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TEACHERS' PERCEPTIONS OF THE USE OF MOBILE DEVICES FOR INSTRUCTIONAL DELIVERY IN SECONDARY SCHOOLS IN OYO STATE

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Teachers' Perceptions of the Use of Mobile Devices for Instructional Delivery in Secondary Schools in Oyo State

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Abstract

Mobile devices are small, portable and compact devices, which can often fit in a pocket or purse. Unlike laptop computers, which are expensive, heavy and power-hungry, mobile devices are relatively low-cost, lightweight, and some work for a long time on an electrical charge or using a couple of standard disposable or rechargeable batteries. The study examined teacher's perceptions of the use of mobile devices for instructional delivery in secondary schools. The study's population comprises the secondary schools in Egbeda, Local Government Area of Oyo State. 26 schools were involved in the study with 220 teachers randomly selected. The instrument used in collecting the data was a researcher designed questionnaire that contained two sections. The data collected were analyzed using Mean. The result of the study reveals that teachers perceived mobile devices to be useful, easy to use and credible. The study concluded that mobile devices are useful for instructional delivery. The study also recommended among others that teachers should be motivated to engage in advanced learning in mobile devices for instructional delivery.

Introduction

The 21st century is witnessing a very significant technological emergence, which is affecting every aspect of human life and has influenced development in every nation. The rapid developments in technology have contributed immensely to improvements in Information and Communication Technology (ICT), which is a set of technological tools and resources used to communicate, create, disseminate, store, and manage information. ICT has brought changes in a range of sectors with extensive impact on contemporary society with the education sector inclusive, and fundamentally changing the instructional process (Rana, 2018).

ICT can simplify and facilitate the quality of instructional processes in our schools. ICT supports instructional processes by providing new opportunities for interaction between teachers and students; provides students easy access to information; offers the potential to meet the learning needs of individual students, and also promotes interdependence of learning among students. Rana, Greenwood, Fox-Turnbull & Wise (2018) related to ICT and education as cited by Rana and Rana (2020) informed that it is essential to learn about ICT, which can be effectively used for instructional delivery. Crook (2011) also argues that ICT can be an effective vehicle to deliver course content where learners participate in working collaboratively.

Rana and Rana (2020) opined that the majority of teachers and students particularly in urban areas have access to internet facilities outside their schools in their daily life. Rana, (2018) reported that private schools have plans to manage ICT facilities and to train their teachers to use ICT, the government does not have a clear strategy for equipping government-owned institutions with ICT infrastructure and for training teachers to use digital technologies. ICT enables learners to understand the difficult concepts in a very simple way, which are presented through simulations when added to real situations (Ishaq, Mat Zin, & Rosdi, Abid, Ijaz, 2020).
Information and Communication Technology allows teachers to access a wide range of openly available digital information and to develop their professional network virtually using tools. ICT tools are all those technologies that facilitate and enhance effective communication. These include all communication devices or applications such as radio, television, cellular phones, computers and network, hardware, software, satellite systems as well as various services and application associated with them like video conferencing and teleconferencing (Anasi, 2005).

However, new technological tools are evolving for instructional delivery. Traxler (2007) stated that there are six areas of emerging technologies that will significantly have an impact on education. These include clouding computing, the use of Geocoded data, personal web tools, semantic aware applications, smart objects that give

ordinary objects the power to recognize their physical location and respond appropriately, and mobile devices. ICT in education is vital in keeping abreast of the rapidly changing technologies which mobile devices for mobile learning are part of (Iloanusi and Osuagwu 2009).

Mobile devices are small, portable and compact device, which can often fit in a pocket or purse. Unlike laptop computers, which are expensive, heavy and power-hungry, mobile devices are relatively low-cost, lightweight, and some work for a long time on an electrical charge or using a couple of standard disposable or rechargeable batteries. Mobile devices include Mobile phones, PDAs, Tablets, Palmtops, and Smart Phones (Iloanusi & Osuagwu 2009). Technological innovation has allowed mobile devices to become information devices due to their reduction in size and weight (Hoang, 2006; Caudill, 2012). The use of the mobile device for teaching has introduced a shift from teacher-centred to a learner-centred approach thereby transforming teaching style and lessons following the advantages the devices can offer. The function of mobile devices is to support computing and communication activities; they are characterized by their design for mobile users, and from an ergonomic point of view they are not intended for constant use. Since the adoption of the usage of mobile devices for instructional delivery in schools, there has been fraught with various problems leading to the inability to use mobile devices effectively during instruction. These problems have become embarrassing to teachers with comments like not getting the lecture content online. The problems associated with conventional methods of teaching in Nigerian schools made Nigerian Educational Research and Development Council (NERDC) recommends the use of ICT for instructional delivery and knowledge sharing.

