

## **Perception of Students and Teachers of Vocational Agricultural Education on e-Assessment**

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### **Abstract**

*Assessment has been a paramount aspect of learning, and getting it right has often been a worry for instructors especially in vocational education that is skill and technically based, in addition to the occasion of the novel coronavirus that has made physical gathering a problem. The global changes brought about by the coronavirus has meant changes also in the way things are done including teaching, learning and evaluation processes. The study examines how students and lecturers alike, view the integration of electronic (e) based assessment in vocational agriculture. The descriptive survey study had with a population of 459 and a sample of 251 respondents. A validated questionnaire was used for data collection after conducting Cronbach alpha reliability test. Data were analyzed using frequency, simple percentage, standard deviation and mean. Findings of the study revealed that the students see e-assessment to be more objective, awarding exalt marks as stipulated without been biased than paper and pen that is marked by teachers. The teachers believe that e-assessment might not adequately in appraise performance of a student of vocational agriculture since it can mainly assess the “hows” and not the actual doings (practical). Against the believe of the teachers, the authors argued that e-assessment can assess process and products when properly planned and integrated.*

**Keywords:** *online; electronic; assessment; exams; students; University*

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### **I. Introduction**

In teaching and learning, the broad objective has always been to impart meaningful skills and knowledge on learners. The knowledge and skills are to make the learner competent and well-informed in the content delivered leading to reformation. To evaluate competency, the learners are assessed to determine the level they have achieved the learning objectives. Assessment is the systematic process of judging performance, documenting and using empirical data on the knowledge, skill, attitudes and beliefs of students for decision making (Allen, 2004). Assessment is a process by which information is obtained relative to set objective or goal (Gordon, Rice & Heincke, 2011). The use of assessment in education is imbedded in the need to know the progress of the learners in accomplishing the task of performing certain skills, acquiring certain knowledge and attitudes as taught in the school system at every important stage of learning within the period of study. Similarly, assessment as well as evaluation uses methods and measures to judge student's learning and understanding of contents delivered for the purposes of grading and reporting (Rotenberg, 2005). Evaluation is summative results for the purpose of grading, appraising, judging, etc, which provides feedback from the instructor to the student about the student's learning. Whether the check for competency and or possessiveness of knowledge is continuous as formative assessment or one-time and terminal as summative assessment or evaluation, the core aim is to understand how well learners have advanced in the instruction delivered and to make decisions.

The adoption of computer mediated learning in pedagogy has necessitated the use of electronic based assessment and evaluation (e-assessment/e-evaluation). The use of pen-and-paper method is gradually fading in most institutions of higher learning in developed, and recently in developing countries. In recent years, education technologies have provided opportunity to benefit from efficient methods of learning (Geogieva, Todorov & Smrikarov, in Akhavan & Arefi, 2014). Unlike the educational sector that is currently welcoming the integration of ICT into its processes in recent decades, organizations across many industries have used information technology (IT) to make themselves more effective and more efficient, particularly by automating repetitive processes and intensive tasks to freeing people to engage in more creative problem-solving tasks (Niederman, Butler, Gallupe & Urquhart, 2016). In pursuance of modern practice, most institutions of higher

learning have adapted or began to adopt electronic based content (e-content), instructional delivery (e-delivery) and assessment (e-assessment).

E-assessment includes any use of a computer as part of any assessment-related activity, be that summative, formative, or diagnostic (Jordan, 2013). E-assessment is defined as the end-to-end electronic evaluation process that involve the usage of ICT for the whole or part of the processes from the presentation of questions to the feedback to the learners (Sitthisak, Gilbert & Davis, 2008; Reju & Adesina in Alruwais, Wills & Wald, 2018; Joint Information System Committee (JISC) in Alruwais, Wills & Wald 2018). In summary, e-assessment involve designing, implementing, testing, grading, recording and providing feedback on outcome in which the procedures from the start to the end might be totally or partly carried out electronically (Alruwais, Wills and Wald (2018). E-assessment scope includes the online submission of an assignment for marking, the recording of student's information, feedback delivered and most commonly, online computer-marked quizzes (Jordan, 2013). E-assessment has enhanced the measurement of learner outcomes and made it possible for them to obtain immediate and direct feedback (Gilbert, Whitelock & Gale in Alruwais, Wills & Wald, 2018).

