

## **PERCEPTION OF TEACHERS ON THE CHALLENGES OF TECHNOLOGY ENHANCED ASSESSMENT IN SECONDARY SCHOOLS IN THE FEDERAL CAPITAL TERRITORY (FCT)**

**Kanu Judith & Otemuyiwa Bridget Idowu**

N. E.R.D.C. Lokoja-Kaduna Road, Sheda, P. M. B. 91, Abuja

### **Abstract**

*Technology Enhanced Assessment (TEA) is an automated evaluation technique conducted electronically. It is also known as E-Assessment. In TEA, the test design, execution, scoring and feedback are performed with the use of computer. TEA enhances the ability of the teacher to provide quality feedback for students. Although the benefits of TEA are laudable, however, it is fraught with numerous challenges. This study was designed to determine teachers' opinions towards the potentials and challenges of TEA in secondary schools in the Federal Capital Territory (FCT). A survey design was adopted for the study. A sample of 60 teachers were randomly selected from six secondary schools in the Abuja Municipal Area Council of FCT. Two research questions were addressed in the study. The instrument for data collection for the study was a structured questionnaire of 28 items developed by the authors and titled Technology Enhanced Assessment Questionnaire (TEAQ). The instrument was designed using a four-point modified Likert scale. The instrument was validated by two experts of measurement and evaluation in the Education Research Centre of NERDC and a reliability coefficient of  $r=0.79$  was obtained using Chronbach Alpha formula. Frequency counts and percentages computation were used to analyse the data collected for the study. The results of the study revealed that there were positive perception of Technology Enhanced Assessment (TEA) by teachers, acute shortage of funds, inadequate exposure of teachers to computer and on-line assessment process, insufficient access to computer and internet, poor technological infrastructure development, difficulty in scoring essay-type and open response questions, difficulty in assessing group project among others as the challenges militating against TEA. Recommendations for improving TEA were also made in this study which include: the use of Digital Technology (DT) tools to shuffle questions in examinations and training of teachers on the use of digital technology among others.*

**Keywords:** Perception, Technology, Assessment, Potential, Challenges.

### **Introduction**

Educational institutions are established with the specific mandate to perform a number of functions. One of such major function is the certification of individual learners under their auspices through assessment. Students' assessment is a critical aspect of teaching and learning process. It enables teachers to measure the effectiveness of teaching with students' performance to specific learning objectives. It is important to assess this performance because it provides feedback which reflects the extent at which

students are successfully meeting the course objectives. Assessment is usually directed towards qualifications and the reporting of achievements. Assessment refers to the procedure teachers' use to grade students' assignments (Harlen, 2007). Stiggins and Chappius (2005) viewed assessment as a standardized testing imposed in schools; as any activity designed to collect information to be used as feedback, to alter teaching and learning activities or to improve instruction and learners' performance (Sparks, 2005). Similarly, Jabbarifar (2009) described assessment as the level of learners' understanding, inspiration, and attainment in the learning process.

Assessment can be either summative or formative. Formative assessment is providing continuous feedback on students' performance whereas summative assessment is to assess students' performance at the end. Whether summative or formative, the aim of assessment is to provide feedback to both teachers and learners for task improvement. Thus, it is an integral part of teaching and learning process. Teachers select assessment methods, tools and techniques based on the curriculum content to be delivered. Assessment is considered to be of good quality when it influences students' motivation, valid, reliable, fair, ethical, uses multiple methods, incorporates technology as well as when it is visible and efficient (Amesi, 2016).

It is worthy of note that the world has gone digital and one of the innovations in the practice of education is the emergence of technology enhanced assessment known as E-assessment. Since e-learning has been embraced, it becomes imperative that technology enhanced assessment should be introduced in educational institutions. Technology enhanced assessment is the electronic delivery of tests or exams. Any technological device that produces, conveys, stores and reports students' assessment marks and give feedback is referred to as TEA (Crisp, 2011; Howarth, 2015; & Winkley, 2010). Technology enhanced assessment (e-assessment) as defined by the Joint Information System Committee (JISC, 2007) is an end-to-end automated testing procedure where information and communications technologies (ICT) are used to perform testing activity and the outcomes are documented. As a component of e-learning, Technology Enhanced Assessment has the prospect of being a better method of assessing learners, as opposed to the traditional assessment (JISC, 2006). When technology is effectively utilised in assessment, learning is improved. Sitthisak et al. (2008) indicates that, Technology Enhanced Assessment includes supporting the assessment by using a computer, for example the web-based assessment tools. Supporting this view, Reju and Adesina (2009) opined that the design of the system includes a comprehensive examination procedure encompassing the proposition, composing papers, signing up, examining, batching, statistics and analysis.

