

## Competence-Based Assessment CBA Practices among Teachers of Technical and Vocational Education in Oyo State

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**Abstract:** *The study investigated the effect of TVET teachers' age and gender on practice of competence-based assessment in technical colleges in Oyo state. The study used ex-post facto design. Thirty respondents drawn from three state technical colleges in Oyo state were used. Teacher Competence-Based Assessment Practice Scale-TCBAS ( $\alpha = 0.840$ ) was used to collect data. Frequency count, analysis of variance and t-test were used to analyse data collected. Fourteen TVET Teachers (46.7%) were of 41-50 years of age, 12 (40.09%) were below 40 years and 04 (13.3%) were of ages 51-60 years. Significant difference in TVET teachers' practice of competence-based assessment was observed based on age [ $F(2,27) = 13.256; p < 0.05$ ]. Post hoc test revealed that teachers of age 51-60 years have the highest means score ( $M=15.32; SD=2.37$ ) followed by teachers below 40 years ( $M=12.99; SD=2.62$ ) and teachers of 41-50 years ( $M=12.98; SD=2.55$ ). There was no significant difference between male and female TVET teachers' practice of competence-based assessment. It was deduced from the findings that age affects TVET teachers' practice of competence-based assessment in Oyo state technical colleges. Therefore, TVET teachers of ages 50 years and below should seek for ways of improving the quality of their competence-based assessment practice.*

**Keywords:** Competence-Based Assessment, Education, Technical Colleges, TVET Teachers

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### Introduction

Sustainable industries across the globe require technical college products that are work ready and are capable of creating employment for themselves and others. This presupposes that technical college products should have the necessary skills to fit into the industries as craftsmen. Robert (2018) noted that there is growing demand all over the world for people who are competent in their fields of specialization before they are considered for employment. Therefore there is no doubt that industries all over the world compete fiercely in the war for talent. This is in recognition of the fact that human resource is most crucial for achieving sustainable industries.

Around the globe, governments, corporate organizations and individual employers are embarking on policies, guidelines and requisites for recruiting employees. The same efforts are intensified in reformation in assessment approach of educational sector. The aspect of education highly affected by this reform is the Technical Vocational Education and Training (TVET) in which Technical College education is a unit. The reason for this reform in the assessment approach is because it is no longer business as usual when it comes to the field of employment of new staff. Thus applicants seeking for employment who probably are products of technical college without the necessary skills are no more having the chances of getting the job. Meaning that assessment is key, in order to ascertain the level of skills possessed by the graduates.

Despite the reforms in assessment approach to Technical Vocational Education and Training (TVET), the competence of graduates of the programme in terms of skills, attitude and knowledge is low. This low competence has implication for employability which will be a bad omen for the economic prosperity of our nation. Tombbari and Celestine (2016), reported that qualifications gained at technical and vocational institutions in Nigeria do not match the real needs of the oil multinational companies; and that the graduates do not possess the skills they need to find decent employment. Similarly, Robert (2018) in his study noted that most technical college products in motor vehicle mechanics' work could not carryout maintenance of motor vehicles despite the good grades they obtained in their National Technical Certificate (NTC) at the end of their programme.

It is obvious that with effective assessment policy entrenched in technical college education, only qualified individuals would be promoted to the next level of their schooling and competent graduates awarded with NTC at the end of their programme in technical colleges. Okwelle and Okeye (2016) described process assessment as assessment method which takes account of the processes of the practical activities leading to

having the final product. The authors added that effective assessment is the only means capable of identifying who will perform best in a job. Similarly, by selecting a workforce through the use of effective assessment process, Ombugus and Ogbuanya (2014) noted that effective assessment would yield significant productivity increase, save cost, decrease in attrition and other critical organizational outcomes that translate into literally millions of dollars. Such effective assessment process is competency-based assessment (CBA).