Several studies have reported that e-assessment improve feedback quality and timing (Way, 2012), enable evaluators track students' performance, reduce man labour and teachers' burden when assessing large class (Nicol, 2015), ensure fast and reliable output, allows flexibility for date and time of examination (Alruwais, Wills & Wald, 2018), and permits integration of high quality diagrams and simulations for testing competencies. According to Jordan (2013) e-assessment includes the use of peer-assessment and e-portfolios, blogs, wikis and forums for keeping records of students' activities. E-assessment can have different forms such as, automatic administrative procedures, digitizing paper-based systems and online testing that includes multiple choice tests and assessment of problem-solving skills (Alruwais, Wills & Wald, 2018).

Skill acquisition and expression are known to be the focus of vocational education. Vocational education is focused on the acquisition of practical knowledge, skills and attitudes relevant to occupations in various sectors of economic and social life (National Policy on Education, NPE, 2013; UNESCO, 2015; Onu et. Al., 2019). Such sector includes the agricultural sector, administered in institutions of higher learning as Vocational Agriculture. Vocational agriculture deals with the requisite skills, attitudes and knowledge in the art and science of cultivation of crops and rearing of animals (Ifeanyieze et. al., 2018; Onu et. al., 2019). Its teaching and learning in universities like the University of Nigeria, Nsukka, is fashioned into theory and practical based courses that are taught at different levels to make the learner competent. The paradigm shift in pedagogy in recent era has been the integration of assessment and evaluation process into electronic contents, instructional delivery as well as assessment. With the increased number of students enrolled to study Vocational Agriculture in the University and the call for digitalization of pedagogy, most universities have gone ahead to adopt Computer-Based Assessment (CBT) or e-assessment for student evaluation in order to meet international best practices.

In addition to the need for international best practices, the recent outbreak of the novel coronavirus (COVID-19) has changed the usual activities in most sectors including the educational sector. Nigeria recorded her first case of COVID-19 in late February, 2020 (Nigeria Centre for Disease Control, 2020). Like other nations, Nigeria closed all borders and enforced stay-at-home executive order to contain the spread of the novel coronavirus (Eboh et al., 2020). The stay at home order implemented by most states in Nigeria followed the closure of business places, churches and institutions of learning including universities, at the time most schools were preparing for semester examinations. In response to the closure of schools, stay at home orders by governments and social distancing rules in place as suggested by the World Health Organization (WHO), some universities began considering eLearning and assessments via online platforms. While the concept of eLearning and electronic based assessment was completely new to some universities and their students in Nigeria after the COVID-19 outbreak, some institutions like the University of Nigeria and others, had conceptualized eLearning for instructional delivery and have gradually began transiting from paper and pen assessment to computer based tests (CBT) or e-assessment, especially for larger classes. This transition has been met with mixed feelings and has been perceived from different angles by various disciplines (Washburn, Herman & Stewart, 2017).

The perception of students and teachers describe how the learners and evaluators view CBTs as appropriate for assessment of courses in vocational agriculture. Since the initiation of CBT in Nigerian universities, evaluators worry that e-assessment may not competently evaluate student competencies especially in practical courses. It is suspected that the shift from the traditional pen-and-paper assessment to CBT presents some concerns and challenges. Addressing the worries of the adoption of CBT in vocational agriculture should begin with knowing how the students and teachers see its possibility and usefulness within their locality and subject. This is the focus of this study. This study was guided by the following research questions.

### **Research Questions**

1. How do the students perceive the adoption of CBT for assessment in vocational agriculture at the University of Nigeria, Nsukka?

