

LECTURERS' PERCEPTION AND USE OF EMERGING TECHNOLOGIES IN ASSESSING HIGHER INSTITUTIONS STUDENTS' PERFORMANCE IN ANAMBRA STATE

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Abstract

This study aimed at determining how lecturers perceive and use emerging technologies in assessing students' performance in higher institutions. The descriptive survey research design was adopted for the study. The population of the study consisted of all the lecturers in Federal Higher Institutions in Anambra state. The sample comprised 300 lecturers obtained through simple random sampling technique. Three research questions were raised to guide the study. An instrument titled "Lecturers' Perception and Use of Emerging Technologies Questionnaire (LAUETQ)" was used to generate data. The instrument was validated and trial tested to determine the reliability coefficient which was 0.81. The data generated was analyzed using Mean and Standard Deviation. It was revealed among others that lecturers' perception on the use of emerging technologies for assessment is high and that lecturers use emerging technologies for assessment but cannot easily administer online assessment without assistant. It was recommended that workshops should be organized to train and re-train the lecturers on the use of emerging technology for assessment so that standard will be maintained for quality certification.

Key Words: Assessment, Certification, Emerging Technologies, Perception

Introduction

The aim of education is to impart knowledge and develop thinking skills that enable students take full responsibility of their lives after graduation. To this effect, certificate is awarded at the end to confirm the presence of certain characteristics. The certificate issued is a formal recognition that an individual has demonstrated proficiency in the area of study. Certificates themselves are only a piece of paper, but they signal the presence of competencies which employers associate with increased productivity and which further education institutions perceive as evidence for the presence of skills and knowledge required to proceed in education (Martorell & Clark, 2010; Betts & Costrell, 2000). The information contained in the certificate can be used by employers for decisions on recruitment. Certificate could be granted by the universities or professional association and it serves as a communication tool to especially stakeholders in education. In higher educational institutions of learning, this could be done through assessment. In other words, educational certification data is gathered through assessments.

Students are assessed throughout their educational life to measure their competency in relation to certain traits measured. Assessment is used to determine course performance, admission to higher levels of education and also for certification. It is carried out at the formative level to determine students' progress during instruction and at summative level for certification and future studies. Assessments are particularly essential and indispensable element of tertiary education since they are used to guarantee the quality of knowledge and competencies of degrees, diplomas and certificates (Bashitialshaaer, Alhendawi, & Avery, [2021](#)). The teacher ascertains how much the students have learnt through the assessment of the cognitive, affective and psychomotor domain. Hence, it is seen as an integral part of any educational system. Infact, the endpoint of the effort of the teacher in the classroom is seen through the students' learning outcome, which could be seen in form of grades, behaviours or practice and this cannot be rightly seen without assessment.

Assessment has been described by Sanders & Voget (2012), as the process of obtaining information that is used to make educational decisions about students; to give feedback to students about their progress, strengths and weaknesses; to judge instructional effectiveness and curricular adequacy; and to make informed policy. It is a very important component of the instructional process and it provides feedback on the effectiveness of the educational services. The traditional method of paper-pencil assessment is time consuming. Osuji (2015) emphasized that the traditional methods of educational assessment which include pen on paper tests, performance assessments, oral questions, projects and portfolios, have become inadequate. To overcome this, there is a shift from physical (face-to-face) assessment to online with the use of new technologies which produce high quality feedback for the educators. There are advancements in technology which have led to new developments in the field of education, especially in the area of assessment and this makes testing more useful for teachers. This also paves way for the students to adapt to a constantly changing technology-driven environment.