The improvement led to the adoption of technology into the teaching and learning process at every level of education in Nigeria. Mobile devices are ICT tools that are inevitable for instructional delivery in Nigerian Schools due to the present student population. However, its usage is perceived differently among the teachers of secondary schools. Teachers' in secondary schools have perceived the usage of mobile devices for instructional delivery differently as compare to common users. Hence, understanding the teachers' perceptions of the use of mobile devices for instructional delivery in secondary schools is essential. The factors that drive the perception of the usage decision making of teachers in secondary schools are still not clearly and fully identified. Based on the above-identified, this study examined the factors that influence technology acceptance decision among teachers in secondary schools in Nigeria using the modified Technology Acceptance Model (TAM) by Olafare (2014) with an added construct of perceived credibility and removed attitude towards and behavioural intention. Technology Acceptance Model (TAM) assumes individuals are rational decision-makers. TAM posited that behaviour was predicted directly from a person's perception of behaviour. TAM suggested that the relative contribution of perceived usefulness and perceived ease of use will vary from context to context. Based on this, perceived usefulness, perceived ease of use, perceived credibility and actual system usage was used in the study to examine teachers' perceptions of the use of mobile devices for instructional delivery in secondary schools.

Purpose of the study

The purpose of the study was to examine teachers' perceptions of the use of mobile devices for instructional delivery in secondary schools. Specifically, the study examined

1. Mobile devices available for teachers in secondary school
2. Teachers' perceived usefulness, ease of use, and credibility of mobile devices for instructional delivery.

Research Questions

The following research questions were posed for this study

1. What are the available Mobile devices for teachers in secondary school for instructional delivery?
2. How do teachers perceive the usefulness, ease of use, and credibility of mobile devices for instructional delivery?

Methodology

Research Design

The design of the study was descriptive of the survey research design of the cross-sectional type. It is quantitative research that involves two or more quantitative variables from the same group of participants.

Population, Sample and Sampling Technique

The population for this study comprised teachers in secondary schools in Oyo State. The sample size was 220 teachers from the Egbeda Local Government Area of Oyo State. A multi-stage sampling technique was used to select the sample for this study. In the first stage of the sampling, a simple random sampling technique was used to select one Local Government Area in Oyo State. Second, the purposive sampling technique was used to select

all the 26 secondary schools in Egbeda L.G.A. finally, a simple random sampling technique was used to select 220 teachers from the selected schools.

Research Instrument

The research instrument used to gather data for the study was a questionnaire designed by the researchers. The instrument consisted of two sections, A and B. Section A dealt with demographic variables of respondents such as gender and age. Section B has 3 sub-sections with 10 items for perceived ease of use, 10 items for perceived usefulness, and 9 items for perceived credibility. The response categories of the items on Section B were based on a four-point rating scale ranging from Strongly Agree (SA), Agree (A) Disagree (D), and Strongly Disagree (SD). The response categories were assigned numerical values of 4, 3, 2 and 1. The internal consistency reliability of the instrument was determined using Cronbach Alpha. The reliability coefficients established for the modified TAM were presented in Table 1:

Table 1. Cronbach Alpha Results of the Dimensions of Modified TAM in the Instrument

TAM Dimensions	Cronbach's Alpha
Perceived Usefulness	.88
Perceived Ease of Use	.82
Perceived credibility	.73

Procedure for Data Collection

The researchers with the help of a research assistant visited the schools; sought their cooperation and sincere participation in the study. The respondents were not compelled to respond to the questionnaire. The instrument was administered to the respondents through personal contacts by the researchers and research assistants. Out of 250 questionnaires administered, 220 were duly filled and returned. These represented an 88% rate of return. The respondents' responses were regarded as reflecting their perception towards mobile devices. It was assumed that all responses given by the respondents were sincere.

