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# Student's Perceptions on Mobile Learning

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**Abstract:** *The rapid growth of technological equipments in our societies has eased the educational system by means of using mobile learning. Mobile Learning is a sort of learning that happens when the learner is not in a specific location or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies. This paper is based on design implementation where survey will be conducted in some selected institutions in Northern Nigeria to determine the efficiency and trends in using mobile learning in academic environments and also to review the essential mobile applications used in enhancing these activities.*

**Keywords:** *Mobile Learning, Dynabook, Pedagogical, Student perception, Mobile devices*

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## 1. INTRODUCTION

The terms “mobile learning” has been classified as the use of wireless devices by any individual to access information and learning materials at any given time and from anywhere. The dignified attribute of our social advancement has brought rapid rate of social and technological transformation. Technological advancement that allows fast communication and information processing that sustain the new social motives irrespective of time and location. Based on that, societies are no longer interested in geographical closeness [16].

Mobile learning is expected to be motivating and offer the Advantages of learning anywhere and anytime. The main reason for choosing mobile learning in this research is its popularity especially with young students today. Almost every person in an institution has at least one mobile phone.

The communication and data flow created by mobile technologies has tremendously reduced the dependence on fixed locations for work and study. However, individuals prefer training that it just in time, just for them and just enough that would convey pedagogical support outside the convention classroom settings. [10], suggested an alternative approach to mobile learning design to decrease the technical expertise required for mobile learning implementation and increase transferability, while unambiguously using a social constructivist pedagogical foundation, focusing upon the potential of mobile web.

This paper aimed in finding out the importance of mobile learning in academic environment and the trends of it essential application in respect to student's field of studies and the magnitude of it ubiquity.

## 2. LITERATURE REVIEW

Mobile learning (M-learning) is a form of distance education that involves connectivity through mobile devices and occurs when a learner is not confined to a predetermined location. Mobile devices go beyond the realm of PDA's or smart phones; included are MP3 players, wireless notebooks and hand held gaming systems. [37], presents a learner-centric conceptualization of mobile learning, where frequent knowledge construction occurs

flawlessly along several dimensions, including location, time, pedagogy, and device type. This concept would have accomplished the required technicality.

Mobile learning is in many ways a new phenomenon; with its practical, technical and current development in organization structure. It is also a new observable fact in respect to the case study; with its convenient and technological innovation to developing countries, teaching and learning become easier and accessible at all time. [32], states that mobile learning is considered as the latest introduced type of learning where new learning strategies provided through mobile devices and applications. Many distance teaching and learning as well as residential institutions in developed countries have already started experimenting with mobile learning through parallel projects as part of their e-learning and information and communication (ICT) enhanced learning environments [21].

During the 1970's, as American computer scientist Alan Kay spearheaded the initiative to use Dynabooks for learning and education Kay, along with his fellow colleagues from the Xerox Palo Alto Research Center anticipated that book-sized computers would be "a personal computer for children of all ages (Kay, 1972 )" [27]. The concept of the Dynabook with the elements of a graphical user interface (GUI), laid the foundation for the modern laptop computer. Although the Dynabook was never quite created, it led to the creation of the Xerox Alto and offered children access to learning in the form of digital media. It was to be an interactive machine that would be small and light enough to be carried everywhere by learners. [Wikipedia contributors. "Dynabook].

Mobile learning is about self-actuated personalization, the accessible wide range of mobile devices and wireless technologies gave an opportunity to realize different systems for mobile education and the ability of mobile technology to deliver synchronous communication and knowledge sharing that can provide benefit to human or systems. Evidence of these benefits has been reported by [9], who found that mobile learning persuade individual mutualization, such as networking and socialization in a normal and relaxing manner. [13,27], reported on a mobile learning study where majority of the students deliberated that it is vital to learn anytime at anywhere. [34] developed a study, in which participated 20 middle school teachers, enrolled in a Midwestern university's mathematics teacher preparation course. the purpose of the study was to train the teachers on inquiry based mathematics content integrating PDAs' (Personal Digital Assistants) to teach middle school mathematics students. The content of the training was based on the National Council of Teachers of Mathematics (NCTM 2000) including data analysis, ratios, geometry and measurement. at the end of the sessions, students were given a questionnaire to express their perceptions of this new project. most of the teachers agreed that PDA was a valuable educational technology tool and would like to learn more on how to use PDAs for instructional activities[34].