2. How do the lecturers perceive the adoption of CBT for assessment in vocational agriculture at the University of Nigeria, Nsukka?
3. What are the challenges of CBT for assessment in vocational agriculture at the University of Nigeria, Nsukka?

## II. Methodology

The study adopted survey research design and was carried out at the University of Nigeria, Nsukka (UNN). UNN, located in Enugu state in the South Eastern region of Nigeria, is a foremost university in Nigeria, and houses the first Faculty of Vocational and Technical Education in Nigeria, the pioneer Faculty of Vocational Agriculture Education in Nigeria. In addition to being a leading federal university, UNN has begun digitalizing teaching and learning including the adoption of CBT in student assessment. Population for the study was 108 respondents made up of 21 lecturers and 87 students. There was no sampling as the population was manageable and accessible. The instrument for data collection was a structured questionnaire developed from literature reviewed for the study. The questionnaire was divided into three sections, each section corresponded to a research question of the study. The instrument with a total of 35 items had section 1 with twelve items for students; section 2 with ten items for lecturers only; and section 3 with thirteen items responded to by the students and lecturers. Each item in the questionnaire had a four-point response options of Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD) (weighted 4, 3, 2, and 1, respectively). Three lecturers validated the instruments. The reliability of the questionnaire instrument was established using Cronbach alpha method and a co-efficient of 0.78 was obtained. The respondents were contacted physically and copies of the questionnaire were administered in late January of 2020 before the spread of COVID-19 and consequent closure of all universities in the country. Out of the 108 copies of the questionnaire administered, 101 copies (representing 94% of the total copies) were retrieved and were duly completed for data analysis. Data was entered into the Statistical Product and Service Solutions (SPSS v24.0) for organization and analysis. The statistical tools used for data analysis were mean to answer research questions and standard deviation to validate the closeness of the respondents from the mean and from each other in their responses. Decisions were made at a criterion mean value point of 2.50. To arrive at 2.50 criterion value, the average of the mean weights was calculated. Items with mean values equal or greater than 2.50 were regarded as “Agreed (A)” while any item with mean value lower than 2.50 was regarded as “Disagreed (D)”.

## III. Results

**Table 1; Students’ Perception of CBT for Assessment in Vocational Agriculture at the University of Nigeria, Nsukka. N=82**

S/N	Item statement	Mean	SD	Remark
1	CBT allows me to express my answers to the questions better	2.23	1.14	D
2	CBT is more accurate in scoring	3.35	0.74	A
3	CBT enhances my concentration during exams	2.75	0.81	A
4	CBT ensures reliable and timely feedback on my performance	3.35	0.70	A
5	CBT controls exam malpractices	2.95	0.93	A
6	CBT controls leakages of exam questions before the exam date	2.93	1.02	A
7	CBT controls victimization and sentimental grading of students by lecturers	3.45	0.64	A
8	CBT reduces dependency on friends and external bodies during exams	3.20	0.88	A
9	CBT exams are quicker to complete	3.38	0.67	A
10	CBT exams are easier to complete	3.20	0.65	A
11	CBT ensures content coverage of the topics taught	2.88	0.88	A
12	CBT is suitable for evaluating practice-based performance	2.47	0.57	D

Data available in Table 1 revealed that the students agreed to 10 out of the 11 presented items, as the mean values of the items ranged from 2.75 to 3.35. These values were higher than the mean criterion value of 2.50 thus were remarked “A” to indicate that the respondents agreed to the items. The remaining two items had mean values of 2.23 and 2.47 which were less than the criterion mean value of 2.50 thus was remarked “D” to indicate that the respondents disagreed with the item. The SD values of all items in Table 1 ranged from 0.57 to 1.14 which is not far apart thus revealing that the respondents were not far from the mean and from each other in their responses.