With the use of emerging Technologies, students' learning could be assessed even from distant locations. COVID-19 has made online assessment mandatory for schools especially at the higher institution level. Those technologies are very powerful tools for educational change which includes tools for assessment. Terry (2022) referred to "emerging educational technologies" as including augmented reality, social media, virtual reality, 3D printing, robotics, adaptive learning algorithms, asynchronous learning and micro learning, remote teaching and learning, artificial intelligence and live streaming via Zoom. The emerging technologies in education and assessment are numerous and they include the internet and/or intranet, computers, mobile phones, ipad, tablet, radio, television, digital camera, video and audio conferencing, webcam, ipod, learning management system, white board and different types of social media and networks. Veletsianos (2010) sees emerging technologies as tools, concepts, innovations, and advancements utilised in diverse educational settings to serve various education-related purposes

such as organisational, instructional and social. Emerging technology, such as virtual reality, augmented reality, and artificial intelligence, offers unique opportunities to engage students, enhance learning outcomes and promote critical thinking and problem-solving skills (Hilton, Pon, & Wang, 2022). Online assessment with the use of emerging technologies in education is very important and effective method of assessment. The use of emerging technologies can ensure innovative and efficient ways to assess students. Technology-based assessments can improve engagement, offer personalized learning experiences and make the assessment process more objective and transparent.

Teachers' productivity and efficiency will be increased with the use of emerging technology for assessment and students can acquire the 21st-century technical abilities required for future careers. By analyzing student data and preferences, these technologies can provide tailored learning materials and feedback, catering to individual needs and challenging students at their own pace (Picciano, 2023). If these technologies are used appropriately, it will lead to increase in digital workplace and improvement in the quality of education. Looking at the numerous advantages of emerging technology, there is need to find out how lecturers in higher institutions of learning perceive its usefulness.

Some university lecturers do not recognize the opportunities embedded in the use of digital mobile technologies for improving skills, efficiency and effectiveness of instructional delivery. The benefits of integrating technology for assessment are becoming more widely acknowledged and new era of possibilities and challenges has been ushered in, particularly in the realm of educational assessment. Educational Psychologists and Researchers in the field of Education have defined perception in many ways, such as the totality of our attitudes toward ourselves or things; a set of beliefs that one holds about things, beliefs that are relatively difficult to modify (Ibrahim, 2014). This means that the perception of the use of innovative technologies in higher education institutions affects how lecturers use them during assessment. The process of deciding to implement the emerging technology will lead to its use. Therefore, lecturers must be vast in the use of these emerging technologies for educational assessment.

The use of emerging technologies refers to actively using a technology to perform tasks like teaching, learning and assessment. The effective utilization on the part of lecturers is required for these tools to be functional. Therefore, if the lecturers are well trained, they will easily utilize these emerging technologies for assessment. Lecturers in higher institution of learning should therefore have a specific level of technological literacy for effective utilization of emerging technology during assessment. This implies that the teacher we want for the educational assessment of students learning outcomes must keep abreast of the developments and use of the emerging technologies (Osuji, 2015). For educational assessment to be conducted with the use of emerging technologies, lecturers must be competent enough to direct the students to fit into them. For the lecturers to give direction to the students, it means he is proficient in the use of these technologies. The use of emerging

technologies can make a significant contribution to solving the challenges experienced in our educational assessment.

Lecturers face significant challenges in adapting to online assessment through the use of emerging technologies. According to Johnson, Jacovina, Russell and Soto (2016), there are a number of concerns that affect the adoption of new teaching technologies. First is the access constraint, which is defined as a lack of equipment or connectivity. The adoption of emerging technologies for assessment is not possible if the school lacks sufficient computers and a quick internet connection. During this uncertainty in our economy, e-learning system can develop Higher Education Institutions that are open to learning and can be fully adopted when there is availability of e-learning facilities (Ezinwa, Mbelede & Ezeugo, 2023). Amuche, Igomu and Iyekekpolor, (2014) conducted a study on "ICT Competence among Teachers of Federal Unity Colleges in the North Central Geopolitical Region of Nigeria and established that while most teachers have personal computers or laptops, they are generally not proficient in using ICT. This makes it very difficult for lecturers in higher institutions of learning to effectively use emerging technologies for educational assessment.