The reviews on mobile learning documents students' usage and perceptions of mobile learning. It denotes that some researchers used the mobile device as an organizer to assist learning; some used SMS (text messaging) for learning while others developed devoted learning environments on the mobile device itself. Projects in which the existing features of the mobile device were used for learning, reported that students were excited to use the mobile device for learning. For example, [12] experiment on learning mathematics in an authentic mobile environment, which took place in an Arab middle school in Umelfahn, Israel, where the students responded enthusiastically by mathematics concepts through exploration and investigation.

The emerging technology such as mobile learning has immense promises for creating a new learning environment that enables better personalization of the learning process and empowers them to explore knowledge with an unregulated type of curiosity that is not available in the traditional classroom settings. [5]

### **3. TYPES OF MOBILE LEARNING**

Mobile learning is defined in [24] as " a current technology that has been developed hastily to convey learning using personal mobile devices without pretension of any restrictions on time and location. The extensive availability and relatively low cost of mobile devices opened new opportunities to control the power and ubiquity of mobile technologies in order to enhance learning and extend educational opportunities in developing countries . Consequence, mobile learning tenders the exploitation of ever-present handheld technologies, together with wireless and mobile phone networks, to facilitate, support, enhance and extend the reach of teaching and learning. In attempt to classify difference types of mobile learning, based on the type of technology used, type of application used, or even the learning theories that are used to support a particular approach in teaching learning and training. [30], states that mobility does not imply only moving physically; such mobility concepts as temporal, conceptual, social and interactional should also be considered, as well as technology mobility.

- **Learners' physical mobility:** people are continuously moving from one place to another and they can find extra time to learn. The physical context can be a determinant in the learning process or it can represent only a background for it [30].

- **Technology mobility:** many mobile devices can be carried around as the learner is moving from one place to another, and they can be exchangeable, depending on the context and needs [30].

- **Mobility in conceptual space:** learning topics and subjects contend for each learner. Experience of inestimable daily situations that may create learning and attention to be shared among interested individual [30].

- **Social/interactional mobility:** people learn at different levels and in different social groups, including family and workplace or formal education groups [30].

- **Temporal mobility:** a learning process develops over time as it involves momentous and connections between a wide variety of learning experiences, both temporal and informal.

### 3.1 CHARACTERISTICS OF MOBILE LEARNING

- **Friendly:** Mobile learning is more nature than other learning types, due to it impulsiveness it signifies a tremendous characteristic that allow individual to learn with mobile device regardless of where you are. It allow learner to get immediate fit back of any learning question at anywhere via online mobile browser.
- **Personal:** Mobile learning is confident, it does not mean that the information cannot be shared with others or data is accessible only to you. Rather, it means that only one person at a time usually has access to the mobile device and that you may access the data he/she want independently from other learners.
- **Informal:** Mobile learning is friendly and personal in nature, it is also casual. Every individual learner can schedule course according to their time. If one becomes curious about a specific topic, than he/she may explore that specific topic at his/her leisure time.
- **Interactive:** Mobile learning like all e-learning is interactive, it is a derived learning experience rather than sitting passively and having someone else provide data for you. Mobile learning must be interactive because it relies on data from servers. The functions of your mobile applications are what allow changeable levels of interactivity.

### 3.2 ESSENTIAL APPLICATIONS OF MOBILE LEARNING

The indispensable applications of mobile technologies play an important role in current classroom settings, particularly when it involves applications that will get professors organize and keep students learning. There are some research related to the design of applications for mobile learning, such as [17], which deals with more abstract patterns and differentiate the types of mobile learning depending on the modalities of training.

Everyone seems to talk endlessly about Smartphone or tablet these days and the following listed below are some of the essential applications being used by most of the students and professors for their daily academic activities [40].

- **TED:** Provide open source lectures where most professors use to enhance their lectures in classroom lessons and even acquire new knowledge that will be of important to them.



Fig.1: TED Mobile Learning Application

- **Twitter:** It assists as an online resource for materials search, it has customizes itself as an important means for the new century classroom application.

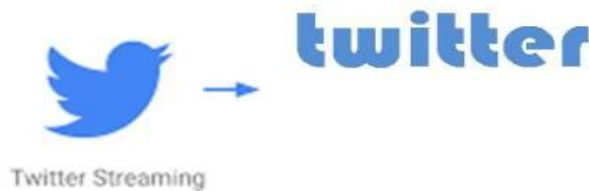


Fig. 2: twitter Mobile Learning Application

- **Quick Graph:** This is a mathematical tool used by most professors; Quick Graph grants mobile computing and thorough visual graphics when it comes to manipulative equations in two and three magnitude.