Howarth (2015) noted that a TEA system is made up of hardware and software necessary for designing and carrying out the assessment task (AT) or test; and an item bank, for questions and instructions. Technology Enhanced Assessment takes place in different ways which includes: automatic administrative procedure, digitalizing paper-based system and on-line testing such as multiple-choice testing and assessment of problem-solving skills (Ridgway et al 2004 cited in Alruwais et al (2018). Algahtani

(2011) posited that there are two ways of carrying out TEA: (1) web-based delivery-use of internet to access the assessment tasks by students. (2) download delivery-use of computers to download assessment tasks/tests in the assessment centres at exact dates and time when the student sits for the assessment. This approach is mainly used for high-stakes assessments. Unwanted exposure of the assessments can be avoided using this approach. The major difference between the two approaches is that while the web-based assessment requires internet connection for learning activities to be done anywhere at any time, the downloaded assessment requires the availability of a computer for learning to take place anywhere and at any time. Corroborating this distinction, Crisp (2011) stated that provided there is access to a server, institutions can place their assessments on their servers for access by student at any time and from anywhere.

Benefits of Technology Enhanced Assessment include: assessing a large number of students within an allotted timeframe, immediate feedback by teachers and learners, assessment tasks/tests can be repeated and randomized, uniformity and fairness in marking and scoring test, saves time; and gives learners opportunity to take responsibility for their own learning (Howarth, 2015). Furthermore, technology enhanced assessment assists students to identify and reflects on what they have been taught and learned, thereby improving the quality of their learning experience (Dermo, 2009). In an ideal world, a well implemented assessment is expected to assist in improving teaching and learning outcome (Bennett, 2011; Clements & Cord, 2013).

Different researches have shown that the value of Technology Enhanced Assessment lies primarily on computerized marking and how easy it makes the teachers' job (Noorbehbahani & Kardan, 2011; Stödborg, 2012). Howarth (2015) observed other benefits of TEA to include: developing Technology Enhanced Assessment tasks costs less; it is easy to execute, does not involve the use of paper/pencil and marking afterwards; accommodates learners with special needs; assessment tasks are carried out steadily, and marking done dependably.

The pandemic era resulted in vital changes in educational policy across the world (Strunc, 2020). Almost all the nations of the world including Nigeria made efforts to ensure a smooth paradigm shift from the traditional face to face learning to more on-line learning. This shift equally accommodates the on-line assessment in the learning process to meet the needs of the different categories of students and to deal with problems of large classes. This is evident as most states of the Federation adopted learning instructions via on-line Zoom and Skype social application software (World Bank, 2020). Media stations were positioned to handle instructions for examination classes at specific times nation-wide and state-wide. However, some schools did not adopt the on-line assessment but rather stayed glued to the traditional paper pencil assessment technique despite the danger of the pandemic.

The need to conduct assessment during pandemic was a daunting task for almost all educational agencies and stakeholders. Although, the benefits of on-line assessment were clear at such a time, educational stakeholders and teachers never gave on-line

assessment a serious thought especially at the secondary school level of education. Stakeholders and educational agencies instead mapped out Covid-19 guidelines for schools to strictly adhere to in the conduct of termly assessments. The indecision to seriously adopt on-line assessment at the secondary school level, even during the lockdown is an indication that educational stakeholders and secondary school teachers at large may have varied perceptions about on-line assessment especially as it relates to the challenges of its adoption.

