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The Effect of Blended Training Environment on Developing E-Assessment Skills and Attitude towards Training of Post – Primary School Teachers

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Abstract:- The aim of the study is to investigate the effectiveness of blended training environment on developing electronic assessments skills and attitude of post primary school teachers in Nigeria. Purposive sampling technique was used to gather thirty (30) post primary school teachers in Charanchi Local Government Area of Katsina State to participate in the research. Two (2) instruments were developed to elicit data from the respondents; the e- assessment achievement test and attitude questionnaire. Descriptive statistics of mean, standard deviation, and paired sample t-test were used to analyze the data obtained from the test of hypotheses. Results revealed significant increase in the performance of post-primary teachers in the e-assessment skills development achievement test and positive feeling towards learning in a multifaceted environment after the post application, which proved the effectiveness of the process implemented. Therefore teachers at this level of education are advised to use blended learning as one of their strategy for instruction and e-assessment as assessment process in their domain within their available technology resources.

Keywords:- *Blended training environment, e-assessments, attitude.*

I. INTRODUCTION

Blended learning has been accorded various connotations such as mixed learning technique, technology mediated learning, hybrid learning system. However whatever is the nomenclature, the meaning and application remain the same.

The concept has been defined differently by different educational researchers. There is no universally accepted definition as regard to the concept. Thus, the most important thing is that whatever the definition is, the idea is combining two methods of teaching and learning for the particular group of learners by a single teacher.

On the other hand assessments are used to verify the effectiveness of instructional techniques and learning gains with a view towards enhancing them. Thus assessments provide data about the extent to which the set instructional objectives have been achieved and also identify the present gaps in students' knowledge.

Information and communication technology (ICT) enable learning in a digital environment with a diversified, enriched as well as developed methods of assessments especially in today's innovative and modern technology era of learning.

The preferred assessment technique is usually the electronic quizzes, electronic assessment, or online assessment such as diagnostic testing, course appraisals and so on.

E-assessment provides teachers with opportunities for multiple uses of questions, modifications, easy update and enrichment of the assessment tools as well as the possibilities for immediate feedback. In addition to that e-assessments enable teachers to acquire and use automatic and quicker pre-set assessments rubrics.

II. PROBLEM STATEMENT

Upon all the availability and utilization of digital learning tools in our higher institutions of learning, coupled with government and nongovernmental organisations interventions such as TeTFund, UNICEF, Ukaid, and Dfid on ICT in education, teachers in post-primary level of education remain conservatives, maintaining the traditional doctrine of teacher controlled pen and paper instruction and assessments.

Thus, the implementation of e-assessment at this level of education still remain a problem, this is not unconnected with the teachers' lack necessary skills and motivation to embrace the promising and befitting technique to instruction in their teaching activities.

Therefore, this study intends to develop necessary skills of post-primary school teachers on e-assessments and attitude in a blended training environment.

III. OBJECTIVES OF THE STUDY

The general aim of this study is to investigate the effectiveness of blended training environment on developing electronic/ distant assessment skills and attitude towards the training of post –primary school teachers. The specific objectives of the study are:

- To determine the effect of blended training environment on developing e-assessment skills among post-primary school teachers.
- To determine the effect of blended training environment on developing attitude towards the training of post-primary school teachers.

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IV. RESEARCH HYPOTHESES

This study will be guided by the following hypotheses

- There is a statistically significant difference between the mean scores of the experimental group in the pre and post application of e-assessment skills achievement test in favor of post application.
- There is a statistically significant difference between the mean scores of the experimental group in the pre and post application of attitude towards the training test in favor of the post application.

Blended training environment has been defined differently by scholars. Jeffrey and Milne, (2014) view it as an approach or technique of teaching that combine the online teaching and learning materials for both online teaching exercise and face to face traditional classroom method.

Blended learning requires the presence of teachers and learners with control of the learner in terms of the choice of place, time, and the learning pace. The classroom activities are combined with face to face activities and a computer mediated activities as regard to the content delivery, (Gambari, Ogunlade, & Osunlade, 2017).

Similarly Jeffrey, Milne and Saddby (2014) view it as a mixture of online and in person delivery in which the online part totally displaces the face to face discussion contact. It is a combination of multiple approaches to teaching and learning methods such as self paced, collaborative, tutor supported learning (also known as traditional), (Medina, 2018, Jia –Jia, 2019).