**Table 2; Lecturers’ Perceive the Adoption of CBT for Assessment in Vocational Agriculture at the University of Nigeria, Nsukka. N=19**

S/N	Item statement	Mean	SD	Remark
1	Makes setting questions easy	2.32	1.01	D
2	Reduces examination malpractice	3.91	0.54	A
3	Reduces students’ co-operations during exams	3.05	0.75	A
4	Makes marking and grading of students easy	3.55	0.43	A
5	Makes teaching of large class size easy to access	2.97	0.93	A

6	Easies recording of scores	3.44	0.74	A
7	Promotes assessment of practical courses	2.45	0.99	D
8	Controls biasness of scoring	3.38	0.78	A
9	Good in stepwise assessment of process	3.01	0.76	A
10	Good in assessment of product from a process	2.35	0.81	D

Data available in Table 2 revealed that the lecturers agreed to 7 out of the 10 presented items, as the mean values of the items ranged from 2.97 to 3.91. These values were higher than the mean criterion value of 2.50 thus were remarked “A” to indicate that the respondents agreed to the items. The remaining three items had mean values of 2.32, 2.45 and 2.35 which were less than the criterion mean value of 2.50 thus were remarked “D” to indicate that the respondents disagreed with the items. The SD values of all items in Table 2 ranged from 0.43 to 1.01 which is not far apart thus revealing that the respondents were not far from the mean and from each other in their responses.

**Table 3; Challenges of CBT for Assessment in Vocational Agriculture at the University of Nigeria, Nsukka  
N=101**

S/N	Item statement	Mean	SD	Remark
1	Poor level of computer operating skills among students	2.14	0.63	D
2	Poor level of computer operating skills among instructors	3.10	0.81	A
3	Inadequate number of computers for the number students	3.05	0.75	A
4	Power failure is an issue in the administration of CBT	3.15	0.83	A
5	Unconducive centers	3.10	0.81	A
6	Increases tension among students	3.00	0.88	A
7	Limits student’s expression to questions	3.28	0.82	A
8	Disenfranchises students/staff who lack computer skills	3.03	0.80	A
9	Malfunctioning of the computer soft/hardware affects CBT	3.23	0.77	A
10	Slow internet speed affects timely loading of the questions	3.35	0.74	A
11	Difficulty in assessing practice-based skills	3.62	0.78	A
12	Difficulty in setting up CBT questions for a practical course	3.23	0.69	A
13	Cost implication in maintaining a functional CBT center	3.34	0.87	A

Data available in Table 3 revealed that the respondents agreed to 12 out of the 13 presented items, as the mean values of the items ranged from 2.90 to 3.62. These values were higher than the mean criterion value of 2.50 thus were remarked “A” to indicate that the respondents agreed to the items. The respondents, however, disagreed with item 1 with a mean value of 2.14. The SD values of all items in Table 3 ranged from 0.63 to 0.88 which is not far apart thus revealing that the respondents were not far from the mean and from each other in their responses.

#### IV. Discussion of Findings

Assessment has been a paramount aspect of learning, and getting it right has often been a worry for instructors especially in vocational education that focuses predominantly on skills. A finding of the study revealed that the students perceive CBT as limiting in response. Other findings in Table 1 revealed that CBT is more accurate in scoring, enhances concentration during exams, ensures reliable and timely feedback on performance, controls exam malpractices, controls leakages of exam questions before the exam date, controls victimization and sentimental grading of students by lecturers, reduces dependency on friends and external bodies during exams, exams are quicker to complete, exams are easier to complete, and ensures content coverage of the topics taught. These findings agree with that of Marriott (2009), Way (2012), Sorensen (2013), Akhavan and Arefi (2014) and Nicol (2015) who revealed in their studies that electronic assessment benefits the students by providing instantaneous and unbiased feedback, enabling students to use the online assignments to check their understanding and so to target future study, assists to reduce student cheating by providing different question in different order and providing flexibility for students to have the exams, anytime and anywhere. However, the students indicated that CBT might not be suitable for assessing practical. This is likely because assessing practical courses requires direct observation to evaluate both the steps taken to express the acquired skills and the products produced while applying the learnt skills.