Data Analysis Technique

Mean, standard deviations, and percentages were used to answer research questions. In determining the perceptions of teachers towards the usage of mobile devices, perceived ease of use, perceived usefulness, perceived credibility, and actual usage, any item with a mean of 2.50 and above was considered agreed upon while less than 2.50 was considered disagreed upon for positively worded items. However, an item with a mean of 2.50 and above was considered disagreed upon while less than 2.50 was considered agreed upon for negatively worded items.

Results

Research Question 1:

What are the available Mobile devices for teachers in secondary school for instructional delivery?

Table 2: Mobile Devices available for Instructional Delivery

	Available (%)	Not Available (%)	Total
1. Smart Phone	46.7	53.3	100
2. iPhone	15.6	84.4	100
3. Android Device	20.0	80.4	100
4. Mini Laptop	56.6	44.4	100
5. IPads	26.7	73.3	100
6. Blackberry	4.4	95.6	100
7. Tablets	11.1	88.9	100
8. Windows Phone	46.7	53.3	100
9. iPod	4.4	95.6	100

Table 2 revealed that out of the 13 devices sampled. 9 devices were observed to be available for teaching but the android device (55.6%), smartphone (46.7%) and tablets (46.7%) remain the most internet-enabled devices used by teachers for instructional delivery. 46.7% of the respondents stated that smartphone and tablets are available for teaching, while 53.3% said that they not available. 15.6% said that iPhone is available and 84.4% said they are not available. Only 20.0% agreed that Android Device is available, the rest 80.0% said that Android Device

is not available. Mini Laptop records the highest percentage of availability (56.6%) and 44.4% of not available. iPad is 26.7% available (low) and 73.3% not available. iPod, windows phone, tablets and Blackberry record the lowest percentage of availability (4.4%, 44.7%, 11.1%, and 4.4%) for use in teaching at school respectively.

Research Question 2: How do teachers perceive the usefulness, ease of use, and credibility of mobile devices for instructional delivery?

Table 3: Perceived Usefulness of Mobile Device for Instructional Delivery

S/N	Items	Mean	SD
1.	The use of mobile devices for teaching will afford me greater control over teaching	2.98	0.12
2.	The use of mobile devices for teaching will enable me to accomplish course content within the time frame.	3.09	0. 75
3.	The use of mobile devices for teaching will enhance the outcome of the teaching and learning process.	3.24	0.87
4.	The use of mobile devices for teaching will improve students' centred teaching and learning	3.27	0.77
5.	Mobile devices will allow me to teach subject content effectively because the students were digital natives.	3.00	0.61
6.	Using mobile devices for my teaching will enable me to accomplish tasks quickly	3.16	0.52
7.	Using mobile devices for teaching will improve the quality of my teaching.	3.33	0.62
8.	Using mobile devices will give me access to a lot of current and accurate information in my area of specialization	3.60	0.83
9.	Mobile devices will support the difficult concepts of my tasks as a teacher.	3.22	0.67
10.	Mobile devices make it easier for me to address the students learning differences.	2.67	0.58
Average Mean		3.16	

Table 3 is quite revealing. The average mean scores of the ranked usefulness of mobile device for instructional delivery shows the mobile device is most useful in accessing current and accurate information on their teaching specialization (mean 3.60). Other perceived usefulness like enhancing the outcome of teaching, effective teaching, improved quality of teaching, supporting for difficult concepts and quick accomplishment of tasks received positive affirmation with the statistical mean ranging from 3.09 to 3.33. However, the impression was low on the usefulness of the device for addressing students learning differences (mean = 2.67). The respondents have a very firm and positive perception of the usefulness of mobile device for teaching.