Several studies have been carried out on the use of emerging technologies for assessment. In a study by Fedelis and Harwati (2021), it was revealed that teachers perceive on-line assessment as difficult due to slow network transmission, lack of facilities, accessibility to reliable gadgets and time needed by teachers to apply on-line assessment tools. Lee and Choi (2022) found that lecturers demonstrate a high level of proficiency in integrating technologies into their teaching practices; they further hinted that the lecturers often possessed advanced technological skills, engaged in continuous professional development and actively sought for opportunities to enhance their pedagogical practices with emerging technologies. However, Chakraborty, Arora and Gupta (2021) maintained that stable connectivity to the internet and digital skills are a precondition for online learning. Poor connectivity to internet and lack of basic digital skills by the lecturers hinder the use of emerging technologies for assessment. Alruwais, Wills, and Wald (2018) investigated the benefits and drawbacks of using e-assessment in learning for different domains. The authors reported that the challenges faced in e-assessment are poor technical infrastructure and a lack of digital skills.

The Federal Ministry of Education in Nigeria developed a national policy on information and communication technologies in education, that emphasized on the integration of ICT-enhanced learning as a priority, in order to facilitate teaching and learning processes, promote life-long learning and to increase access to education among other things (Federal Ministry of Education, 2019). Despite this policy and the availability of a variety of instructional technologies in educational systems, many developing countries, such as Nigeria, are still not fully utilizing them in their educational practices (Alvarez, 2020). Even though there is a constant advancement of technologies, academic staff in higher institutions seems not to be fully utilizing them especially for assessment. It seems most schools leverage emerging

technologies for e-learning and administrative purposes, but the use of instructional technology for assessment remains a major challenge for universities. However, it is not clear if the lecturers are ready to adopt and use emerging technology for assessment. Could it be that there are some hindrances to the use of these technologies for assessment in federal government owned institutions, even after the juicy policy? It is against this backdrop that the researcher seeks to find out the extent lecturers' perceive and use emerging technologies in assessing higher institution students' performance.

The main purpose of this study is to find out lecturers' perception and use of emerging technology for assessment which will lead to certification at the end of the programme.

The study specifically determines to find out:

1. the extent lecturers perceived the use of emerging technologies for assessment.
2. the extent lecturers have used emerging technologies for assessment.
3. the challenges encountered by the lecturers in the use of emerging technologies for assessment.

The following research questions were raised to guide the study:

1. To what extent have lecturers perceived the use of emerging technologies for assessment?
2. To what extent have lecturers used emerging technologies for assessment?
3. What are the challenges encountered in the use of emerging technologies for assessment?

Methodology

The descriptive survey research design was adopted for the study because no variable used in the study was manipulated. The population of the study consisted of 3,620 lecturers in Federal Higher Institutions in Anambra state, (Federal College of Education Umunze- 420 and Nnamdi Azikiwe University, Awka – 3,200, Source: Secretary to the Dean/Unirank). The sample comprised 300 lecturers obtained through convenience sampling technique. Convenience sampling is a non-random sampling method in which the sample to be selected from the population is determined by the judgment of the researcher. This method was preferred due to the fact that the use of emerging technologies for assessment is open to all the lecturers in federal higher institutions and it was not possible to access the entire lecturers. The researcher selected the participants because they were ready, willing and available to be studied. One hundred and fifty lecturers each, from Nnamdi Azikiwe University, Awka and Federal College of Education, Umunze were used, which gave rise to 300 lecturers. Three research questions were raised to guide the study. The instrument for data collection was a modified Likert type questionnaire titled "Lecturers' Perception and Use of Emerging Technologies Questionnaire (LAUETQ)". The instrument has two sections. Section A sought information on the personal data of the respondents. Section B is divided into three clusters, structured after the research questions. Each cluster has ten (10) items. The first and second cluster have a response mode of "Very High Extent – Very Low Extent while the third cluster has a response mode of "Strongly Agree – Strongly

Disagree. The instrument for data collection was validated by two experts in the Department of Educational Foundations. The reliability of the instrument was determined using Cronbach Alpha technique, which yielded a reliability estimate of 0.81, which was considered high enough to confirm the instrument as reliable. The instrument was administered to the two Federal Higher Education Institutions through online google form and 287 responded to the questionnaire. Arithmetic mean and Standard deviation were used to analyze the data. The mean of 2.50 was used as the cut-off point for decisions because of the four-point scale used in the study. The decision rule therefore was that any weighted mean scores from 2.50 and above were taken as agree/high extent, while weighted mean scores below 2.50 were taken as disagree/low extent.