It is to be expected that the change process is not easily manageable or predictable, given the complex teaching context and multiple dimensions of teacher factors. Implementation of E-assessment faced some challenges. Different studies have investigated these challenges. Studies by Ramazan (2017) showed that one of the most frequently perceived problems the lecturers encountered in implementing on-line assessment include, not being able to prevent cheating during the exams. In carrying out assignments and projects, students often used the same assignments by copying from each other and/or they copy/paste things they found on internet. Moreover, the process of preparing and evaluating on-line exams and assignments require a lot of time and effort. In a study by Mirza (2021) on university teachers' perception of on-line assessment during Covid-19 in Lebanon, it was observed that "all participants agreed that the university's web-based system was not well developed to handle the tests of a large number of students, monitor test-taking and prevent cheating. They were equally of the opinion that adequate guidance was not provided, therefore, they preferred to avoid using on-line exams and quizzes. The findings of Mariam (2021) revealed that the teachers' perception of on-line assessment includes but are not limited to: lack of physical interaction, poor assessment of speaking and translation courses, high risk of cheating and plagiarism, technical difficulties, and problem of guarantying the integrity of on-line assessment. The findings of Fedelis and Harwati (2021) equally 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. The challenge of network is further collaborated by Emmanuel (2020), who stated that teachers found it difficult to upload large notes. Oyediji (2016) and Ezeugo (2021) noted that some of the challenges of e-assessment include: funding, dearth of infrastructure required for its successful uptake, absence of internet facilities in rural areas, erratic power supply, resistance to change by stakeholders (fear of losing their status) and low level of computer literacy among the secondary school teachers.

on-line assessment of learning affords both the teachers and students a lot of benefits but presents many challenges especially for developing countries like Nigeria. In the first instance, most public secondary schools do not have the requisite infrastructure to conduct on-line assessment. The cost of installation of the needed on-line assessment technology is high and cannot be afforded in least possible time. Also, with the epileptic power supply in the country, the possibility of conducting on-line assessment effectively is obviously slim. There is also the problem of poor technological skills among secondary school students who may not be ready for an on-line assessment of

learning programmes. Kearns (2012) outlined four basic challenges of on-line assessment. They include: challenges as a result of the impact of physical distance between the instructor and the students, difficulties in applying technological tools in communicating with the students, teachers work load and time constraints, demands of varied assessment data and feedback needs although, these are general views to the possible challenges of on-line assessment of learning, secondary school teachers may have some peculiar views as the true curriculum implementers. It became pertinent therefore, that a study should be conducted to empirically establish the perception of secondary school teachers on the challenges of technology enhanced assessment in FCT.

Hence, the need to investigate the perception of teachers on the potentials and challenges associated with technology enhanced assessment. To facilitate this investigation, the following research questions were postulated:

1. What are the perceptions of teachers on the potentials of technology enhanced assessment?
2. What are the perceived challenges of technology enhanced assessment?

### **Methodology**

A survey design was adopted for the study. A sample of 60 teachers was randomly selected from six secondary schools in Abuja Municipal Area Council of FCT. Two research questions were addressed in the study. The instrument for data collection for the study was a structured questionnaire of 28 items developed by the authors and titled Technology Enhanced Assessment Questionnaire (TEAQ). The instrument was adapted from Yoestara et al (2020). The instrument was designed using a four- point modified Likert scale. The instrument was validated by two experts of measurement and evaluation in the Education Research Centre of NERDC. Cronbach Alpha formula was used to obtain a reliability coefficient of  $r=0.79$ . Frequency counts and percentages computation were used to analyse the data collected for the study

### **Results**

**Research Question 1:** What are the perceptions of teachers on the potentials of technology enhanced assessment?

**Table 1 Frequency count and percentage of responses on teachers' perceived potentials of Technology Enhanced Assessment**

