DIGITAL ASSESSMENT COMPETENCIES OF TEACHER EDUCATORS IN NIGERIA FOR IMPROVING QUALITY EDUCATION

Dr. Columbus Okey Ogbuabor
Department of Educational Foundations and Administration,
Federal college of Education, Eha-Amufu, Enugu state.
ogbuaborokey@yahoo.com

Dr. Dinah Ifunanya Obiano
Abuja, Zonal office, Joint Admissions and Matriculation Board, Abuja
dinahifyobiano@gmail.com

Dr. Nkechi Hope Ezeilo
Department of Educational Management,
Enugu State University of Science and Technology.
ezeiloenkay@yahoo.com

Abstract

The implementation of digital technologies in schools has given rise to remarkable improvements in terms of development and management of assessment of students' academic achievement. However, it is worrisome that digital assessment is not visibly present in the processes of educational assessment, in teacher education institutions in Nigeria. Teacher education institutions are expected to model best practices in the formation of student teachers to meet the demands of the wider society in educational leadership and implementation. This study therefore, investigated the digital assessment competencies of teacher educators in colleges of education in Nigeria. One research question and one research hypothesis were formulated and tested at 0.05 level of significance. The study was carried out in the two public colleges of education in Enugu State. The entire population of teaching staff totaling 408, comprising of 338 from Federal College of Education Eha-Amufu and 70 from Enugu State College of Education Technical was used for the study. Census sampling was used because the population is manageable. A self-developed structured questionnaire titled Digital Assessment Competency Questionnaire (DACQ) was used as the instrument for data collection. The instrument was validated by three experts, one expert in Measurement and Evaluation; and two experts in Educational Management, all from the Faculty of Education, Enugu State University of Science and Technology. The reliability of the instrument was determined using Cronbach Alpha. The instrument yielded reliability indices of .75, which shows suitability of the instrument for the study. Copies of questionnaire were administered and retrieved by the researcher with the aid of survey heart application, which web link was shared using the WhatsApp platforms of the Academic Staff Unions of the respective institutions. Mean with standard deviation was used to answer the research questions. The null hypothesis was tested using z–test statistics at .05 level of significance. Mean scores of 2.50 and above were considered positive while those below 2.50 were considered negative. From the result of the findings of the study, it was concluded that the teaching staff of colleges of education in Nigeria do not possess adequate digital assessment competencies. Comparison of the federal and state institutions shows that there was no significant difference between the mean scores of teaching staff of federal and state colleges of education on digital assessment competencies. It was therefore, recommended among others that there is need for government to provide the supportive infrastructure and training that will aid the smooth transition to digital assessment in teacher education in the colleges of education in Nigeria.

Keywords: *Digital, Assessment, Competency, Teacher education, Quality Education.*

Introduction

The twenty first century has witnessed remarkable advancements in technology which is rapidly changing human behaviors and mode of interactions. This change in behavior is very visible in the school system, with various developments in teaching, learning and assessment procedures. One very outstanding

aspect of this development is the introduction of digital assessment in schools. Assessment is the systematic basis for making inferences about the learning and development of students (Ghaicha, 2016). It's the process of defining, selecting, designing, collecting, analyzing, interpreting and using information to increase students learning and development. These processes can be achieved with easy by the use of technology hence, referred to as digital assessment.

Digital assessment according to Guàrdia, Crisp, and Alsina (2017) refers to "all the evaluation tasks using a computer or the Web". This applies to where assessment activities have been digitalized and moved online (Haipinge, Kadhila, & Josua, 2022). This helps to facilitate efficiency and effectiveness in administration of assessment in schools where it is implemented. Digital assessment is a modern and reliable means of test; it provides a stable and worry-free platform that allows focus on innovating assessment environment, offering secure digital and online exams, course work, tests, take-home assignments and port folios, providing the best education to your student. It's the delivery of assessment, exams, surveys and evaluation of learning outcomes using digital devices such as computers, tablets, mobile phones, internet and intranet.

The implementation of digital assessment is expected to be championed by the colleges of education in Nigeria as the foremost teacher training institutions in the country. However, the researchers observed that the institutions are not living up to the expectations. The institutions are still using the traditional methods of assessing student's academic performance. What is not clear is why the colleges of education are not able to key into the new normal, despite the advances in technology. Could it be that the lecturers lack the requisite skills to implement the new technology? Or is there any other factor militating against digitization of assessment in colleges of education. This is a gap that this research tends to fill.

