LECTURERS' AWARENESS AND READINESS TOWARDS THE ADOPTION OF OPEN EDUCATIONAL RESOURCES FOR TEACHING IN TERTIARY INSTITUTIONS IN NIGER STATE, NIGERIA

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A B S T R A C T

This study investigated attitudes and self-efficacy towards the utilization of interactive whiteboards (IWB) among university lecturers in North Central, Nigeria. A descriptive survey research design was employed for the study and 315 participants were selected through a multi-stage sampling technique. Four research questions and two null hypotheses guided the study and a 20-item questionnaire was used as an instrument for data collection. The questionnaire was subjected to both validation and reliability checks. Data obtained from the administration of the research instrument were analysed using descriptive statistics of Mean and Standard Deviation for research questions and inferential statistics of z-test for research hypotheses. A decision rule was set, in which a mean score of 2.5 and above was considered agreed, while a mean score below 2.5 was considered disagreed. Findings revealed that lecturers' attitudes and self-efficacy towards the utilization of interactive whiteboards (IWB) were positive with a mean score of 3.02 and 2.70 out of possible 4.0. Also, gender as a moderating variable had an influence on lecturers' attitude and self-efficacy towards utilization of interactive whiteboard. Based on these findings, it was recommended among others that lecturers in tertiary institutions should be encouraged to adopt Interactive Whiteboard in order to enhance their teaching. This can be achieved through the provision of enabling work environment that supports the use of information and communication technology in the teaching and learning process.

K E Y W O R D S
Interactive Whiteboard, Attitude, Self-Efficacy, Educational technology, Electronic learning.

INTRODUCTION

It is certain that technology has changed education greatly. It has morphed how teachers/lecturers teach and how students learn. Classroom is also not left out; it has been equipped with technological tools, gadgets and devices to enhance the teaching and learning environment. The use of information and communication technology in teaching and learning process has brought another kind of learning environment in which walls no longer exist (Virtual Classroom). These changes however do not change the fundamental learning styles or approaches, but have changed the way people do things and how they view them. The traditional perception of the learning process has been shifted to a new perception, made manifest through educational technology which embeds hardware and software as tools for teaching and learning processes (Demircioglu & Geban, 2015).

Educational technology as the ethical practice of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources is a wide field, and has many definitions, (Richey *et al.*, 2018) some of which are conflicting based on perceptions. As a field, educational technology emphasizes communication skills and approaches to teaching and learning through the judicious use and integration of diverse media. Scholars in the field examine the uses of innovative media and technologies for education, examining all aspects from direct student learning to management and impacts on institutions. Through educational technology, radical innovations are being introduced in cultural and social life through computers that store, retrieve and process information and the internet that connect computer and individuals (Adewale, 2017).

Computer Applications such as educational games, simulations, multimedia applications, virtual reality, and e-books are making serious contributions to the teaching and learning process through various instructional technologies. Instructional technologies are the broad range of communication, information and related technologies that can be used to support learning, teaching and assessment. These ideas were initiated to ensure permanent learning, makes the learners more active and interested in the lesson (Demircioglu & Geban, 2015). The positive impacts of ICT, vis-à-vis instructional technology, cannot be over emphasized.

There is overwhelming evidence confirming the notion that ICT has greatly transformed the educational operations and processes in many contemporary institutions (Duran & Cruz, 2011). Today, many different forms of technology inform of hardware and software have entered the classroom (Çömek & Bayram, 2019). One of such hardware which is another novelty of the last 28 years has been the interactive whiteboard (IWB) (Klammer *et al.*, 2016). Interactive whiteboards (IWB) operate on the connection between a computer, a projector and a touch electronic screen. At the heart of the interactive whiteboard lies a touch screen smart board which students can use to experiment, solve problems, write, draw, drag an object, manipulate text or shape something and erase applications such as visual experiments, visuals, animations and graphics (Klammer *et al.*, 2016).Interactive Whiteboard (IWB) is one of such technologies that transform classroom activities and lecturers' role. The move to utilize IWB is motivated by the fact that the learners of today are growing up in a world that relies heavily on technology. Technology has become their first language in a sense of entertainments such as video, play-station and games. Learners have become preoccupied with these high-tech inventions for entertainment purpose which they learn how to use unconsciously.