Competency-based assessment according to Robert (2018) is assessment process in which a number of assessment techniques are used to assess whether an individual has acquired the minimum knowledge, skills and attitude required to perform a given task satisfactorily. Thus, the practice of CBA will enhance the role of TVET in improving equitable access to employment opportunities, productivity, and income generation. Ayonmike, Okwelle, and Okeke, (2014) defined Competency Based Education and Training (CBET) as a programme of study with clearly defined, concrete and measurable objectives of which every student participating in the programme must have demonstrated mastery upon programme completion. Often these programmes also involve students working at their own rate and structuring their own methods of learning so as to meet these objectives. Competence based assessment gives competence based education training. Competence Based Education Training (CBET) is an industry and demand driven education and training programme; its products have a high demand on the job market (Anane, 2013).

Odewumi and Dekom (2020) investigated concepts of Technical Vocational Education and Training (TVET) and Competence Based Education and Training, objectives of CBET, TVET Curriculum Design and Delivery to Meet the Labour Market, Programme Delivery using the Competence Based Education and Training (CBET) Approach, advantages of its to workers and Implications of Competence Based Education and Training (CBET) in Technical Vocational Education and Training (TVET) for Industry and Development in Nigeria. Recommendations are proffer among which was that CBET should be introduced into TVET curriculum in order produce competent graduates who will be able to face the challenges of the workforce. However, the study did not examine practice of competence based assessment as it was done in the present study.

Robert and Udoh (2019) examine an overview of assessment process in technical colleges which is mostly on the assessment of knowledge while other domains of learning such as attitude and skills are lacking. The researchers showed competency – base assessment as innovation in assessment process employed in TVET in most industrialized nations. The roles of CBA in TVET are highlighted to include; improve like between knowledge and performance; reduces anxiety among students; increase intrinsic motivation among others. They presented problems affecting implementation of CBA in technical colleges to include; Absence of assessment policy that favors CBA; Lack of trained manpower; High cost of assessment process. The study also recommends that government and other stakeholders should review assessment policy to reflect CBA NABTED should organize workshops and seminars on competency-based education and assessment; Government should ensure effective funding of technical colleges. However, the study failed to tie competence based assessment as it varied across gender, age or other factors as were done in this study.

Meanwhile, age and gender are two human attribute that have impacts on many human behaviors teacher practice of competence based assessment inclusive. Different studies have reported the influence of age and gender on teacher behaviors. For example, Sephokgole and Makgato(2019) investigated assessment of lecturer practice of competence base assessment they found out that experience lecturers teachers are crucial in the implementation of competence based assessment and as such older lecturers are employed more of the assessment approach.

Similarly, a study conducted by Nkalane (2018) showed that classroom-based assessments related to integrated-learning work performed by teachers were ineffective and students were unable to relate theory and practice in the workplace. The authors of Okolie, Elom, Igwe, Binuomote, Nwajiuba and Igu (2020) study showed that although problem-based learning in assessment was successfully conducted, there were problems inherent in terms of the recruitment of unqualified TVET teachers. Assessment is also seen to be effectively implemented to assess student performance using technologies such as computers, such as the study by (Seifried, Brandt, Kögler and Rausch, 2020; Mohd Ali, Nordin, and Ismail, 2019 and Rausch, Seifried, Wuttke, Kögler and Brandt, 2016) versus conventional assessment. This study also shows that teachers play an essential role in ensuring the successful implementation of assessment. Teachers' skills and knowledge are critical indicators in student assessment.

Ilokanulo, Ilodibe and Okoye (2021) investigated the world aims to achieve sustainable development in the year 2030, in the light the current trend on gender inequality persists. Technical vocational education and training (TVET) as lifelong learning requires equal involvement of both males and females in accelerating economic growth and development in Africa and beyond. The results from the secondary data collected for the research shows less participation of women in TVET despite the current contributions that women have made in all walks of life. The implication is that there will be less practice of competence based assessment by female TVET teachers owing their fewer numbers. The study suggested education incentives like scholarships, best female students' awards, etc. should be given to women to encourage them to learn TVET courses dominated by males. Encouraging women to acquire more skills and reducing the time they spend on house chores will contribute significantly to the development of Nigeria and Africa at large.