Results

Research Question One: To what extent has lecturers perceived the use of emerging technologies for assessment?

Table 1: Mean ratings of the extent lecturers perceive the use of emerging technologies for assessment

S/N	Mean	Std. Dev.	Decision
1. I see the use of emerging technologies for assessments very stressful.	2.15	0.95	Low Extent
2. I prefer to avoid using on-line exams and quizzes because of inadequate guidance.	2.12	0.91	Low Extent
3. I prefer online assessment because of its flexibility.	3.30	0.47	High Extent
4. The use of emerging technologies for assessment brings about students' poor performance.	2.23	0.50	Low Extent
5. Emerging technologies are very effective for assessment.	3.53	0.50	High Extent
6. The use of emerging technologies for assessment requires less effort compared to traditional assessment.	3.36	0.69	High Extent
7. The use of emerging technologies gives immediate feedback.	3.46	0.50	High Extent
8. Preparation and uploading of questions for online assessment is not time consuming.	2.67	0.47	High Extent
9. I prefer the use of emerging technology for assessment because of ease of use.	2.56	0.82	High Extent
10. There is transparency in the use of technological tools.	3.18	0.75	High Extent
Grand Mean		3.19	

Table 1 shows that item 3, 5, 6, 7, 8, 9, and 10 have mean scores above the cut-off mean while item 1, 2 and 4 have mean scores below the cut-off. The grand mean of 3.19 indicates high extent to the lecturers' perception of the use of emerging technologies for assessment. The standard deviation scores are moderate which show that the lecturers share a general understanding of the use of emerging technologies.

Research Question Two: To what extent has lecturers used emerging technologies for assessment?

Table 2: Mean ratings of the extent lecturers use emerging technologies for assessment**N: 287**

S/N	Mean	Std. Dev.	Decision
1. I easily administer online assessment without assistant.	2.45	0.85	Low Extent
2. I personally upload my questions on the platform for online assessment.	2.60	0.74	High Extent
3. I do not always use technological tools for online assessment due to unstable internet connection.	2.79	0.78	High Extent
4. I easily navigate online assessment platform.	2.98	0.84	High Extent
5. I combine the use of modern technologies with traditional method of assessment.	3.22	0.80	High Extent
6. I engage students on online teaching but uses traditional method of assessment because of inadequate knowledge of ICT skills.	2.80	0.95	High Extent
7. I always use and also encourage my colleagues to administer assessment with modern technological tools.	2.75	0.94	High Extent
8. I always engage young lecturers to upload and administer online assessment on my behalf while I still use traditional approach.	2.55	1.08	High Extent
9. I collaborate with knowledgeable colleagues when I encounter difficulty in the use of emerging technologies.	3.08	0.43	High Extent
10. I apply the skills acquired during seminars to improve the administration of online assessment	3.08	0.50	High Extent
Grand Mean		2.83	

Table 2 shows that of all the items, 9 items have mean scores above the cut-off mean while item 1 is below the cut-off mean. The grand mean of 2.83 indicates that the extent lecturers use emerging technologies for assessment is high. The standard deviation scores are moderate which show that the lecturers share a general understanding on the extent of use of emerging technologies.

Research Question Three: What are the challenges encountered in the use of emerging technologies for assessment?