Empirical evidences indicated positive effects of blended training and electronic assessments approach compared to the traditional techniques. Kebualamanga & Mgwe investigated the impact of blended approach on students' perception and performances, their result indicated positive effects on the two variables.

Moreover Jia-Jia (2019) also revealed that blended learning stimulates and enhances students listening, speaking, reading and writing performance. Gambari et al, (2019) found that undergraduate students who were exposed to blended learning demonstrated more evidence of academic achievements compared to those taught with traditional model.

The queries of Adeneken, Talulope and Jatto (2023) revealed that blended training improve positive attitude of post graduate students through engagement and intrigues and found to have no significant effect on the perceived behavioural control and subjective norms of attitude of the trial audience.

Studies from Ikhwan and Widodo (2019) constructed the fact that blended learning stimulates learners emotional conceptions integrate motivations, encourage resource access as well as improving environmental positive feelings as regards to learning.

In the same vein, Khan (2016) observed that prospective teachers from science stream were more affiliate to blended training environment in the area of positive feelings as compared to their counterpart in the arts and humanities specialists.

V. MODELS OF BLENDED LEARNING

There are various models of blended learning outline and described by Dziuban, Graham, Moskal, Norberg and Sicilia, (2018), Machumu, Ghasia and Musabila, (2018), Guzer & Caner,(2014) The models are illustrated below:-

- Face to face driver model
- Rotation model
- Flexible model
- Online lab school model
- Self blended model
- Online mode driver model
- **Face to face drive**: - This is the mode where the teacher led the class activities supported by online or digital tools and equipment.
- **Rotation mode:** - This is a strategy where by the students activities are separated on face to face classroom activities and the online schedule at different time and environment.
- **Flexible mode**: - This form of learning is flexible in the sense that some of the contents are delivered to the learners digitally (online) and then arrangements are made to meet with the teacher for the remaining contents and consultation.
- **Online labs school model:** - In this mode the overall learning contents are delivered to the learners digitally in a specific platform such as whatsApp, Face book, Twitter, platforms and later meet in a specified location possibly for teachers support.
- **Self blended**: - This is when the learners are at liberty to blend their learning strategy for both online and traditional face to face approach.
- **Online mode drive**: - This is the mode whereby the overall course materials and resources are delivered to the learners digitally via an online platform with the possible teachers' supervision, and the traditional face to face meeting is only scheduled if there is need.

A. Essentials of blended training

Medina (2018) outlined the benefits of blended environment in the educational sector as an environment that provide opportunity for more students' academic achievement, as well as creation of students teachers relationship and timely support from teachers to the learners. It helps to increase students' creativity, improve learners' engagement in the lesson, provides opportunity for learners to access more instructional resources at less cost to both teachers and learners; interesting and fun as well.

B. Problems of blended training

Dinning, Magill, Money, Walsh & Nixon, (2015) identified some difficulties faced by blended trainers which were termed as the possible challenges to the progress of the technique, the obstacles ranges from dependency of the technique on technology devices to some extent thereby

exacerbation of digital divide among the learners and lack of technology training from the sides of both teachers and learners as a great hindrance to its implementation.

C. Characteristics of blended learning:

Blended learning technique is characterized by the following features according to Lalima and Dangwal (2017):-

- Supplements learners' engagement in the teaching and learning process.
- More interaction between teachers and learners
- Flexibility of the environment and time
- Learners learn and progress at their own rate
- Less expensive, as it does not require the purchase of physical resources

D. E – Assessment

E-assessment on the other hand has been termed differently by different scholars in the field of educational technology such as; technology enabled testing, computerized administered evaluation, computer based testing, web-based assessment, electronic examination, online evaluation, computerized administered testing and many more names regarded as assessment in a digital and virtual environments, (Ghouli, Benmousat, & Cecilia, 2020).

E- Assessment has been defined as that form of assessment that relies on electronic gadgets and other technological applications to present and receive evaluation data to and from the learners for formative and summative testing and feedback, (Dogan, Kibrishoglu Uysal, Kelecioglu & Hambleton, 2020).