The whiteboard is used to deliver instruction in a variety of ways that may be categorized based on three modalities of learning, that is, Visual Learning, Auditory Learning and Tactile learning. The extent to which each of these three modalities is incorporated into a lesson may determine the extent to which students are engaged in the learning process and, thus, are motivated to learn (Beeland, 2017). IWB is regarded as one of the most revolutionary instructional technologies for various educational levels (Türel & Johnson, 2012). Interactive whiteboards according to Becta (2013) enhances motivation, improves participation and cooperation, and makes presentation more attractive. It provides ease of use for younger children since there is no requirement for a physical keyboard, allows easier handling of complex concepts with the help of clearer, more effective and dynamic presentations, and appeals to students with different learning styles. Wall, Higgins and Smith (2009) stated that interactive whiteboards are effective tools for initiating and facilitating the learning process and ensuring student participation. In addition, Wall *et al*, (2019) summarized the benefits of interactive whiteboards to include flexibility and multiple facets, effectiveness in multimedia use, support for the lesson plan and diversity of resources. The author opined that IWB is of good quality.

In line with the aforementioned, there has also been an ever increasing interest in utilizing interactive whiteboards (IWB) in classrooms as this technology is perceived as combining all pre-existing instructional materials such as chalkboard, whiteboard, television, video, overhead projector, CD player, and computer (Yáñez & Coyle, 2011). Even though the IWB technology is relatively a new phenomenon as it was originally designed for commercial settings (DiGregorio & Sobel-Lojeski, 2010), it is increasingly bang utilized in classrooms all over the world. As also indicated by Coyle *et al*, (2010), it provides lecturers with many opportunities to teach in exciting and promising ways that go far beyond the possibilities of traditional boards. On these grounds, it can be argued that IWBs are now a fact of everyday life as it is generally regarded as a "must have" device "to keep up to date and to be seen as having the latest equipment" (Hockly, 2013). However, it has been reported that Interactive Whiteboards are still not popularly used in must universities. (Marcelle, 2015). Though technology alone is not a panacea in university teaching and teaching (Johnsona *et al*., 2010). Consequently, the question here is the utilization of IWB in the teaching and learning process not been popular among most lecturers. Could it be the issue of attitude and self-efficacy?

Attitude in its broadest sense is the way in which the individual is standing up against the objects or subjects that contain a psychological value (Gomleksiz, 2013). It has been proved by many research findings that attitudes developed as a natural result of interaction, greatly affect the success of the individual (Canakay, 2011). Attitude is a summary evaluation of a psychological object captured in such attribute dimensions as good-bad, harmful-beneficial, pleasant-unpleasant, and likeable-dislikeable (Ajzen, 2013). Lee *et al*, (2013) argue that understanding the usefulness of IWB has a direct influence on teachers' attitude and satisfaction level. That is, a positive attitude towards IWB platform will increase the utilization and quality of participation. Lecturers' attitude towards the use of this IWB platform constitutes a significant factor to this study; the researcher believes that it is important to identify and understand lecturers' attitude which also relates to their self-efficacy towards the use of IWB.

Self-efficacy refers to lecturers' competency in utilizing the IWB platform for teaching and learning purpose. Self-efficacy otherwise known as personal efficacy can also be referred to as confidence in

one's own ability to achieve intended academic results when using IWB platform for teaching purpose. Consequently, since self-efficacy affects every area of human endeavour, it implies that the belief lectures hold regarding their abilities to utilize IWB for teaching and learning in universities will strongly influence their competency to face IWB challenges as well as choices they make out of it.

Gender is the collection of socially constructed roles and relationships, personality traits, attitudes, behaviours values, relative power and influence the society ascribes to the two sexes on a differential basis (Marcelle, 2015). Gender is relational, its roles and characters do not exist in isolation, but are defined in relation to one another and through the relationships between female and male. Sex refers to biological differences, whereas gender refers to social differences. Gender is also socially constructed characteristics, such as; role, norm, relationship of and between groups of men and women. Gender is a significant demographic variable that might affect the use of IWB, thus there is need to establish it there are some differences between its usage by male and female lecturers.

ICT revolution is yet to attain that critical mass required for it to register the necessary impact in the teaching and learning process in a developing nation like Nigeria (Agyeman, 2012). Shahadat *et al*, (2012) observed with great concern that several higher educational institutions in developing countries are finding it difficult to even implement basics of ICT and all it offers in education.