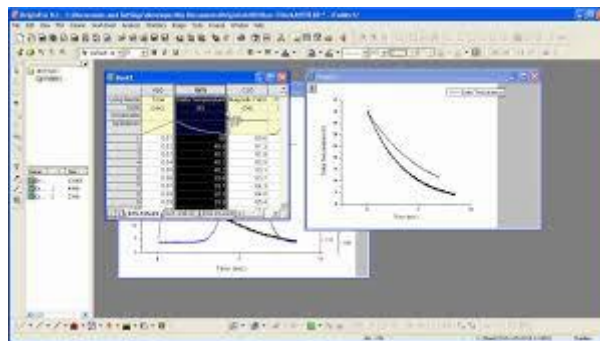


Fig. 3: Quick Graph Mobile Learning Application

- **Keynote:** keynote is a tool that admits users to bullwhip multimedia presentations for classes, seminars, conferences on their Devices.



Fig. 4: Keynote Mobile Learning Application

- **Google Apps:** As the name implies google boost most classroom application with ways to window phones, Android Phones, Blackberry, or other mobile devices for fast and immediate operations.



*Fig. 5: Google Mobile Learning Application*

- **Wikipedia:** Wikipedia usually anchor the most precise obtainable information that allows researchers and educators to carry out lecture notes accurately.



*Fig. 6: Wikipedia Mobile Learning Application*

- **Quick Office Pro:** Most mobile device and Smartphone owners benefit from full Microsoft Office collection that allow manipulation, creation, editing and share of documents with other colleagues at any time.



*Fig. 7: Quick Office Pro Mobile Learning Application*

### 3.3 ADVANTAGES OF MOBILE LEARNING

Mobile learning bundles numerous advantages. Some of these advantages are outlined below:

- Acquiring knowledge is not limited to a permanent location any more. Mobile learning devices allow learners to access learning contents, interactions with tutors and peer groups anywhere at any time.
- Individuals while roaming and traveling can have access to their learning content and study without any time wastage.
- It is remarkable to realize the capability of mobile device, regardless of its weight, size and figure; it carries much data and information as required.
- As being always said mobile facilitate the bond between peer groups, international partner, tutors and classmates worldwide.

### 3.4 DISADVANTAGES OF MOBILE LEARNING

Mobile learning needs to consider the limitations below while preparing the learning content. Acknowledging the present day situation, there are wide varieties of devices available in the market with a range of technical configurations like PDA, Smart Phones, multimedia players, I-phones, portable gaming consoles etc. all of these have some common constraints.

- Most of the devices have limited input capabilities like small number pad and several keys, even the devices with keyboard are small which are not suitable for broad usage
- Screens are generally too small for use of any stylish applications.
- Inadequate memory on the mobile devices stress for a smaller application and it required “battery-friendly” applications since the devices run on battery as well.
- Creating unified solutions can be challenge because the mobile industries are solidly divided and they have their own measures, platforms and languages.
- The internet bandwidth is another barrier for mobile learning, even with the introduction of high speed and high bandwidth services; internet usage in mobile phone is still very expensive compared to fixed line internet services.

Despite the fact, the essential application of mobile learning and how effective it will be when implement fully in academic environments is examined. A survey was conduct in some selected high institutions in Northern Nigeria where questionnaires was administered.

The analysed and interpreted data from the questionnaires determines the essentiality and effectiveness in using mobile learning in academic environments.

### 3.5 TYPES OF DEVICES USE FOR MOBILE LEARNING

There are many types of mobile devices use for learning activities as said above; mobile devices or handhelds are electronic device that enable some variety of computing activities, which are small enough to be easily carried around. These frequently use mobile devices are as follows:

- Cell Phones
- PDAs
- Smart phones
- Tablets and notebooks

#### 3.5.1 *Types of Mobile Phone Programming Languages*

There are so many programming languages used for mobile devices depending on the operating system of the device, but the most common and popularly used by mobile devices are mostly two;

java Script programming with different version that support mobile phone (J2ME etc) and the Symbian SiS programming which is a bit more complicated, it runs both old .Jar files as well as the new file of SiS files.

### **3.5.2 Implementation of Mobile learning**

Mobile learning is comparatively a new and popular sphere that is hastily evolving in educational phenomenon, which makes its accomplishment a bit difficult to implement. There are some steps needed to be considered to attain the objectives.

#### **A. Establish the Need**

The need and benefit of mobile learning should be acknowledge in other to implement it in organizations or institutions, because the learning initiative using mobile learning lacks more understanding compare to the traditional way of learning. In this case, needs for establishment should arise for better implementation.