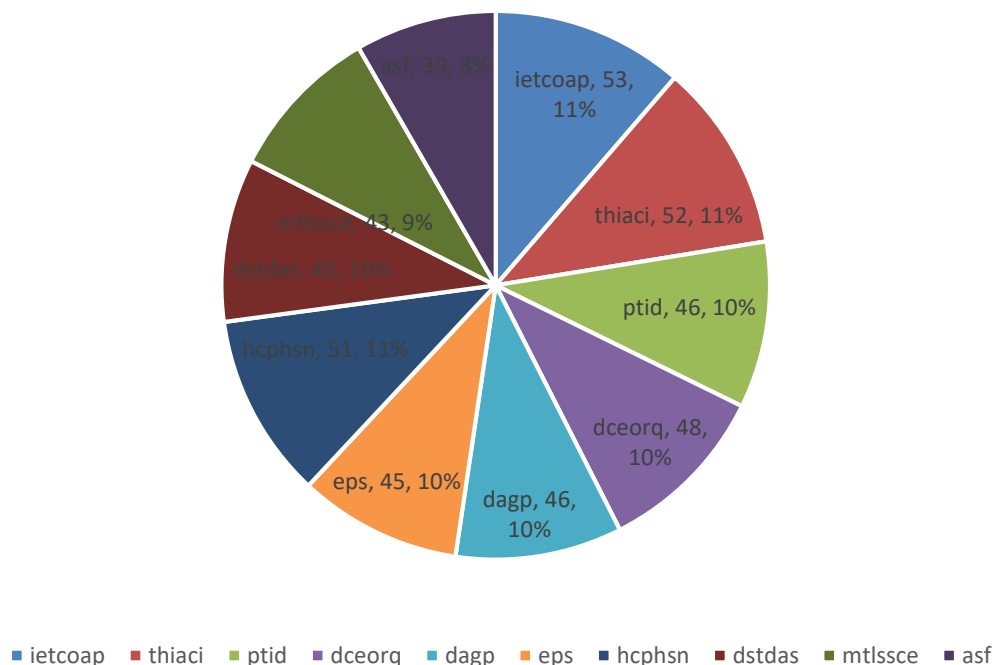
S/N	Item statement	YES		NO		TOTAL	
		Freq	%	Freq	%	Freq	%
	Technology Enhanced Assessment (TEA):						
1	Provides immediate feedback	48	80	12	20	60	100
2	It is fast	53	88.3	7	11.7	60	100
3	It is easy to conduct	48	80	12	20	60	100
4	It can take place anytime	53	88.3	7	11.7	60	100

5	It is very flexible	53	88.3	7	11.7	60	100
6	It removes the burden of marking from the teacher	48	80	12	20	60	100
7	It promotes high order thinking in students	41	68.3	19	31.7	60	100
8	It is very suitable for a large population of students	53	88.3	7	31.7	60	100
9	It has the ability to reduce cheating among students	46	76.7	14	23.3	60	100
10	It is more interesting than traditional test	40	66.7	20	33.3	60	100
11	It could ease the assessment process	44	73.3	16	26.7	60	100
12	It is a good tool to evaluate students	46	76.7	14	33.3	60	100
13	It is easy to design	40	66.7	20	33.3	60	100
14	It could save money	37	61.7	23	38.3	60	100
15	It is easy to implement	46	76.7	14	33.3	60	100
16	It could save time	56	93.3	4	6.7	60	100
17	It saves paper	57	95	3	5	60	100
18	It is appropriate for all skills	40	66.7	20	33.3	60	100
19	It is easy to mark.	49	81.7	11	18.3	60	100
20	It is appropriate for all students.	35	58.3	25	41.7	60	100
21	It reduces exam stress	46	76.7	14	23.3	60	100
22	It is very cumbersome	33	55	27	45	60	

Table 1 presents the results of the perception of teachers towards the potentials of Technology Enhanced Assessment. The result showed that most of the participants agreed to all the items. The item with the highest frequency and percentage is item 17 where 95% of the respondents agreed that Technology Enhanced Assessment has the potential to save paper. This was followed by items 16 (93.3%), items 2, 4, 5, and 8 with 88.3% each. These indicate that the respondents perceived TEA is fast, that it can take place at any time, it is flexible and suitable for a large population of students. The teachers also perceived that TEA has the ability to reduce cheating among students, it is a good tool to evaluate students, easy to implement and reduces exam stress (items 9, 12, 15 and 21 with 76.7% each). This result implies that teachers have positive perception towards the potentials of TEA.

**Research Question 2:** What are the perceived challenges of Technology Enhanced Assessment?

**Figure 1: Frequency count and percentage of Responses on Perceived Challenges of Technology Enhanced Assessment**



**Key:**

Ietcoap: Inadequate exposure of teachers to computer and on-line assessment process

Thiaci: Teachers have insufficient access to computer and internet

Ptid: Poor technical infrastructure development

Dceorq: Difficulty in scoring essay-type and open response questions

Dagp: Difficulty in assessing group projects

Eps: Erratic power supply

Hcphsn: High cost of purchasing hardware, software and network

Dstdas: Dearth of skilled technicians to develop appropriate software

Mtlssce: Many teachers lack sufficient skills to conduct e-assessment

Asf: Acute shortage of funds

Teachers perceived challenges of TEA are shown in a pie chart in figure 1. The respondents agreed to all the items as possible challenges to TEA. These challenges include: inadequate exposure of teachers to computer and on-line assessment. teacher's insufficient access to computer and internet, poor technical infrastructure development; difficulty in scoring essay-type and open response questions, difficulty in assessing group project, erratic power supply, high cost of purchasing hardware, software and

network, dearth of skilled technicians to develop appropriate software lack of sufficient skills to conduct e-assessment by many teachers and acute shortage of funds.