Female teachers have formed the smaller unit in the TVET institutions both in the developed and developing world (Axmann et al., 2015). The data released on government staffing by gender in Bangladesh shows that 20% of the staff in TVET institutions are female, among which none of the female teachers has attained the position of a principal, vice-principal 1, chief instructor (Tech) 3 and chief instructor (Non-Tech) 2 female representative respectively (World Bank, 2017). In Malawi, out of 187 staff in seven technical colleges, only 17 are female, which represent 9% of the staff in technical colleges (Chimpololo, 2013).

Among the staff in Technical Colleges in Nigeria, 80% of the total staff were male while 20% of the staff were female. The teaching staff in colleges of agriculture and related discipline, the male teaching staff (73%) makeup approximately three out of four of the teaching staff strength (NBTE, 2017). To further stress the point on gender disparity, UNESCO 2015 TVET Country Profile indicator shows that 16,561 (80%) male and 4062 (20%) of female are TVET staff. This has shown the overwhelming dominance of males in the technical colleges. While this is the case in Nigeria and some countries in Africa and Asia, but some countries like the Philippines, Malaysia, and Mongolia have witnessed higher enrolment rate of female students in secondary and higher education in TVET institutions (UNESCO, 2015).

Practice of competence based assessment has been reported to be low among TVET teachers in technical colleges. Generalising this assertion may not reflect the true nature across various grouping of teachers. Also, effects of some grouping variables such as age, gender, race, school location, school type, level of study and professions on teachers' knowledge of competence based assessment have only been investigated by previous studies. However, there appears to be dearth of literature on effect of age and gender on TVET teachers' practice of competence-based assessment. Therefore, the study investigated the TVET teachers' practice of competence-based assessment based on age and gender.

### Research Questions

1. What is the profile of TVET teachers in Oyo state technical colleges?
2. Is there any significant difference in teachers' practice of competence-based assessment practice based on age?
3. Is there any significant difference in teachers' practice of competence-based assessment practice based on gender?

### Material and Methods

The study used *ex-post* facto design. This design became necessary because it allowed the researcher to compare across the different gender, age and draw the inferences. The target population for this study comprise all teachers of government technical colleges in Oyo state Nigeria. Multi-stage sampling procedure was adopted to select sample. Oyo state has five technical colleges. In the first stage, population proportional to size was used to select three colleges out of the five colleges in the state. In the second stage, simple random sampling was used to select ten teachers each from each of the college making thirty teachers that participated in the study.

Teacher Competence-Based Assessment Practice Scale (TCBAS) was used to collect data. TCBAS was developed by the researcher to measure teachers' practice of competence-based assessment in delivery and assessing instructions in schools. It consists of two sections A and B. Section A sought participants' demographic information, Section B is on teachers' practice of competence-based assessment. The initial

scale thirty two items where participants were asked to select as it applies to them. These items were subjected to pilot testing using teachers who were not part of the final sample for the study. The content validity was established by given the draft to psychometricians and other test item developer experts. To determine the reliability of the instrument, the internal consistency of the scale was obtained using Chronbach's Alpha which yielded a value of 0.84. The researcher monitored the data collection exercise. Two research assistants who were co-opted for the study were trained on the administration of the instrument before the commencement of the study. They were intimated with the objectives of the study and the reasons they were selected. Frequency count, one way analysis of variance: 1-Way ANOVA and t-test were used to analyse the data.

The issue of ethical consideration was observed by ensuring that the participants were free to respond without cohesion. They were also free to withdraw from participation in the research exercise at any stage where they feel uncomfortable with the process. Their identities were protected from any unforeseen or potential danger in line with data protection and governance as entrenched by the Nigeria Communication Commission (NCC) of the Federal Ministry of Community and Digital Economy policy, as they were taken as anonymous by not requesting or recording their identities. And lastly, the data collected were treated with confidentiality and solely for research purpose only.