#### **B. Decide on Devices & Platforms to Support**

Mobile platforms (or operating systems) are jostling for larger share of the pie with apple's iOS and Android together ruling the market as of now and even the Blackberry with its new release versions will only depend on the user capabilities and interest on what device to use and to put into consideration the mobile learning applications that will be used during the learning processes.

## **4. METHODOLOGY**

Methodology is a part in every research that can be qualitative, quantitative or mixed. The research at hand is a quantitative research which deals with the approach of testing objective theories by examining the relationship among variables. These variables, in turn, can be measured, typically on instruments, so that numbered data can be analysed using statistical procedures [11]. In every research there are things to be considered, this research is realized to be an exploratory case study with questionnaire distributed to respondents for accurate and further analysis.

As mobile learning (m-learning) is becoming accepted due to the rapid technological revolution, the need to examine its momentous trends to the academic environment and how well it could aid students in their academic fields is obligatory to scrutinize. Some random selected institutions in Northern Nigeria are main spotlight in content to these research questions, which are:

- i. What are the mobile technologies uses as learning aids?
- ii. Whether mobile technologies present opportunities for innovative ways in delivery teaching and learning process?
- iii. What kind of students are most likely to use mobile devices for variety of learning purposes, such as interacting with peers and communicating with teachers, lecture time change or doing research/homework?
- iv. What are the impact of mobile technologies on teaching and learning, the development and growth of mobile learning?

The main purpose of this research is to ascertain how well mobile learning aids students in their academic fields with use of its essential applications and the trends of its existence in the academic environment.

### **4.1 DEMOGRAPHY**

This research is a quantitative research, where questionnaire is use as a means of assembling different data. The responding data was collected from students, staff's and information technology desk officers.



The responded and retuned questionnaires were inserted into statistical product and service solutions (SPSS). This software is a mathematical modelling technique used to perform quantitative analysis and is used as a complete statistical package that is based on a point and click interface. This software has been widely used by researchers to perform quantitative analysis since its development. Without exception, the returned data from the questionnaire undergo thorough test such as the mean, average, percentage and reliability test as well, due to the fact that every data collected should be tested for data validation and reliability.

Table 1 below shows the percentage result on the type of mobile devices owned by respondents, 56% of the respondents owned valid mobile phones, 2% owned PDA/ pocket pc/Palmtop while 42% owned both mobile phones PDA respectively.

| <i>Mobile Devices Own</i>  | <i>Frequency (n)</i> | <i>Percentage (%)</i> |
|----------------------------|----------------------|-----------------------|
| Mobile Phones              | 28                   | 56.0                  |
| PDA/Pocket/Palmtop         | 1                    | 2.0                   |
| Both Mobile Phones and PDA | 21                   | 42.0                  |
| <b>Total</b>               | <b>50</b>            | <b>100.0</b>          |

Table 1: Types of Mobile Devices Owned

Table 2 below also displays the percentage on the type of occupation that the respondents are into, where 90% of the respondents are mainly students, while 2% of the respondents are social workers and 8% of the rest are from other collective occupation.

| <i>Occupation</i> | <i>Frequency (n)</i> | <i>Percentage (%)</i> |
|-------------------|----------------------|-----------------------|
| Student           | 45                   | 90.0                  |
| Social Worker     | 1                    | 2.0                   |
| Others            | 4                    | 8.0                   |
| <b>Total</b>      | <b>50</b>            | <b>100.0</b>          |

Table 2: Types of Occupation

In term of usage, table 3 below shows the percentage of respondents in respect of how frequent they use their mobile phones, where 66% of the respondents always use their mobile phones and 34% of the respondents sometimes use mobile phones.

| <i>Usage of Mobile Device</i> | <i>Frequency (n)</i> | <i>Percentage (%)</i> |
|-------------------------------|----------------------|-----------------------|
| Always                        | 33                   | 66.0                  |
| Sometimes                     | 17                   | 34.0                  |
| <b>Total</b>                  | <b>50</b>            | <b>100.0</b>          |

Table 3: Usage of Mobile devices

Table 4 below shows the percentage of where the respondent uses their mobile phones at home 42% of the respondents use their mobile phones at home, 40% uses their mobile device at school, 8% of the respondents use their mobile at work while 10% of the respondents represent other usage of mobile phones.

| <i>Mobility</i> | <i>Frequency (n)</i> | <i>Percentage (%)</i> |
|-----------------|----------------------|-----------------------|
| Home            | 21                   | 42.0                  |
| School          | 20                   | 40.0                  |
| Work            | 4                    | 8.0                   |
| Others          | 5                    | 10.0%                 |
| <b>Total</b>    | <b>50</b>            | <b>100.0</b>          |