Lecturers in colleges of education in Nigeria have the primary responsibility to train professional educators/teachers for basic education (FRN, 2013). This population is a digital savvy student that moves with the trends of technology in the 21st century**.** A Good percentage of their live experiences are in digital platforms. Therefore, it is expected that instructional and assessment practices will follow the same trend to achieve optimal results. In a related research, Fabry (2016) observed that trained digital assessment literate educators are highly in demand as educational professionals. Similarly, Husain (2021) reported that to eliminate the traditional method of assessment, teachers may need to be trained on digital assessment practices. Prior to the advent of COVID-19, only few teachers were taught digital literacy (Schmidt &DeSchryver, 2022).

Studies in other parts of the world show varied digital assessment competencies among teachers. In any case, it explains the level of implementation of digital assessment in those countries. If the level of digital competency is high, the tendency is that its application will also be high. In Malaysia, Awang (2021) reported that the level of digital assessment competency of teachers was at a high level, with male teachers showing higher rates than that of female teachers, whereas younger teachers showed higher levels of literacy than older teachers. In Morocco, Rehhali, Mazouak and Belaaouad (2022) observed the desire to transit into using digital assessment but they are constrained by some technological in-competencies. In South Africa, Fynn and Mashile (2022) reported that digital assessment was marred by inadequate access to devices due to inequalities in schooling.

In Nigeria, recent literatures on digital assessment competencies of teachers are invisible. Despite the fact that one could see studies on e-learning, information and communication technology, educational information management systems researchers appear to have ignored these very important digital assessment skills of teachers. There is a need to appraise digital assessment competencies, particularly in the context teacher education. This study aims to address the gap in knowledge using evidence from teacher education institutions in Nigeria. It is an issue that has broad relevance to the teacher education in developing countries. It shows how the capacity of teachers determines the quality of their products.

Research question

What are the digital assessment skills possessed by academic staff of colleges of education?

Research hypothesis

The null hypothesis stated below, which was tested at 0.05 level of significance guided the study.

$H0_1$: There is no significant difference between the mean ratings of academic staff of State and federal colleges of education on the digital assessment skills possessed by the academic staff.

Research method

This study employed descriptive survey design. A descriptive survey design according to Nworgu (2015) is a type of research design which involves collecting and analyzing data from a representative sample or the entire population to describe the characteristics of a phenomenon. This design is particularly suited for gathering data and providing a systematic description of the opinions and experiences of a target population. In this case, the descriptive survey design was deemed appropriate for investigating digital skills of teacher educators in colleges of education.

The study was conducted in Enugu State, located in South Eastern Nigeria. Enugu State is home to a diverse range of tertiary institutions, both public and private universities, including the University of Nigeria, Nsukka, Enugu State University of Science and Technology, Caritas University, Godfrey Okoye University, and Coal City University, among others. This rich educational landscape made Enugu State an ideal setting for the study. Population for the study was 408, comprising of all the 338 academic staff of Federal College of Education Eha-Amufu and 70 academic staff of Enugu State College of Education Technical. These institutions were established and managed by state and federal governments respectively. Census sampling was used because the population is manageable. A self-developed structured questionnaire titled Digital Assessment Competency Questionnaire (DACQ) was used as the instrument for data collection. The questionnaire has two parts: A and B. Part A contains information on personal data of the respondents, while part B contains 9 items which focused on ability to use digital resources in managing students assessment by academic staff of public colleges of education in Enugu State, Nigeria. The rating format was based on a four point scale of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). This implies that the higher the aggregate scores in the rating scale, the more positive the response of the subjects and the lower the score the more negative the response of the subjects. The scale was weighed 4, 3, 2, and 1 respectively.

The face validity of the research instrument was determined by giving initial copies of the instrument to three research experts. One of the experts was from the Department of Mathematics and Computer Education (Measurement and Evaluation option), while two were from Department of Educational Management all from the Faculty of Education, Enugu State University of Science and Technology (ESUT). They were specifically requested to assess the adequacy of the items in getting the required information, the quality of its language and the logicality of its arrangement. Their corrections and comments were used to modify the questionnaire before the final copy was produced.