In some countries, with particular reference to Nigeria, the culture and mind set has become a big obstacle for the implementation of electronic learning systems based on their attitude and self-efficacy. Furthermore, evidence has found that males, compared to females, tend to hold higher perceptions of self-efficacy (Busch, 2015). Venkatesh and Morris (2010) argued that women typically display lower self-efficacy (SE), lower computer aptitude and higher computer anxiety than men. A higher level of anxiety can lead to a lower level of self-efficacy and subsequently influence outcome expectancy (Compeau & Higgins, 2019). The concern or thrust of this study therefore was to investigate the attitude and self-efficacy towards utilization of IWB among university lecturers in North Central Nigeria.

Research Questions
The following research questions were raised to guide the Study:
1. What is University lecturers' attitude towards the utilization of IWB in North Central, Nigeria?
2. What is University lecturers' self-efficacy towards the utilization of IWB in North Central, Nigeria?
3. What is the influence of gender on attitude of University lecturers using IWB in North Central, Nigeria?
4. What is the influence of gender on University lecturers' self-efficacy towards the utilization of IWB in North Central, Nigeria?

Research Hypotheses
The following null hypotheses were tested in the study:
1. There is no significant difference between the attitude of male and female university lecturers towards using IWB in North Central, Nigeria.

2. There is no significant difference between male and female university lecturers' self-efficacy towards the utilization of IWB in North Central, Nigeria.

Methodology

This study adopted descriptive survey research design. The methodology involved the use of questionnaire to elicit needed responses from lecturers on their attitude and self-efficacy towards the utilization of interactive whiteboard.

Participants

The population of the study comprised of all the lecturers in the two tertiary institutions selected for this study. Firstly, purposive sampling technique was used to select faculties of education in these institutions because of the relevance of faculty members to this study. Thereafter, based on the number of faculty members in the selected faculties, a total of 354 questionnaires were distributed. However, within the allocated time for administration of the questionnaires, some faculty members were not available, hence, only 315 questionnaires (completed by 205 male and 110 female participants) were duly filled and returned to the researchers. The questionnaire was validated by two educational technology experts. Based on their suggestions, some items were modified while some items were removed. To determine the internal consistency of the instrument, a pilot test was carried out on 20 respondents within the study population but outside the selected study sample. The instrument was administered once and the scores obtained were computed using Cronbach Alpha's formula. Reliability co-efficient of 0.80, and 0.76 were obtained, hence, the questionnaire was considered as having high reliability and therefore suitable for data collection.

Data Collection and Analysis

A researchers-developed questionnaire was used for data collection. The questionnaire consists of three sections (Sections A, B, & C). Section A was used to collect the respondents' demography (institution, discipline and gender) while Section B and C consists of 10 items each on attitude and self-efficacy towards the utilization of Interactive Whiteboard. A four-point scale of Strongly Agree (SA, 4 points), Agree (A, 3 points), Disagree (D, 2 points) and Strongly Disagree (SD, 1 point) was used in weighing responses to items in the questionnaire.

Responses on each questionnaire item were analysed according to frequencies and mean rankings. First of all, total responses in each scale category (frequency) of every item were tabulated. Next, the number of points allocated to each category was multiplied by the frequency of each category and lastly, the sum of these scores was divided by the sum of the frequency for each category (ΣN).

$$Mean = \frac{\{[4 \times N(SA)] + [3 \times N(A)] + [2 \times N(D)] + [1 \times N(SD)]\}}{\sum N}$$

A mean response below 2.50 was considered disagreement while a mean response of 2.50 and above was considered as agreement. Responses to questionnaire items were analysed and used to provide answers to research questions using mean and standard deviation. Furthermore, the average mean responses of male and female were analysed using z-test, which was used to test hypotheses one and two at 0.05 alpha levels.

Results

The responses of the entire 315 participants were used to provide answers to research question one and two. For the purpose of comparing the responses of participants based on gender, research questions three and four were hypothesized. Thereafter, the responses of 205 male and 110 female respondents who participated in the study were collated and analysed for testing hypotheses one and two. Descriptive statistics of Mean and Standard Deviation were used to answer the research questions as presented in Tables 1 and 2, while z-test were used to test the hypotheses as presented in Tables 3 and 4.