In Table 2, findings revealed that the adoption of CBT does not make setting questions easy, does not promote assessment of practical courses and is not a suitable approach for the assessment of product from a process. Contrary to the belief of the respondent lecturers as expressed in their opinion, e-assessment has been documented to reduce the man-labour of the teacher as adaptive testing in CBTs, is able to generate questions based on instructional module, present simulations to mimic actual practical and assess the student based on responses and as well assess the virtual product produced in the simulation (Alruwais et al., 2018). According to Ridgway, McCusker & Peard (2004) CBTs are designed to house pools of questions from which randomized questions are continuously displayed and adaptive testing in most CBTs can be programmed to change the

difficulty level of the test depending on the student response, by increasing the difficulty if the student responds correctly and decrease the difficulty if the student chose the wrong answer repeatedly. Findings of the study in Table 2 further revealed that the adoption of CBT reduces examination malpractice, reduces students' co-operations during exams, makes marking and grading of students easy, makes teaching of large class size easy to assess, makes recording of scores easy, controls biasness of scoring, and encourages stepwise assessment of process. These findings align with that of Rotenberg (2005), Gikandi, Morrow and Davis (2011), Niederman, Butler, Gallupe, Tan and Urquhart (2016), Okogwu and Dike (2017). In their studies, it was reported that fast and accurate method for assessment as provided by CBT enables the teacher to track the students' performance and make analysis across many assessment, saves teachers' time and assists to reduce student cheating by providing different question in different order.

Findings of the study in Table 3 revealed that poor level of computer operating skills among instructors, insufficient computers for the number students, power failure, uncondusive centers, tension among students, limitation of student's response to questions, disenfranchising students/staff who lack computer skills, malfunctioning of the computer soft/hardware during the tests, and slow internet speed affects timely loading of the questions are challenges to the adoption of CBT in UNN. Findings further revealed that difficulty in assessing practice-based skills and in setting up CBT questions for a practical course as well as cost implication in maintaining a functional CBT center are more imposing problems to CBT. Authors like Way (2013) and Alruwais et al. (2018) had similar findings. In their studies, they reported that adequate accessibility to computer and internet, poor technical infrastructure development, difficulty in preparing the questions and infusing it into a CBT platform, and inadequate funding for CBT platforms and tools. Findings revealed that students are completely lacking in the ability to operate computer and function of the CBT platforms. The proliferation of mobile gadgets, owned by majority of the students in higher institutions, probably availed these skill sets. Most of the CBT platforms can operate well on mobile phones and the skill sets used in the operation of phones can be handy when running the CBT platforms on computer sets.

## V. Conclusion and Recommendations

The use of ICT in the current era has come to stay as it being integrated into most sectors and institutions. Its usefulness in the sectors - from medicine to engineering and in education - has been greatly heralded. Its extent of usage and adoption is only limited by the perception and imposing challenges the users and investors encounter. The adoption of CBT for the assessment of students in vocational agriculture is hoped to be more advantageous than adverse. It has been tried in other skill-based courses like engineering and its yielding good results. Assessing competencies and grading processes as well as the product in practical courses like vocational agriculture is possible through simulations. Simulations can be programmed to be close to reality and the competencies required, processes expected as well as the products can be assessed digitally, as with real life situations. The study therefore encourages the students and teachers of vocational agriculture to be more open to CBT. The transition might not be free of error and difficulties but with time and continuous adjustments quality and reliable CBT for vocational courses can be achieved. With the need to meet up with current international practices and the trending impacts of coronavirus, the universities must adapt, not only in e-content delivery but also designing and implementation e-assessments through CBTs to make up for lost times. The study recommends the upskilling/scaling of the teaching staff in ICT to exposed them to the possibilities as well as the requisite skills needed for designing and deployment of CBTs for students' assessment and evaluation in the teaching and learning of vocational agriculture in universities.

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