Table 4: Place of mobile Usage

Table 5 below displays the percentage of how often the respondents are connected to internet connection, 82% of the respondents accepted that they are always connected with WiFi while 18% of the respondents deny the access of internet connection to their mobiles.



| <i>WiFi Connection</i> | <i>Frequency (n)</i> | <i>Percentage (%)</i> |
|------------------------|----------------------|-----------------------|
| Yes                    | 41                   | 82.0                  |
| No                     | 9                    | 18.0                  |
| <b>Total</b>           | <b>50</b>            | <b>100.0</b>          |

Table 5: WiFi connection

Table 6 below shows the percentage of mobile usage in term of teaching and learning 33% of the respondents accepted that mobile device is use as a tool for teaching and learning while 28% disagreed and 6% of the respondents do not have any idea about learning tools.

| <i>Mobile usage in term of Teaching and Learning</i> | <i>Frequency (n)</i> | <i>Percentage (%)</i> |
|--|----------------------|-----------------------|
| Yes  | 33                   | 66.0                  |
| No   | 14                   | 28.0                  |
| I Do Not Know  | 3                    | 6.0                   |
| <b>Total</b>   | <b>50</b>            | <b>100.0</b>          |

Table 6: Mobile usage in Teaching and Learning

Table 7 below shows the percentage of how mobile devices are use in developing lesson plan, 54% of the respondents accepted that mobile device are use to develop lesson plans and 46% of other respondents disagreed.

| <i>Mobile Devices are use in developing Lesson Plan</i> | <i>Frequency (n)</i> | <i>Percentage (%)</i> |
|---|----------------------|-----------------------|
| Yes   | 27                   | 54.0                  |
| No  | 23                   | 46.0                  |
| <b>Total</b>  | <b>50</b>            | <b>100.0</b>          |

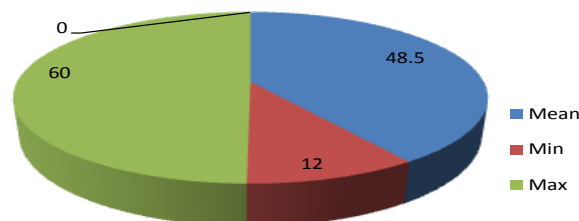
Table 7: Mobile usage in Developing Lesson plan

#### 4.2 Perception on Mobile Learning

Tables 8 below shows the respondents results, from the data statistical analysis preformed, the perception is the total summation of returned response from the questionnaires of the respondents, where the mean of 48.5% is derived as the average of the response compare to the whole questions answered in the questionnaire while the minimum percentage of 35% is the value of the lower response in the questionnaire and maximum percentage of 60% is the highest value of response in the questionnaire. Figure 8 below also shows the satisfactory perception of the respondents.

| <i>Mean</i> | <i>Min</i> | <i>Max</i> |
|-------------|------------|------------|
| 48.5        | 12         | 60         |

Table 8: Perception of Respondents



## 5. RECOMMENDATIONS

The major aspect of mobile learning recognized in this research is its capability to present learning at any place and anytime; knowledge that is positioned either at the field or place of work. Mobile devices are making knowledge transmission easier, it has the ability to convey different types of learning that could not be achieved in previous time.

This research conducted so far with the encouraging results has aspired to commend and report the use of mobile technologies in learning. To make mobile learning effective and useful in comparison with other methods, there is a need for an understanding of the way in which the learner uses the mobile devices. For example, Mobile learners often utilize the system for learning usually for shorter periods unlike other learning methods.

Mobile learning has been recognized by most academicians including its significant benefits that emerge to be partially accepted for didactic use. Although, with individuals motivating the uptake of mobile devices and tremendous growth in functionality, it shows that mobile learning will surely have a place in the middle of the road in terms of education and training in the future.

### 5.1 CONCLUSION

Most research carried out on mobile learning declare that students using mobile phones are moving away from the known traditional messaging to the newer technology like the e-mail, SMS and IM. [13]. These trends persuade learners to be more occupied with course material outside the classroom and make conversing far more efficient. [1], shows in a research that learners were typically passionate about mobile learning, which incorporates immediate messaging, and accessing web learning material through mobile devices. In order for the learning process to be flourishing, awareness is needed to develop a well-built strategy of mobile learning and online education setting as well [9]. In addition to students' perceptions on mobile learning there is a need for future research due to the rapid technological transition in global nations and the hasty advancement in mobile technologies really demand for potential exploitation.

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