Table 1 helps to provide answers to the first research question. The results of data illustrate that the mean score for items 1 to 10 ranged between 1.91 and 3.63 and were therefore agreed by the respondents.

Table 1: Lecturers' Mean Response on attitude towards the utilization of IWB

No	Items	N	$\bar{x}$	S.D	Decision
1	I have good level of computer literacy	315	3.18	0.687	Agree
2	I do not know the functionality of IWB	315	3.75	0.553	Agree
3	I know it is good to develop effective teaching methods by using IWB	315	3.24	0.714	Agree
4	I am aware of the vast difference between conventional whiteboard and IWB	315	3.22	0.673	Agree
5	I am aware of the advantages of IWB	315	3.23	0.636	Agree
6	I tend to generalize the use of IWB in education because it made a revolution in the world of education	315	3.36	0.613	Agree
7	I am exposed to the technicalities of IWB	315	3.41	0.602	Agree
8	IWB will increase my instructional awareness and my scientific achievement	315	3.34	0.583	Agree
9	I have a little awareness of IWB	315	3.28	0.611	Agree
10	IWB is a common educational tool in my school	315	3.36	0.653	Agree
	Grand Mean		**3.02**		**Agree**

Decision Mean = 2.5

Table 1 shows the Mean and Standard Deviation of lecturers' response on their attitude toward the utilization of IWB. The table reveals the computed mean score of 3.18 with Standard Deviation of 0.687 for item one, 3.75 with Standard Deviation of 0.553 for item two, 3.24 with Standard Deviation of 0.714 for item three, 3.22 with Standard Deviation of 0.673 for item four, 3.23 with Standard Deviation of 0.636 for item five, 3.36 with Standard Deviation of 0.613 for item six, 3.41 with Standard Deviation of 0.602 for item seven, 3.34 with Standard Deviation of 0.583 for item eight, 3.28 with Standard Deviation of 0.611 for item nine, 3.36 with Standard Deviation of 0.653 for item ten. The table revealed further that, the grand mean score of responses to the ten items was 3.02 which were greater than the decision mean score of 2.50. This implies that lecturers in North- Central have positive attitude towards the of the utilization of IWB.

Table 2 helps to provide answers to the first research question. The results of data illustrate that the mean score for items 1 to 10 ranged between 2.86 and 3.11 and were therefore agreed by the respondents.

Table 2: Lecturers' Mean Response on self-efficacy towards the utilization of IWB

No	Items	N	$\bar{x}$	S.D	Decision
1	I can record lessons I taught for reference purpose in the next lesson using IWB audio facility	315	3.01	0.990	Agree
2	I can use the IWB in the classroom because it save time and effort	315	2.94	0.969	Agree
3	I can use IWB because I am well trained to use it for teaching and learning in the classroom	315	2.95	0.971	Agree
4	I can use most of IWB tools on its software menu.	315	3.00	0.992	Agree
5	I cannot use the IWB for educational purposes because of the fear of being stuck in the process	315	2.98	1.032	Agree
6	I can confidently ask my students to help if I have problem using any part of the IWB.	315	2.86	1.034	Agree
7	I can only use the IWB to import my lessons from PowerPoint platform to display.	315	3.03	0.889	Agree
8	I can use virtually all the accessories related to IWB	315	3.09	0.892	Agree
9	I can calibrate the IWB.	315	2.99	0.941	Agree
10	I can resolve some technical challenges associated with the use of IWB	315	3.11	0.922	Agree
	Grand Mean		**2.70**		**Agree**

Decision Mean = 2.5

Table 2 shows the Mean and Standard Deviation of lecturers' response on their self-efficacy towards the utilization of IWB. The table reveals the computed mean score of 3.01 with Standard Deviation of 0.990 for item one, 2.94 with Standard Deviation of 0.969 for item two, 2.95 with Standard Deviation of 0.971 for item three, 3.00 with Standard Deviation of 0.992 for item four, 2.98 with Standard Deviation of 1.032 for item five, 2.86 with Standard Deviation of 1.034 for item six, 3.03 with Standard Deviation of 0.889 for item seven, 3.09 with Standard Deviation of 0.892 for item eight, 2.99 with Standard Deviation of 0.941 for item nine. The table revealed further that, the grand mean score of responses to the eight items was 2.70 which were greater than the decision mean score of 2.50. This implies that lecturers in North-Central have self-efficacy in utilizing IWB.

