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Development and Validation of Teacher Quality Behaviour Checklist

Obiageli Omeje
Department of Psychology
Enugu State University of Science &Technology Agbani

Nicholas Attamah
Department of Economics
Enugu State University of Science &Technology Agbani

George Isiwu
Department of Economics
Enugu State University of Science &Technology Agbani

Abstract

This study developed and validated Teacher Quality Behaviour Checklist (TQBC) by conducting two separate studies that provided supporting evidence that shows construct validity and internal consistency of the scale. In the first study, it was aimed at identifying the factors that enhance or retard teacher quality behaviour. Seventeen items were generated through Focused Group Discussion (FGD) and literature and administered to 211 participants 108 females (51.2%) and 103 males (48.8%). The data supported a solid one dimension scale and internal consistency (Cronbach alpha of 0.86). In the second study, data collected from 184 tertiary students from a different state, also supported internal consistency of TQBC (Cronbach alpha of 0.91) in the same vein, shows a high validity index. It was concluded that good teacher quality behaviour plays vital role in the enhancement of quality learning and as such should be emphasized and encouraged as TQBC seems to have evidence for research based on the scores obtained from the study.
Keywords: Teacher Quality, Behaviour, Checklist, Nigeria

Introduction

The importance of education to the development of any nation needs not be overemphasized. Nigeria like any other country relies on qualitative education as a means of attaining her development aspirations. It is for this reason that Nigeria's policy on education provides thus: " Not only is education the greatest force that can be applied to bring about redress it is also the greatest investment that the nation can make for the quick development of the economic, political, sociological and human resources" (FRN 1981,1). Good educational standards are imperative for the realization of national objectives and goals. It is for this reason that the Nigerian governments regulate all levels of education.

However, and unfortunately, it has been severally reported that educational standards have continued to fall in Nigerian schools. Falua (1989) asserts that the primary schools have virtually decayed. The secondary schools are congested. Both colleges of Education and Polytechnics exist under their own shadows. The universities according to Falua are generally in shambles and the conditions could hardly be otherwise. In the same manner, Okorma (2007)

asserts that education being a vehicle for development must see any fall in standards at any level as a threat to the qualitative existence of every society. According to Okoma, the fall in the standards of education is a grave threat to the economic, sociological and human resources development that are necessary for Nigeria's growth aspirations.

The issue of standards is a concept with great degree of relativity. Akintola (1996), believes that the concept of standard involves a minimum point of reference from which the intrinsic value of any human endeavour must be measured. In relation to education, the point of reference serves as a minimum that must be attained for an effort to have merit. The point of reference in focus, according to Akintola (1996), is not static but rather depends on what to be measured and how it is to be measured. Educational standards vary from one institution to another and from one programme to another. Udoh (1989) sees standards as an acceptable level of measurement to which members of a group have to conform and by which the performance of each member of such group is to be judged. These expositions show the importance of standards and the necessity to ensure good standards in human activities. The role of education in the development of every society makes it even more imperative to take all possible measures at ensuring acceptable standards.

Good educational standards often manifest in the quality of life of every society as reflected in all facets of development such as health industrialization, technology, food production, economic and political development etc. Akinola (1990) has provided a useful insight on the factors that influence educational standards which can only be sustained through adequate implementation efforts. Among these factors are: funding, physical facilities, admission policies, quality of teachers, teacher motivation, students attitudes etc. According to Akinola, adequate funding is critical to achieving good standards of education. It is in recognition of this that the national policy on education (FRN 2004, 61) provides thus "Education is an expensive social service and requires adequate financial provision from all tiers of government for successful implementation of the educational programmes. The financing of education is a joint responsibility of the federal, state and local government and the private sector". Duze (2011) believes that the falling standard of education in Nigeria could be linked also to the lost glories of traditional education which inculcates among other things the very important values of hard-work, diligence, integrity, and high productivity. When these are lacking in any production system, education inclusive, the results are often devastating leading especially to poor quality output and wastage which in themselves undermine capacity building and sustainable development.