The reliability of the instrument was determined by a trial test on 20 academic staff at the Federal College of Education (Technical) Umunze, Anambra State, which has similar characteristics with Federal College of Education Eha-Amufu and Enugu State College of Education Technical. Cronbach alpha method was adopted to determine the internal consistency coefficient of the instrument, because the questions are polychotomous in nature. Cronbach Alpha statistics was used because the instruments were in cluster and items were not dichotomously scored. Cronbach Alpha is also considered appropriate as it ensured the homogeneity of items on the cluster. The instrument yielded reliability index coefficient of 'r' .75. The reliability index indicates that the instrument was reliable and suitable for the study.

The instrument was administered on the respondents using Survey Heart Application. Survey Heart Application is a web-based data collection application. The web link address was shared to the respondents through the WhatsApp groups of the academic staff unions of the respective institutions. This approach helped to maintain control over the data collection process, ensuring that the correct respondents completed the instrument. Three hundred and seventy-two (372) soft copies of questionnaire completed and returned were used for the study.

The research questions were answered using Mean rating and standard deviation, while the hypotheses were tested at 0.05 level of significance using z-test statistic. The four point scales were used with the following values assigned to the responses:

Strongly Agree - 4 points
Agree - 3 points
Disagree - 2 points
Strongly Disagree - 1 point

The decision rule was that any item with mean rating of 2.50 and above was interpreted as "Agree", while mean rating below 2.50 was interpreted as "Disagree". This is in line with the position of Nworgu

(2015) who stated that with four point scale, a mean rating with 2.50 or above should be positive, while those less than 2.50 should be regarded as negative. The z-test statistics was used to test the hypotheses. Consequently, when the calculated z-value is less than the critical z-value, the null hypothesis was not rejected, but when the calculated z-value is equal to or greater than the critical z-value, the null hypothesis is rejected.

Results

Research question: What are the digital assessment skills possessed my academic staff of colleges of education.

Table 1: mean scores of academic staff of state and federal colleges of education on their digital assessment skills

S/N	ITEMS	ESCET 68			FCEE 304			OVERALL 372		
	I am able to use digital resources to:	**X**	**SD**	**Dec**	**X**	**SD**	**Dec**	**X**	SD	Dec.
1	Use digital tools available in my institution	2.26	1.10	D	2.05	1.17	D	2.09	1.16	D
2	Use available software applications for managing shared files	2.25	1.03	D	2.27	0.96	D	2.26	0.97	D
3	Create digital assessment	2.28	1.09	D	2.49	1.07	D	2.45	1.07	D
4	Develop valid grading procedure	2.35	1.02	D	2.44	1.03	D	2.42	1.03	D
5	Schedule digital assessment	2.38	0.95	D	2.43	1.05	D	2.42	1.03	D
6	Keep assessment scores of each students confidential	2.35	1.02	D	2.23	0.98	D	2.26	0.99	D
7	Communicate assessment scores to students	2.37	1.08	D	2.34	1.00	D	2.35	1.02	D
8	Monitor students progress	2.38	1.02	D	2.45	0.99	D	2.44	0.99	D
9	Print hard copy feedback to parents	2.44	0.92	D	2.44	0.98	D	2.44	0.97	D
	Cluster mean	**2.34**	**1.03**	**D**	**2.35**	**1.03**	**D**	**2.35**	**1.03**	**D**

Table 1 above shows the mean scores of academic staff at ESCET and FCEE on their skills for managing digital assessment. The respondents' means ranged from 2.25 to 2.44 with a cluster mean of 2.34 and a standard deviation of 1.03 for ESCET academic staff, while those of FCEE academic staff ranged from 2.05 to 2.49 with a cluster mean of 2.35 and standard deviation of 1.03. The respondents had an overall cluster mean of 2.35 and standard deviation of 1.03. Both groups recorded similar responses in all the items. The overall cluster mean of 2.35 and standard deviation of 1.03 indicates that academic staffs of colleges of education do not have requisite competencies in digital assessment.

Research hypothesis: $H0_1$: There is no significant difference between the mean ratings of academic staff of State and federal colleges of education on the digital assessment skills possessed by the academic staff.

Table 2: z-test of significant difference between mean ratings of academic staff of state and federal colleges of education on digital skills possessed by academic staff.

Group	N	X	SD	df	z-cal	z-crit	Decision
ESCET	68	2.34	1.03				
				370	0.07	1.96	Do not reject H01
FCEE	304	2.35	1.03				

Table 2 shows the z-value for difference in mean scores of State and federal academic staff of colleges of education on their digital assessment competencies. The result showed that the calculated z-value (0.07) was less than the critical value (1.96). Hence, the null hypothesis was not rejected. Therefore, there is no significant difference between the mean ratings of academic staffs of State and Federal colleges of education on the digital competencies of academic staff of colleges of education in Nigeria.