It has been seen as the evaluation technique that involves design, production, delivery, recording and analysis of assessment data via digital devices, (Kiryakova, 2021, Alruwais,Wills & Wald, 2018).

E. Benefits of e-assessment

According to Alruwais et al (2018), Nikolova, (2012) the essentials of e- assessment can be grouped into three spheres, the learners, teachers and institutions 'spheres.

For the learners sphere students' benefits from e-assessment include but not limited to improving their academic performance, easy completion task within a short span, provision of immediate feedback, engagement and control, dynamicity, and opportunity to participate at distant space.

For the teachers, who are the instructors of learning domain e-assessment saves their time for marking and recordings of results, improve quality of their' assessment feedback, ability to evaluate many assessment results at a time, as well as the opportunity to out-rightly attend to individual learners misconceptions.

F. Characteristics of e-assessments

For an electronic assessment to be effective, it has to possess some features according to Nikolava (2012), the features include interactivity, it has to be rich with different categories of educational media items, provision of novel opportunities for learners and teachers to respond, it should be at anytime anywhere, synchronous or asynchronous, personalized and independent for learners, provide opportunity for learner control and immediate feedback, as well as the ability for the learners to access e-resources.

G. E- Assessment tools

Different types of tools are employed by instructors in the design, development, implementation and evaluation of learners electronically as illustrated by Ghauli et al (2020) as follows:

- Closed ended and objectives types multiple choice (MCQ) questions
- The assessment through e- portfolio that enable learners to interact with one another online
- Wikis inform of online projects
- The discussion forums (discussion boards, social network forums, Google docs etc.)
- Social media sites. Such as messenger, whatsapp, twitter,
- Peer assessment
- Self assessment
- Teacher diagnostic assessment
- Assessment through learning management systems like schoology, Google classroom, Docebo learning management systems, Adobe captivate prime and so on.

H. E- Assessment process

To design a strong and credible electronic assessment tool Ghouli, et al, (2020) pointed some guiding principles that could be considered by digital assessment designers to design and develop an effective assessment tool. These principles are:-

- The first step in e-assessment process is the motivation of the teachers and learners to embrace the system. This is concern with training to develop knowledge and skills about design, production, and implementation of the technique. It also include the use of behavioural stimulus to arouse the interest of learners to participate, this could be achieved through provision of positive reinforcements.
- The next step is the design of the assessment tools; here the teacher plans the formative and summative types of assessment tools and rubrics.
- The next step is the development of the e-assessments items in line with the rubrics and contents, the developed materials will then be subjected to test of validity and reliability to ensure construct of the items by pre-testing to a particular group of learners or through expert review.
- The next step is the implementation of the assessments tools to the participants, and then followed by retrieval of the responses, then processing and provision of formative and summative feedback.
- Finally the follow up activities comes, where the learners evaluate their learning feedback with a view to improvement or otherwise next time.

I. Components of e-assessment

There are two major components of electronic assessments as described by Appiah and Tonder, (2018) as follows:

- The e-assessment engine: This includes all the digital devices hard ware and soft ware applications utilized for the design, development and delivery of assessment tools to the learners by the teacher. Examples are Kahoot,

Google drive, socrative. Com, Google docs, Quiziz, Google forms.

- The second component is the delivery channel, which is a web-based or cloud and download modes. In the former learners access the e-assessment items online via the internet synchronously while the latter refers to asynchronous mode of delivery in which learners download the assessment items with computers at a particular designated centre in an appointed date and time.

J. Research design:

An extended one group inform of pre-test – post test experimental design in order to determine the effect of blended training environment on the development of electronic assessment skills and attitude for the post- primary schools teachers was adopted for the research structure.

K. Area of the study

The study took place at Charanchi local government area of Katsina state, Nigeria, with some selected post-primary school teachers.

L. Research audience

The study audience were all post –primary school teachers in Katsina state, the targeted at post-primary school teachers in Charanchi local government, and the sample were thirty (30) selected post-primary school teachers in Charanchi Local Government Area.