## Results

**Research Question 1:** What is the profile of TVET teachers in Oyo state technical colleges?

**Table 1: Profile of TVET Teachers in Oyo State Technical Colleges**

Variable	Frequency	Percentage
<b>Age</b>		
Below 40 years	12	40.0
41-50 years	14	46.7
51-60 years	04	13.3
<b>Total</b>	<b>30</b>	<b>100.0</b>
<b>Gender</b>		
Male	22	73.30
Female	08	26.70
<b>Total</b>	<b>30</b>	<b>100.0</b>

Table 1 shows the descriptive statistics of the profile of TVET teacher in Oyo state Technical colleges. The result revealed that 14 (46.4%) of the TVET teachers in Oyo state Technical colleges are between 41-50 years of age, 12 (40.0%) are below 40 years of age and 04 (13.3%) are 51-60 years of age.

**Research Question 2:** Is there any significant difference in teachers' practice of competence-based assessment practice based on age?

**Table 2a: Descriptive Statistics**

Variable	Mean
<b>Age</b>	
Below 40 years	12.99
41-50 years	12.98
51-60 years	15.32

**Table 2b: 1-Way Analysis of Variance of Competence-Based Assessment Practice by Age**

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	172.599	2	86.299	13.256	0.000*
Within Groups	1621.064	27	6.510		
<b>Total</b>	<b>1793.663</b>	<b>29</b>			

\*= significant at  $p < 0.05$

Table 2b shows that there is a significant statistical difference in TVET teachers' competence-based assessment practice based on age [ $F_{(2,27)} = 13.256; p < 0.05$ ].

Table 3: Post-hoc Multiple Comparison

(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.
51-60 years	41-50 years	2.341*	0.481	0.000
	Below 40 years	2.335*	0.492	0.000
41-50 years	51-60 years	-2.341*	0.481	0.000
	Below 40 years	-0.007	0.349	1.000
Below 40 years	51-60 years	-2.335*	0.492	0.000
	41-50 years	0.007	0.349	1.000

Table 3 shows the post-hoc multiple comparison of TVET teachers' competence-based assessment practice by age. The table reveals that teachers of 51-60 years of age have the highest means score (M=15.32; SD=2.37) followed by teachers of below 40 years of age (M=12.99; SD=2.62) and teachers of ages 41-50 years (M=12.98; SD=2.55). This is further shown in Figure 2.

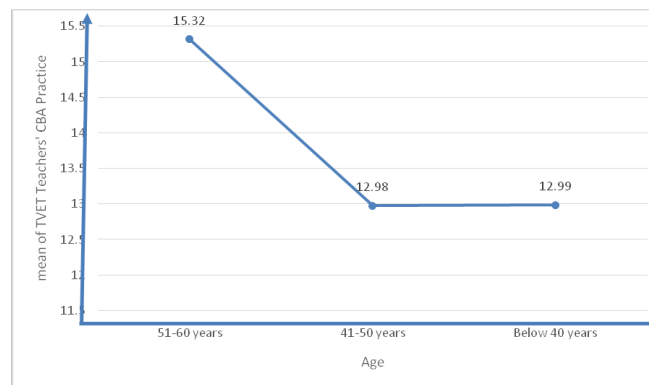


Figure 2: Mean Plot of TVET Teachers' Competence-Based Assessment Practice

**Research Question 3:** Is there any significant difference in teachers' practice of competence-based assessment practice based on gender?

Table 4.0: Mean Difference of TVET Teachers' Practice of Competence-Based Assessment

Gender	N	M	SD	T	Df	Sig.
Male	22	1.67	0.786	1.771	28	.079
Female	08	0.83	0.705			

The table above shows the  $t_{(28)} = 1.771$  is greater than the p value ( $p > 0.05$ ). Hence there is no significant difference between the mean of male and female teachers practice of competence-based assessment in Oyo state technical colleges. The respondents irrespective of their gender do not differ in their response on practice of competence-based assessment.