### **Discussion of Findings**

This study investigated the perception of teachers on the challenges of TEA. The findings revealed that the respondents had positive perception about technology enhanced assessment (E-assessment). The respondents agreed that e-assessment provides immediate feedback, it is fast, easy to conduct, can take place at anytime and anywhere. Also, it is flexible, eases off the burden of marking more interesting than the traditional test, eases the assessment process, a good tool to evaluate students, easy to design, could save money, easy to implement, could save time, suitable for a large population of students, has the ability to reduce cheating among students and promotes critical thinking among others. These findings align with the report by Cirit (2015) on assessing the perception of English Language Pre-service Teachers (ELT) towards traditional, on-line and alternative assessment which showed that the respondents were optimistic towards on-line assessment. Findings by Khan and Khan (2019), Alruwais (2018); Alsadoon (2017) parallel the finding from this study. In the same vein, Amalia (2018) conducted a research to determine how students' perceived the use of Schoology in the assessment of English as a Foreign Language (EFL). The results revealed that the students maintained a positive view towards the use of on-line assessment. The findings of this study were also corroborated by Yoestara et al (2020) who carried out a study on the perception of Pre-service English teachers towards an on-line assessment method and found that the respondents have positive perception towards it. The findings from this study equally corroborate the earlier report by Crew and Curtis (2010) and Way (2012) who identified inexperienced teachers with computer and on-line assessment and poor technical infrastructural development as challenges associated with e-assessment. Ridway et al (2004) was in support of this finding when he identified difficulty in scoring essay-type and open response questions, difficulty in assessing group project as challenges in using TEA. The challenge of erratic power supply was supported by Deebom and Zite (2016) who stressed that challenges to effective utilization of ICT resources in teaching, learning and assessment are incessant power supply, high cost of acquisition of ICT resources among others.

These findings were corroborated by the findings of Fedelis and Harwati (2021) who revealed that teachers perceive on-line assessment as difficult due to slow network transmission, lack of facilities, inaccessibility to reliable gadgets and time needed by teachers to apply for on-line assessment tools. This finding is thus in line with the findings of Emmanuel (2020) who reported that teachers have challenges when



uploading large number of notes at the same time during on-line teaching due to poor network. Such poor networks could result into loss of internet service and connectivity. Other challenges identified by the study include: lack of skilled technician to prepare appropriate software, lack of sufficient skills to conduct e-assessment by teachers, acute shortage of funds among others. Oyedeki (2016) validated these findings when he posited that e-assessment has been impeded by multiple challenges which include: funding, dearth of infrastructure required for its successful uptake, absence of internet facilities in rural areas, erratic power supply, resistance to change by stakeholders (fear of losing their status) and low level of computer literacy among the secondary school teachers.

Again, lack of technological skills is a problem for the teachers who perceive scoring of on-line assessment and its evaluation to be difficult. This is in line with the findings of Eyiuche and Adebawale (2020) that there was a low extent of digital disparity in ICT knowledge of secondary school teachers in Anambra state. Questions that require open-ended answers may require serious technical and computer efforts to be able to evaluate them. This is in line with the findings of Ramazan (2017) that the process of preparing and evaluating on-line exams and assignments requires a lot of time and effort. To do so, secondary schools must have a good infrastructure that can facilitate the use of on-line assessment, but this is lacking in most secondary schools. Where it is available however, teachers may need to spend a lot of time preparing on-line assessment with its high cost implication. This is because, data bundles must be subscribed to where government does not provide data services. There is, also, the cost of maintenance and all of these require a lot of time as perceived by secondary school teachers. Another challenge perceived by secondary school teachers is the need for orientation and training of students for on-line assessment. Students have to be given login identity time and shown how to submit paper, return to answered questions and how to check their internet connection.

### **Conclusion and Recommendations**

Based on the data analysis and the findings, it is concluded that secondary school teachers in the Federal Capital Territory (FCT) have positive perception towards the potentials of technology enhanced assessment. The respondents agreed that TEA could provide immediate feed-back, it is fast, easy to conduct, takes place at anytime and anywhere, it is flexible and removes the burden of marking among others. However, they perceive that in spite of these potentials, there are multiple challenges associated with e-assessment which include: inadequate exposure of teachers to computer and on-line assessment process and poor technical infrastructure development. Based on these, the following were recommended:

- The use of Digital Technology (DT) tools to shuffle questions in examinations by teachers.
- Training of teachers on the use of digital technology by government.
- Provision of digital infrastructure for secondary schools by government.