Discussion of finding

This study's findings indicate that academic staffs in Nigerian colleges of education lack the necessary competencies in digital assessment. Moreover, a comparison between state and federal colleges of education revealed no significant difference in digital competencies among academic staff. This suggests that colleges of education in Nigeria have not embraced digital technologies in student assessments, consistent with previous research (Fabry, 2016; Husain, 2021). The limited digital literacy training for teachers before the COVID-19 pandemic (Schmidt &DeSchryver, 2022) likely contributed to this deficiency. The implications are profound: colleges of education may fail to equip future teachers with essential digital assessment skills, rendering them less relevant and unable to meet the demands of 21st-century education. This underscores the urgent need for colleges of education to prioritize digital assessment training for academic staff to ensure they can effectively prepare students for the modern workforce.

Conclusion

The technological advancements of the 21st century have profoundly impacted the education system, with the introduction of digital assessment being a notable development. This study investigated the capacity of academic staff in Nigerian colleges of education to utilize digital technology for students' assessment. The findings reveal a significant disparity in digital assessment competencies among academic staff, highlighting the need for urgent intervention to bridge this gap. Equipping teacher educators with the necessary skills to effectively integrate digital assessment practices in their teaching is crucial to enhancing the quality of teacher education and preparing students for success in the digital age. Addressing this critical issue will enable Nigeria to align its teacher education system with the demands of the 21st century, ultimately leading to improved educational outcomes and national development."

Recommendations

Based on the findings, the following recommendations are made:

1. The management of colleges of education should develop and implement comprehensive digital assessment training programs for academic staff.
2. Government should provide the supportive infrastructures to ensure reliable access to computers, internet, and other digital resources. This will aid the smooth and fast transition to digital assessment in teacher education in the colleges of education in Nigeria.
3. The government should formulate and implement policies that prioritize digital assessment and encourage its integration into teacher education curricula.
4. The school management should foster partnerships between colleges of education, educational technology companies, and other stakeholders to enhance digital assessment capabilities.
5. The academic staff of various tertiary institutions especially colleges of education should adopt self development in the use of digital technology in teaching and learning processes with more emphasis on digital assessment.

References

Awang, M. I. (2021). The Digitalization of learning assessment. The proceeding book of the 4th International Conference on Multidisciplinary Research, 4(1). ISSN: 2808-6229. Theme: "*The Importance of Digital Media for Sustainable Learning, Research, and Community Service during The COVID-19 Pandemic*". School of Education, University Utara Malaysia.

Fabry, D. (2016). *Why we need assessment literacy as part of teacher preparation.* Assessment Basics.

Federal Republic of Nigeria (FRN, 2013). *National policy on education*. NERDC Press.

Fynn, A. & MashileE.O. (2022). Continuous Online Assessment at a South African Open Distance and e-Learning Institution. Frontiers in Education. 7:791271. https://doi.org/10.3389/feduc.2022.791271

Ghaicha, A. (2016) Theoretical framework for educational assessment: A synoptic review. *Journal of Education and Practice*, 7(24), 212-231.

Guàrdia, L., Crisp, G., & Alsina, I. (2017). "Trends and challenges of e-assessment to enhance student learning in higher education." In innovative practices for higher education assessment and measurement, edited by Elena Cano and Georgeta Ion, 36–56. IGI Global.

Haipinge, E. , Kadhila, N. & Josua, L. (2022) Using digital technology in transforming assessment in higher education institutions beyond COVID-19. *Creative Education*, 13, 2157-2167. https://doi.org/10.4236/ce.2022.137136

Husain, F. N. (2021). Digital assessment literacy: The need of online assessment literacy and online assessment literate educators. *International Education Studies*; 14(10), 65-76. https://doi.org/10.5539/ies.v14n10p65

Nworgu, B. G. (2015). Educational research: Basic issues and methodology (3rd ed.). University Trust Publishers.

Rehhali, M., Mazouak, A., & Belaaouad, S. (2022). The digital assessment of learning: Current situation and perspectives: Case of teachers of life and earth sciences. *Journal of Information Technology Management*, 14(3), 65-78. https://doi.org/10.22059/jitm.2022.87534

Schmidt, L. J., & DeSchryver, M. (2022). The role of gigital application literacy in online assessment. Journal of Educational Technology Systems, 50(3), 356-378. https://doi.org/10.1177/00472395211052644