### Discussion of Findings

The result on the descriptive statistics of the profile of TVET teacher in Oyo state Technical colleges revealed that there are more TVET teachers between 41-50 years of age than below 40 years of age and 51-60 years of age. There were also more male than female TVET teachers.

The findings on significant difference in teachers' practice of competence-based assessment practice based on age showed that there is a significant statistical difference in TVET teachers' competence-based assessment practice based on age. The post-hoc multiple comparison of TVET teachers' competence-based assessment practice by age reveals that teachers of 51-60 years of age have the highest means score followed by teachers of below 40 years of age and teachers of ages 41-50 years.

The finding of this study agrees well with that of Axmann et al., (2015) who found out that female teachers have formed the smaller unit in the TVET institutions both in the developed and developing world. The finding also supports that of Chimpololo (2013) who reported that the data released on government staffing by gender in Bangladesh shows that 20% of the staff in TVET institutions are female, among which none of the female teachers has attained the position of a principal, vice-principal 1, chief instructor (Tech) 3 and

chief instructor (Non-Tech) 2 female representative respectively (World Bank, 2017). In Malawi, out of 187 staff in seven technical colleges, only 17 are female, which represent 9% of the staff in technical colleges.

The result on significant difference in teachers' practice of competence-based assessment practice based on gender shows that there is no significant difference between the mean responses of male and female teachers on practice of competence-based assessment. The respondents irrespective of their gender do not differ in their response on practice of competence-based assessment.

The result of this study go contrary to UNESCO (2015) who found out that among the staff in Technical Colleges in Nigeria, 80% of the total staff were male while 20% of the staff were female. The teaching staff in colleges of agriculture and related discipline, the male teaching staffs (73%) makeup approximately three out of four of the teaching staff strength (NBTE, 2017). To further stress the point on gender disparity, UNESCO 2015 TVET Country Profile indicator shows that 16,561 (80%) male and 4062 (20%) of female are TVET staff. This has shown the overwhelming dominance of males in the technical colleges. While this is the case in Nigeria and some countries in Africa and Asia, it implies that fewer number of female TVET teachers to practicing competence based assessment approach.

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### Conclusion and Recommendation

It is deduced from the results that there are fewer TVET teachers of ages between 51-60 years and below 40 years of age than ages 41-50 years in technical colleges in Oyo state. However, age affects teachers' practice of competence-based assessment. Therefore, TVET teachers should continue to use their older age in the pursuit and improvement of practice of competence-based assessment while teachers early and middle age should seek for ways of improving the quality of their practice of competence-based assessment.

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**Conflicts of Interest:** The author declares no conflict of interest.

### References

- Axmann, M., Rhoades, A., Nordstrum, L. (2015). Vocational teachers and trainers in a changing world: the imperative of high-quality teacher training systems, (Geneva: International Labour Office, Employment Policy Department, Skills and Employability Branch, 2015) 56-62.
- Anane, C.A. (2013). Competency based training: Quality delivery for technical and vocational education and training (TVET) institutions. *Educational Research International*, 2(2), 117- 127. Available at: [http://www.erint.savap.org.pk/PDF/vol2\(2\)/ERInt.2013](http://www.erint.savap.org.pk/PDF/vol2(2)/ERInt.2013) (Retrieved on 01 June 2023).
- Ayonmike, C.S, Okwelle, P.C. & Okeke, B.C. (2014). Competency based education and training in technical vocational education: Implication for sustainable national security and development. *Journal of Educational Policy and Entrepreneurial Research (JEPER)*, 1: 290-300. Available at: <http://www.iiste.org/Journals/index.php/JEPER/index> (Retrieved 01 June 2023).
- Chimpololo A (2013). Transforming the Training of Technical and Vocational Education Instructors through Open Distance and Flexible Learning: The Case of Malawi, p6.
- Ilokanulo, S. N., Ilo-dibe, E. C. and Okoye M. C. (2021). Gender Inequality Challenge in TVET in Achieving Sustainable Development in Nigeria. *American Journal of Humanities and Social Sciences Research (AJHSSR)*, Volume-5, Issue-9, pp-139-146.
- Mohd Ali, S.; Nordin, N.; Ismail, M.E. (2019). The Effect of Computerized-Adaptive Test on Reducing Anxiety towards Math Test for Polytechnic Students. *J. Tech. Educ. Train*, 11, 27-35.
- NBTE (2017). Digest Statistics of Technical Vocational Education and Training in Nigeria 2016/2017 session, volume 7.
- Nkalane, P.K. (2018). Inclusive Assessment Practices in Vocational Education: A Case of a Technical Vocational Education and Training College. *Int. J. Divers. Educ.* 2018, 17, 39-50.