Table 3: Mean ratings of the challenges encountered in the use of emerging technologies for assessment

Descriptive Statistics			
N: 287			
S/N	Mean	Std. Dev.	Decision
1. Inadequate knowledge of digital skills is one of the challenges faced in the adoption of e-assessment.	3.37	0.65	Agree
2. I find it difficult to use online assessment for practical works because of the nature of the questions.	2.68	0.70	Agree
3. Sometimes, the process is frustrating due to unavailability of technical experts to assist.	3.16	0.45	Agree
4. Poor internet access is a challenge to the use of emerging technologies for assessment.	3.49	0.50	Agree
5. Emerging technological infrastructures are not adequate.	3.03	1.10	Agree
6. The rate of students' failure is on the increase due to poor knowledge of digital skills.	2.70	0.74	Agree
7. I find it difficult to carry out practical assessment using emerging technology.	2.75	0.798	Agree
9. Institution not ready to adopt the system due to poor education funding by the federal government.	2.99	0.84	Agree
10. There is low and unstable electricity supply.	3.16	0.70	Agree
Grand Mean		3.01	

Table 3 shows that all the items have mean scores above the cut-off mean. This indicates that all the items are challenges encountered in the use of emerging technologies for assessment. The standard deviation scores are moderate which show that the lecturers share a general understanding on the challenges encountered in the use of emerging technologies for assessment

Discussion of Findings

The findings of the study revealed that lecturers' perception on the use of emerging technologies for assessment is high. This is as a result of transparency and ease of use in terms of quick uploading of questions for online assessment. This agrees with Osuji, (2015) who maintained that the teacher we want for the educational assessment of students learning outcomes must keep abreast of the developments and use of the emerging technologies. This finding contradicts with that of Fedelis and Harwati (2021) who found that teachers perceive on-line assessment as difficult due to slow network transmission, lack of facilities, accessibility to reliable gadgets and time needed by teachers to apply on-line assessment tools.

The findings of the study also revealed that lecturers use emerging technologies for assessment. This can be seen from the way they apply the skills acquired during seminars to improve the administration of online assessment. The findings of the study agree with Lee and Choi (2022) who found that lecturers demonstrate a high level of proficiency in integrating technologies into their

teaching practices; they further hinted that the lecturers often possessed advanced technological skills, engaged in continuous professional development and actively sought for opportunities to enhance their pedagogical practices with emerging technologies. However, Alvarez (2020) as against the findings, maintained that despite the policy and the availability of a variety of instructional technologies in educational systems, many developing countries, such as Nigeria, are still not fully utilizing them in their educational practices. This is indicated from the rate at which lecturers easily administer online assessment without assistant, which is low.

The study revealed that several factors such as inadequate knowledge of digital skills, poor internet access, poor education funding by the federal government, among others are the challenges encountered by the lecturers in the use of emerging technologies for assessment. This is supported by Alruwais, Wills, and Wald (2018), who investigated the benefits and drawbacks of using e-assessment in learning for different domains. The authors reported that the challenges faced in e-assessment are poor technical infrastructure and a lack of digital skills. This was supported by Chakraborty, Arora and Gupta (2021), who maintained that poor connectivity to internet and lack of basic digital skills by the lecturers hinder the use of emerging technologies for assessment.

Conclusion

Based on the findings, it was concluded that majority of the lecturers have right perception and are making use of emerging technologies for assessment. However, lecturers face some challenges like poor internet access, inadequate knowledge of digital skills, among others which hinder the use of these technologies. The perception and use of online assessment for certification depend on technological and individual factors because the aim cannot be achieved if the lecturers do not have internet access, computing devices and the digital skills to access and navigate online assessment platforms.

Recommendations

Based on the findings and conclusion of the study, the following recommendations were made:.

1. Lecturers should continue to explore the field of emerging technologies which encourages positive perceptions on the adoption and usage of an online assessment.
2. There is need for lecturers in the universities to receive adequate training on the use of emerging technologies for assessment. This will help to overcome skills gaps and lead to effective use of these technologies.
3. Since the assessment is for certification, there is need to address the challenges faced by lecturers on the use of emerging technologies. To achieve this, the school management through the government should provide necessary technological tools and also motivate the lecturers by organizing seminars and conferences for them to be able to adopt the tools appropriately and award quality certificate.