Table 3: z-test analysis of cumulative mean responses of male and female lecturers on attitude towards interactive whiteboard

Group	N	df	$\bar{x}$	SD	t-value	p-value
Male	205		29.85	6.436		
		313			0.530[nt]	0.909
Female	110		29.93	6.639		

Not Significant at 0.05 level

Table 3 shows the z-test analyses of mean response of male and female lecturers' attitude towards the utilization of IWB. The result indicated that there was no statistically significant difference between the two groups, t= 0.530, df=313, p = 0.909 (p >0.05) with a mean score of 29.85 for male lecturers and 29.93 for female lecturers. Base on this, hypothesis one was retained. This implies that both the male and female Lecturers in Niger state, Nigeria has the same level of attitude toward the use of IWB.

Table 4: z-test analysis of cumulative mean responses of male and female lecturers on self-efficacy towards interactive whiteboard

Group	N	Df	$\overline{x}$	SD	t-value	p-value
Male	205		33.70	3.017		
		313			0.532	0.046
Female	110		33.04	2.770		

Significant at 0.05 level

Table 4 shows the z-test analyses of mean response of male and female Lecturers' on their Self-efficacy in utilizing IWB. The result indicated that there was statistically significant difference between the two groups, t= 0.532, df = 313, p=0.046 (p <0.05) with a mean score of 33.70 for male lecturers and 33.04 for female lecturers. Base on this, hypothesis three was rejected. This implies that the male lecturers have high self-efficacy in utilizing IWB more than their female counterpart in North-Central, Nigeria.

DISCUSSION AND CONCLUSION

Finding that emanated from this study on lecturers' self-efficacy towards the utilization of interactive whiteboard indicated that lecturers have positive attitude towards the use of interactive whiteboard for teaching and learning. This finding is in line with the earlier findings of Adeyanju *et al*, (2017); Mohammed (2017); Singaravelu (2017); Krause *et al*, (2017); Noori (2018); and Anatürk and Ateşkan (2019), who found out that lecturers have positive attitude to utilize interactive whiteboard for teaching and learning. Also, finding of this study on lecturers' self-efficacy towards the utilization of interactive whiteboard for teaching indicated that lecturers have appropriate level of self-efficacy towards the utilization of interactive whiteboard for teaching and learning. This finding is in line with the earlier findings of Yinghui *et al*., (2018) and Kaya and Yazıcı (2018), who found out those lecturers, have high level of self-efficacy to utilize interactive whiteboard for teaching and learning. This finding is not in line with the earlier findings of Robert (2016), who found out that the total number of eLearning tools used significantly improved student's self-efficacy but not instructor connectedness.

The finding of this study also revealed that gender has no influence on lecturers' attitude to utilize interactive whiteboard for teaching and learning. This finding is in agreement with the earlier finding of Adeyanju *et al*, (2017), who found out that no significant difference was established between male and female lecturers' attitude in the utilization of whiteboard for teaching. Also, finding from this study revealed that gender has influence on lecturers' self-efficacy to utilize interactive whiteboard for teaching and learning. This finding is not in agreement with the earlier finding of Kaya and Yazıcı (2018), who found that their self-efficacy in using the interactive blackboard did not vary based on the variables of gender. The clear implication of these findings is that although ICT is not used currently at the highest levels, lecturers do recognize the benefits of the ICT components that they have chosen to incorporate into their teaching. This finding is specifically influenced by the developments found among the participants in the study. Positive developments are significantly supported if the lecturers have the opportunity to attend educational seminars specifically covering the use of ICT in education. Based on the findings that emanated from this study, the following recommendation were made:

1. Integration on the use of interactive whiteboard for teaching should be made compulsory in all the universities in Nigeria.

2. It is important to note that the current study utilizes quantitative research method and uses only a survey questionnaire to collect date. Therefore, it is recommended that for a more comprehensive study, other instruments such as interviews and class observations be conducted to get a more through picture of the use interactive whiteboard.

3. Government and tertiary institutions managements should make provision for continuous sensitizations, trainings and workshops for lecturers in tertiary institution. This will further encourage them to engage in the usage of open educational resources.

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