The sampling technique is purposive, post- primary teachers and teachers who possessed technology devices like mobile android phones, tablets, personal computers (PCs) and technology training were selected. The demographic data of the research sample are depicted in table 1 below:

Table 1: Characteristics of the research sample

Item	Frequency	Percentage
Gender		
Male	22	73%
Female	8	27%
Age		
25 -30	30	100%
Qualifications		
Bsc	18	60%
NCE/OND	12	40%

Table 1 above, shows that thirty (30) post – primary school teachers drawn from eight (8) secondary schools located in Charanchi local government took part in the study. Twenty two (22) of them were male representing 73% and eight (8) were female staff representing 27%, all the selected samples were between the ages of 25 – 30 years, however, eighteen (18) representing 60% were Bsc holders and the remaining twelve (12) 40% possessed NCE/OND certificates.

M. Research tools

Two instruments were employed to collect data from the participants, they are:-

- The e-assessment skills development achievement test
- Attitude towards blended training environment questionnaire

N. Validity and reliability of the data collection tools

The two (2) research instruments, twenty (20) items e – assessment skills development test (MCQ), and the twenty (20) items five (5) point likert type attitude towards blended training environment scale were designed and developed by the researcher. Expert views from three (3) technocrats in educational technology field, concerning the quality of the content and outlook of the instruments were sought and strictly considered.

The reliability of the tests developed was practiced with twenty (20) post – primary school teachers, who happened to be part of galleries but not within the participated audience. Cronbach alpha α internal consistency coefficients were calculated using special package for social sciences (SPSS) soft ware version 23, where 0.75 and 0.80 alpha α coefficients were realized, indicating a perfect consistency of all the tests items under review.

O. The blended training environment

A rotation model of blended training was adopted to deliver instruction in a dual mode, the model enable the trainer to interact with the trainees face to face and through technology in a varying span and environment.

In this study the trainer utilized Google classroom to deliver resources to the participants twice in a week, and also meet physically with them from 8:00 – 10:00 pm of every Mondays and Fridays of the experimental period, the virtual meetings were used for theoretical aspect of the training, while the physical meetings were to discuss about the resources shared in online platforms.

Prior to the implementation stage, the trainer used whatsApp forum to described the training environment (Google classroom) and other Google apps (Google forms, Kahoot, Quiziz, Google docs, Google slides) that will be used intermittently in the training, Finally class code was assigned to the trainees via whatsApp forum to join the Google classroom for the virtual meetings.

P. Pre – training trial

Earlier than the application of the treatments course materials, the two (2) instruments were administered to the research audience, the purpose was to trace their cognitive level in relation to e – assessment and attitude prior to instruction, this will enable the researcher to compare the outcomes with that of post – application to determine whether the independent variable has any positive influence on the dependent variables.

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VI. TREATMENTS

The treatment processes were designed and implemented for the period of four (4) weeks, in which two (2) weeks were dedicated for the theory phase, where the participants learned the theoretical aspect of electronic assessments, which include skills and process for the design, development and implementation of electronic assessments, e- assessment apps (Google forms, Kahoot and Quiziz).

The second phase, two (2) weeks, were for practice, where the participants created their own e-assessment tools using one of the e-assessment apps and applied to their learners, finally post – test was applied electronically using Google forms via Google classroom and whatsApp group created for this study. The time table for the experiment is presented in table 2 below:

Table 2: Schedules of experimental treatments

Week	Treatment/ activity	Assessment
Week 1&2 1st – 14th August 2023	- General guidelines and objectives of the training 1. Preamble of the first module: introduction to electronic assessment (concept, characteristics, rationale, components, forms). - Face to face meetings for activities. 2. The second module: Skills and process for the design, development and implementation of e- assessment 3. Use of e- assessment apps, Google forms, Kahoot and Quiziz - Face to face meetings for activities.	Trainer formative assessment and feedback
Week 3&4 15th – 29th August, 2023	(**product phase**) - All participants to create their own e- assessment tools using one of the Google apps (Google forms, Kahoot and Quiziz) And share it to their learners in an online platform. - Application of post – test achievement test and blended training environment attitude scale.	Trainer formative assessment and feedback

VII. ANALYSIS TECHNIQUE

The researcher used multiple analyses techniques to determine the potential level of significant difference in the performance of the subjects on e-assessment skills development achievement test and attitude towards blended training environment questionnaire from the pre-test and post-test application, the techniques are descriptive statistics of mean, standard deviation and paired sample t-test.