Table 4: Perceived Ease of Use of Mobile Devices for Instructional Delivery

S/N	Items	Mean
1.	The flexibility of mobile devices will ensure easy dissemination of knowledge and information to students.	3.31
2.	It would be easier to remember how to perform teaching tasks using mobile devices.	2.91
3.	Mobile devices will be easier to use because it is internet enabled.	3.07
4.	Using mobile devices make learning clearer and understandable.	3.27
5.	It is easy for me to become skilful at using mobile devices for teaching.	3.09
6.	It is easy to remember how to perform teaching tasks using mobile devices.	2.87
7.	Using mobile devices for instruction would require a lot of skills and effort to ensure learning takes place.	2.64
8.	It takes a lot of effort to become skilful in using mobile devices for the instructional process.	2.64
9.	It is easy to customize mobile devices for educational uses	2.82
10.	It will demand a lot of training and re-training to become skilful in using mobile devices for teaching.	2.73
Average Mean		**2.94**

A mean score of 3.31 and 3.27 indicates that flexibility of the device and clarity of learning is strongly affirmed. The majority just agreed that the use of the mobile device for teaching is easy but demand some skills which can

be acquired through training and retraining (mean ranges 2.64 to 3.09). The average of means (2.935) shows that the teachers perceived the use of the mobile device for teaching to be easy but subject to skill training on various applications of the device for teaching.

Table 5: Perceived Credibility of Mobile Devices for Instructional Delivery

S/N	Items	Mean
1.	Mobile device allows getting instant information and knowledge of the result.	3.56
2.	Mobile device enables the assessment of a wide range of topics very quickly.	3.44
3.	With a mobile device, regular access to instruction is possible.	3.27
4.	Mobile device makes teaching less stressful.	3.31
5.	Time saving by the mobile device allows more regular assessment than might otherwise have been possible.	3.04
6.	I encounter some barriers when trying to access contents with my mobile device	2.78
7.	Mobile device fills a gap that teachers could not otherwise fulfil when resources are unavailable.	2.80
8.	Learning with mobile device leads to deep learning and more transient gains.	3.18
9.	Mobile device gives room for collaboration among students and the teacher.	
	Average Mean	3.24
		3.18

Table 5 shows that the credibility of the use of the mobile device for teaching in secondary schools is strongly acknowledged. The most perceived credibility of the device is in getting instant information and quick assessment of a wide range of topics, followed by stress-less teaching, student-teacher collaboration, transient gains and time-saving. However, the device is perceived to be less credible in filling a gap that teachers could not fill in the absence of learning resources. Based on average, the device is perceived to be very credible for teaching.

Discussion of Findings

Out of the numerous mobile devices, only the android phone, smartphone and tablet phone were mostly available and used by the teachers for instructional delivery. Comparatively, this might be due to several advantages they have in terms of compatibility, durability, cost-effectiveness and user-friendliness. The findings of Kearney and Maher (2013) explored mobile learning for teachers, who used their smartphones to mediate their professional learning, exploiting features of authenticity and personalization in both formal and informal settings.

Teo, (2009) noted that perceived usefulness has often been a significant predictor of intentions to use and actual use of technology. Furthermore, it is possible that people who believe that technology is useful could at the same time believe it to be too difficult to use and that the performance benefits of usage are outweighed by the effort of using the entire application or technology. It was also revealed that teachers perceived the use of the mobile device for teaching to be easy. This agrees with Wong &Teo (2009) findings that perceived ease of use is a significant determinant of the attitude and intention to use technology among teachers. Also, Šumak et al. (2011) revealed that the perceived ease of use is a factor that directly affects attitude. The study further agrees that the credibility of the use of the mobile device for teaching in secondary schools is strongly acknowledged but the most perceived credibility of the device is in getting instant information and quick assessment of a wide range of topics, followed by stress-less teaching, student-teacher collaboration, transient gains and time-saving. Handal et al. (2013) perceived the greatest potentials of mobile technology as facilitating anywhere-anytime learning, improving teacher to student communication, sharing resources and enhancing autonomous learning.

Conclusion

The study concluded that mobile devices are perceived to be useful, easy to use and credible for instructional delivery.

Recommendations

The study recommended that:

1. Teachers should be motivated to engage in advanced learning in mobile devices for instructional delivery.
2. Teachers should as well engage the student in the use of mobile devices for learning.
3. Government agencies and policymakers should ensure the inclusion of constant and regular training and development programs for teachers on the use of mobile devices for instructional delivery.

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