous (2005).

CONCLUSION

The paper investigated the following: the possibilities of enhancing pedagogical activities in Federal University of Technology through the use of mobile technologies. Specifically, the study examined a randomly sampled population of first year students in the School of Sciences of the Federal University of Technology, Akure with the view to discovering the availability of browse-able mobile devices among students, their perception of m-learning and their willingness to engage in mlearning. Furthermore, five lecturers were interviewed. The findings of the study indicate that the student population is ready for the launching of mobile learning and the lecturers also welcome the idea.

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