References

- Alruwais, N., Wills, G., & Wald, M. (2018). Advantages and challenges of using e-assessment. *International Journal of Information and Education Technology*. 8(1), 34– 37. <https://doi.org/10.18178/ijiet.2018.8.1.1008>
- Alvarez, A. V. (2020). The phenomenon of learning at a distance through emergency remote teaching amidst the pandemic crisis. *15*(1), 10. <https://doi.org/10.5281/zenodo.3881529>
- Amuche, Igomu, C., & Iyemekpolor, (2014). An assessment of ICT competence among teachers of federal unity colleges in North Central 107 *East African Journal of Education and Social Sciences (EAJESS)* 4(5)101-108. Geopolitical of Nigeria. *American International Journal of Research in Humanities, Arts and Social Sciences (AIJRHASS)*, 2 (5)
- Bashitialshaaer, R., Alhendawi, M., & Avery, H. (2021). Obstacles to applying electronic exams amidst the COVID-19 pandemic: An Exploratory Study in the Palestinian Universities in Gaza. *Information*. 12(6):256. <https://doi.org/10.3390/info12060256>
- Betts, J.R. & R.M. Costrell (2000), “Incentives and equity under standards-based Reform”, *Economics Department Working Paper Series*, Paper 88, University of Massachusetts Amherst.
- Chakraborty, P., Arora, A., & Gupta, M. S. (2021). Opinion of students on online education during the COVID-19 pandemic. *Human Behavior and Emerging Technologies*, 2020, 357–365. <https://doi.org/10.1002/hbe2.240>
- Ezinwa, A.U., Ezeugo, N.C. & Mbelede, N.G. (2023). Evaluation of Lecturers' level of acceptance and use of e-learning in higher institution in a period of economic uncertainty. *Unizik Orient Journal of Education*. Vol.10 No.1. ISSN: 0794– 9525.
- Fedelis, R. & Harwati, H. (2021). Primary school teachers' usage and perception of on-line formative assessment tools in language assessment. *International Journal of Academic Research in Progressive Education & Development*, 10(1), 291-303. DOI:10.6007/IJARPED/v10-i1/8846.
- Federal Ministry of Education. (2019). National policy on information communication technology in education. Federal Ministry of Education Publications. <https://education.gov.ng/wpcontent/>
- Hilton, J. M., Pon, K. B., & Wang, Y. (2022). Digital learning: the impact of emerging technologies on education. *Journal of Educational Technology Systems*, 51(2), 241-264.
- Ibrahim, A. (2014). The students' perception of teachers' classroom effectiveness on their self-

- concepts in Lagos metropolis. *Journal of Teaching and Teacher Education*, 2(1), 133-141. <http://journals.uob.edu.bh>. DOI: <http://dx.doi.org/10.12785/jtte/020209>
- Johnson, A. M., Jacovina, M. E., Russell, D. E., & Soto, C. M. (2016). Challenges and solutions when using technologies in the classroom. In S. A. Crossley and D. S. McNamara (Eds.) *Adaptive educational technologies for literacy instruction* (pp. 13-29).
- Kim, Y., & Han, S. (2022). Strategies for enhancing the proficiency of university lecturers in the adoption of emerging instructional technologies: A qualitative study. *Journal of Educational Technology and Society*, 25(1), 25-37.
- Lee, H., & Choi, E. (2022). *International Journal of Educational Technology in Higher Education*, 19(7), 1-19.
- Martorell, F. & D. Clark (2010), "The signaling value of a high school diploma" *Rand Education Working Paper Series*, 780.
- Osuji, U. S. A. (2015). Emerging technologies in educational assessment: The need for teachers' competence. *African Educational Research Journal*, 3(1): 18-24.
- Picciano, A. G. (2023). Emerging technologies in education: A Historical Review and Future Directions *Journal of Research on Technology in Education*, 55(1), 1-16.
- Sanders, J. R., & Vogel, S. R. (2012). The development of standards for teachers' competence in educational assessment of students. Lincoln: Digital Commons.
- Terry, H. (2022). What are the best examples of emerging education technology?. Retrieved from: <https://www.teachthought.com/the-future-of-learning/emerging-education-technology/>