VIII. FINDINGS AND DISCUSSION

The major consequences of the experimental treatments conceived are presented under the subtitles below in considerate with the research aims, the data generated and the test of hypotheses.

In order to verify the impact of blended training environment on e-assessment skills development, pre-test and post – test success scores were compared by paired sample t-test, the analysed results are figured out in table 3 below:

Table 3: Mean, standard deviation, correlation and paired sampled t-test concerning e-assessment skills development pre-test and post-test achievement success scores

N	Achievement test	Mean	SD	MD	Corr.	Sig.
20	Pre- Test	5.90	3.024			
20	Post- Test	9.95	2.964	-4.05	.176	0.00

As glanced in table 3 above, there is an important variation in the average scores between pre- test and post – test success scores of the e-assessment skills development achievement test, the pre test average score is 5.90 (SD,3.024) and post – test 9.95 (SD,2.964) revealed a mean difference of 4.05 in favor of post application. 0.176 correlations were observed which indicated a low correlation between the scores of the two (2) applications. The calculated p value 0.00 is less than the significance alpha α 0.05 value, meaning that null hypotheses is rejected, and since null hypotheses is rejected, it implied that blended training environment has an influence in upgrading the skills and academic success of the experimental group.

This finding is similar to that of Gambari et al, (2019) that students who were exposed to blended learning demonstrated more evidence of academic achievements when their learning achievement is compared to those taught with traditional model.

Also to prove the result further, a qualitative description by Medina (2018) credited blended environment as a domain that provide opportunity for more students' academic gain, deepen creativity and improved engagement in the lesson as well as access to instructional resources at less cost.

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To canvass the effect of blended training environment on attitude, pre-test and post – test scores were computed and compared by paired sample t-test, the analysed result is exemplified in table 4 below:

Table 4: Mean, standard deviation, correlation and paired sampled t-test concerning attitude towards blended training environment pre-test and post-test scores

N	Attitude scale	Mean	SD	MD	Corr.	Sig.
20	Pre- Test	12.67	6.025			
20	Post Test	15.50	5.086	-2.83	.470	.283

As observed from table 4, the relational output of pre and post application of attitude scale average scores were 12.67(SD, 6.025) and 15.50 (SD.5.086), this indicated that post application mean is higher than the pre test score by 2.83. Also a medium correlation .470 was determine, paired sample t-test was calculated to prove whether 2.83 mean difference between pre and post application is significant at 0.05 thresholds, and was found to be .283, which is above 0.05 significance level, this could be interpreted as that 2.83 is in significant at this confidence level , therefore blended training environment has less significant impact in improving and holding positive attitude of the subjects towards learning in a flexible environment.

To oppose the finding, Adenekan, Talulope and Jatto (2023) revealed that blended learning improve positive attitude of students towards learning, most especially at postgraduate level, this is achieved through frequent learners engagement in their lesson activities, and found to have no significant effect on subjective norms and perceived behavioural control of attitude of the trial audience.

To buttress the above, Ikhwan and Widodo (2019) queries, constructed that blended learning stimulates learners emotional conceptions about training and learning especially in a dual domain, and at the same time integrate motivations and enhances positive feelings regarding the instructional environment used and access of educational resources available in the digital data banks.

IX. CONCLUSION AND RECOMMENDATIONS

The essence of this enquiry is to verify the effectiveness of blended training environment on developing digital assessment skills and attitude towards blended environment, the results from the study showed that learning in a multi modal environment that involve the use of technology in addition to physical practice has a positive influence in improving academic gains, but has no greater influence towards enhancing and holding positive feelings of the trial subjects towards learning in an integrated domain.

Realizing the immense benefits of blended training environment and electronic assessment in education, teachers at this level of education are advised to use blended learning as one of their strategy for instruction and e-assessment as assessment process in their domain within their available technology resources.

Moreover, the training and retraining of teachers at this level of education, to equip them with the latest blended learning and e-assessment skills should be organised and sponsored by the state ministry of education and state universal basic education board.

More studies may be conducted to ascertain the effectiveness of blended training environment on developing some skills other than e-assessment such as the use of educational scaffolding, use of artificial intelligence, augmented reality, hologram and more.

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