## References

- Algahtani, A.F. (2011). Evaluating the effectiveness of the e-learning experience in some universities in Saudi Arabia from male students' perceptions. Durham theses, Durham University.  
<http://etheses.dur.ac.uk/3215/1/Abdullah'sThesis.pdf?DDD29+>
- 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.
- Alsadoon, H. (2017). Students' perceptions of E-assessment at Saudi Electronic University. *TOJET: The Turkish on-line Journal of Educational Technology*, 16(1), 147-153
- Amalia, R. (2018). Students' perception of on-line Assessment use in Schoology in EFL Classrooms (Doctoral dissertation, UIN Sunan Ampel Surabaya).
- Amesi, J. (2016). "Issues in evaluation and assessment: implication for effective teaching and learning in Business Education in the Niger Delta". *Nigerian Journal of Business Education*, 3(2), 242-252.
- Hton, H. S., Beevers, C. E., Korabinski, A. A. & Youngson, M. A., (2006). Incorporating partial credit in computer-aided assessment of Mathematics in secondary education. *British Journal of Educational Technology*, 37(1), 93-119
- Bennett, R.E. (2011). Formative Assessment: A Critical Review. *Assessment in Education: Principles, Policy & Practice*, 18(1):5-25.
- Clements, M.D. & Cord, B.A. (2013). Assessment Guiding Learning: Developing Graduate Qualities in an Experiential Learning Programme. *Assessment & Evaluation in Higher Education*, 38(1):114-124.
- Crisp, G. (2011). Teacher's handbook on e-Assessment: A handbook to support teachers in using e-assessment to improve and evidence student learning and outcomes. San Francisco, California: Creative Commons.
- Cirit, N. C. (2015). Assessing ELT Pre-Service Teachers via Web 2.0 Tools: Perceptions toward Traditional, on-line and Alternative Assessment. *Turkish on-line Journal of Educational Technology-TOJET*, 14(3), 9-19.
- Crews T. B. and Curtis, D. F. (2010). "on-line course evaluations: Faculty perspective and strategies for improved response rates." *Assessment & Evaluation in Higher Education*, 36, (7). Routledge, pp. 965-878.
- Deebom, M. T. & Zite, B. N. (2016). Effectiveness of information and communication technology (ICT) in teaching and learning in public senior secondary schools in the Ogoni area, Rivers State. *International Journal of Education and Evaluation* 2(4), 18-26
- Dermo, J. (2009). E-assessment and the student learning experience: a survey of student perceptions of e-assessment. *British Journal of Educational Technology*, 40(2):203-214.
- Emmanuel, L.H. (2020). Perceptions of e-assessment by students and lecturers.

- International *Journal of Education and Research*, 8(4), 143-152
- Eyiuche, R. & Adebowale, O.A. (2020). Appraising the extent of digital divide between music teachers and students in anambra state secondary schools, Nigeria. *International Journal of Music Studies*, 2(1), 26-43
- Ezeugo Nneka Chinyere (2021). Secondary school teachers' perceptions of the challenges and solutions to on-line assessment of learning. *European Journal of Education Studies*, 8(9)
- 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.
- Harlen, W. (2007). *Assessment of learning*. London: Sage Publications
- Howarth P. (2015). The opportunities and challenges faced in utilizing e-Based assessment. <http://www.educationalrc.org/oldconf/old/pdf/Paul%20Howarth%20-%20Beirut%20Presentation.pdf> (Accessed 6 July 2015)
- Jabbarifar, T. (2009). The importance of classroom assessment and evaluation in educational system. In *Proceedings of the 2nd International Conference of Teaching and Learning* (pp. 1-9).
- JISC (Joint Information Systems Committee). (2006). Effective use of VLEs: e-assessment. [www.jiscinfonet.ac.uk](http://www.jiscinfonet.ac.uk) (Accessed 10 June 2015).
- JISC (Joint Information Systems Committee). (2007). Effective practice with e-assessment: An overview of technologies, policies and practice in further and higher education. <http://www.jisc.ac.uk/media/documents/themes/elearning/effpraceassess.pdf> (Accessed 27 June 2015).
- Kearns, L.R. (2012). Student assessment in on-line learning: Challenges and effective practices. *Merlot Journal of on-line Learning and Teaching* 8 (3). [https://jolt.merlot.org/vol8no3/kearns\\_0912.pdf](https://jolt.merlot.org/vol8no3/kearns_0912.pdf)
- Khan, S., & Khan, R. A. (2019). on-line assessments: Exploring perspectives of university students. *Education and Information Technologies*, 24(1), 661-677.
- Mariam, Y.M.A. (2021). Full-time on-line assessment during covid-19 lockdown: EFL teachers' perceptions. *Asian EFL Journal Research Articles*, 28(1), 1-22.
- Mayotte, S. (2012). on-line assessment. <https://www.igi-global.com/chapter/online-assessment/64775>
- Mirza, H.S. (2021). University teachers' perception of on-line assessment during the Covid-19 pandemic in Lebanon. *American Academic & Scholarly Research Journal* 13(1)
- Mitchell T., Aldridge N., Williamson W., & Broomhead P., (2003) "Computer based testing of medical knowledge," presented at the 7th Computer Assisted Assessment Conference.