Odewumi, A. S. and Dekom, H. B. (2020). Competency Based Education and Technical Vocational Education and Training: Implication for Sustainable Industries and Development in Nigeria. *Vocational And Technical Education Journal (Votej) Vol2, NO. 1, 86-93.*

Okolie, U.C.; Elom, E.N.; Igwe, P.A.; Binuomote, M.O.; Nwajiuba, C.A.; Igu, N.C.N. (2020). Improving Graduate Outcomes: Implementation of Problem-Based Learning in TVET Systems of Nigerian Higher Education. *High. Educ. Ski. Work. -Based Learn.*, 11, 92–110.

Okwelle, P. C & Okeke, B (2012). Development and Validation of Instrument for Assessing Practical Skills in Fault Diagnosis and Repair of Radio and Television System in Nigerian Technical Colleges. *American Journal of Scientific and Industrial Research* 2 181 – 190.

Ombugus, D. A. & Ogbuanya, T. C (2014). Development and Validation of Workshop-based process Skill Test in Metal Fitting for improving Students' Skills in Technical Colleges for Work. *Journal of Education and Practice* (2) 46 – 53.

Rausch, A.; Seifried, J.; Wuttke, E.; Kögler, K.; Brandt, S. (2016). Reliability and Validity of a Computer-Based Assessment of Cognitive and Non-Cognitive Facets of Problem-Solving Competence in the Business Domain. *Empir. Res. Vocat. Educ. Train.*, 8, (9).

Robert, A. M. (2018). Development and Validation of Competency-based Assessment Instrument in Motor Vehicle Mechanics work for Assessing Students in technical Colleges in Akwalbom State, Nigeria Unpublished Ph.D Thesis, University of Nigeria, Nsukka.

Robert, A. M. and Udoh, V. E. (2019). Assessment of Students in Technical Colleges for Life-Long Learning: The Role of Competency – Based Assessment. *Journal of Educational Reality*, 9 (1) 1-8.

Pulakos, E. D (2016). Selection Assessment Methods. A Guide to Implementing Formal Assessment to Build a High-quality/ Workforce. *Foundation Society for Human Resource Management* (1) 87 – 98.

Tombari, B. Y & Celestine, W. (2016). Role of TVET in enhancing sustainable local content development in Rivers State. *Nigerian Association of Teachers of Technology 29<sup>th</sup> Annual National Conference Minna. Book of Proceedings.*

Seifried, J.; Brandt, S.; Kögler, K.; Rausch, A. (2020). The Computer-Based Assessment of Domain-Specific Problem-Solving Competence—A Three-Step Scoring Procedure. *Cogent Educ.*, 7 (1).

Sephokgole, D.; Makgato, M. (2019). Student Perception of Lecturers' Assessment Practices at Technical and Vocational Education and Training (TVET) Colleges in South Africa. *World Trans. Eng. Technol. Educ* 17, 398–403.

UNESCO. (2015). *Girls and Women in Science, Technology, Engineering and Mathematics in Asia*. Korean Women's Development Institute (KWDI) : Bangkok, South Korea.

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