- Noorbehhahani, F. & Kardan, A.A. (2011). The Automatic Assessment of Free Text Answers using a Modified BLEU Algorithm. *Computers & Education*, 56 (1):337-345
- Oyededeji, S. O. (2016). Educational Assessment in Nigerian Secondary Schools: Historical analysis, challenges and prospects. *International Advanced Journal of Teaching and Learning*, 2 (4), Pp 43-54 ISSN: 2488-9059; ISSN:2505-029X
- Ramazan, Y. (2017). Problems experienced in evaluation success and performance in distance education: A case study. *Turkish on-line Journal of Distance Education TOJDE*, 18(1), 39-51.
- Reju S. A. and Adesina A., (2009) "Fundamentals of on-line examinations," presented at a Training Workshop for Academic Staff on On-line Examination System in National Open University of Nigeria, at the Model Study Centre Computer Laboratory.
- Ridgway J., McCusker S., and Pead D., (2004) "Literature review of technology enhanced assessment," Bristol.
- Sparks, D. (2005). *Learning for results*. Thousand oaks, ca: Corwin Press.
- Sitthisak O., Gilbert L., and Davis H. C., (2008) "An evaluation of pedagogically informed parameterised questions for self-assessment," *Learn. Media Technol.*, vol. 33, no. 3, pp. 235–248.
- Stiggins, R.J., & Chappius, J. (2005). Using student-involved classroom to close achievement gaps. *Theory into Practice*, 44 (91), 11-18.
- Stödsberg, U. (2012). A Research Review of E-Assessment. *Assessment & Evaluation in Higher Education*, 37(5):591-604.
- Strunc, A. (2020). Editorial: Are They Listening? Policymakers and Their Role in Public Education. *Research in Educational Policy and Management*, 2(1), i-iii. <https://doi.org/10.46303/repam.02.01.ed>
- Thomson, G. S. & Schleicher, A. (2017). Assessment online: informing teaching and learning. [https://www.teachermagazine.com/au\\_en/](https://www.teachermagazine.com/au_en/)
- Way A. (2012), "The use of technology enhanced assessments in the Nigerian higher education system," *Turkish on-line J. Distance Educ.*, vol. 13, no. 1, pp. 140–152, 2012
- Whitelock, D. (2010). Activating Assessment for Learning: are we on the way with Web 2.0? In M.J.W. Lee & C. McLoughlin (Eds.) *Web 2.0-Based-E-Learning: Applying Social Informatics for Tertiary Teaching*. IGI Global.
- Winkley, J. (2010). E-assessment and innovation. A Becta report. <http://www.becta.org.uk/> (Accessed on 5 July 2015).
- World Bank (2020). How countries are using EdTech (including on-line learning, radio, television, texting) to support access to remote learning during the COVID-19

pandemic. Retrieved from <https://www.worldbank.org/en/topic/edutech/brief/how-countries-are-using-edtech-to-support-remote-learning-during-the-covid-19-pandemic>

Yoestara, M., Putri, Z., Keumala, M., & Idami, Z. (2020). Pre-service English teacher's perception towards on-line assessment method. IJELR: International Journal of Education, Language, and Religion, 2(1), 1-10.