On physical facilities, Duze asserts that in every endeavour, the achievement of a quality result or output requires a quality input. Accordingly, every workman needs some working tools to succeed. Schools need facilities such as laboratories, workshops, libraries, tables, chairs, buildings etc. in good numbers in order to produce graduates of good standards if other implementation factors are adequate. Maitama (2005) observed that the quality of programmes and their products are being increasingly called to question. Many factors have contributed to

the decline and chiefly among them are under-funding, inadequate academic staffs in number and quality, inadequate physical facilities and equipment. According to Maitama, a workman without the required working tools will undoubtedly be less productive in terms of quantity and quality. So it is with using unqualified and unskilled manpower to utilise the tools

Teacher quality is constantly and frequently being discussed in education reform forums and academic literature. According to Novozhenina and Lopez Prinzon (2018), teacher quality refers to different constituents namely: (a) tested ability, highest test scores for recruiting as teachers; (b) credentials, licenses, certificates and experience to demonstrate knowledge and skills; (c) classroom practice, quality of practice/activities in the classroom; (d) skill in heightening students' performance; and (e) beliefs and values, nurturing positive attitudes and ability for understanding learner needs. The teacher factor is an important element in the determination and assessment of educational standards. No school can have a standard of learning by its students higher than what the teachers have offered which will usually reflect the quality of such teachers.

Nigeria's policy on education recognizes the importance of quality teachers hence it provides at sections 70 and 72 that, " since no education system may rise above the quality of its teachers, teacher education shall continue to be given major emphasis in all educational planning and development (section 70) All teachers in educational institutions shall be professionally trained. Teacher educational programmes shall be structured to equip teachers for effective performance of their duties (section 72) (FRN 2004, 39). Also, teachers usually enhance their knowledge, skills and expertise through independent and sponsored professional development activities (Abeywickrama, 2019, 2020b). Independent personal development driven by democratic professionalism is broadly connected to practitioner-centered initiatives and focuses on teachers' democratic goals, principles and needs (Abeywickrama, 2019, 2020b).

Though many psychological tests have been developed, majority of them are foreign based and require adaptation. Hence, they are not suitable for our cultural environment (Olowookeere, 2011). Adaptation of test is a very rigorous activity and Butcher (1996) posits that adapted test must possess three levels of equivalence namely, functional, metric and scalar. Berry, Protinga, Segall & Dasen (2002) note that secular equivalence is most difficult to establish. Thus, development of teacher quality behaviour checklist of this research would not only help solve problem of adaptation but also equip the teachers who scored low in the test to strive for improvement against future assessments. To achieve the above, the researchers embarked on two studies with different samples: first, we looked at the development and basic psychometric properties through factor analysis and internal reliability index of the Teacher Quality Behaviour Checklist. Second, we provided evidence for concurrent, convergent and divergent validity of the scale. Most importantly, the checklist will enable institutions assess the quality of lecturers and based on the results, decisions could be taken on who to promote, engage or disengage.

Teachers' welfare should be given priority by government to avoid unnecessary strikes in our educational sector while more qualified teachers should be employed to curb the present shortage of teachers in our schools. Teachers should be trained so that they can meet up with any new challenge hence the need for educational facilities to be upgraded to modern standards while teaching facilities should be adequately provided.

Teacher Quality Behaviour Checklist Development Process

The researchers started with a focus group discussion with the population of interest towards determining the domains the scale should cover. Items were generated during the discussions which took place at three different places, as organized by the researchers. From the discussion, 100 items were put together. Furthermore, the items generated were further reviewed and the items trimmed down to 32 items. The items were designed to capture different teacher behaviour in the school environment. After which it was given to five experts; 2 education managers, 1 industrial psychologists and 2 educational psychologists for face and content validation. That is, there expert opinions were sought after (Bollen, 1989) for the clarity of constructs, contents coverage and relevance of the checklist. Based on the experts review, the checklist was all positively worded contrary to the initial negative and positive wordings, ambiguous items were refined. However, items that failed to get 70% approval of the five experts were dropped. Hence, 20 items were retained out of the 32 items and validation carried out on them.

Study 1: Psychometric Properties

Method

Participants

In this study1, two hundred and eleven (211) students between the ages of 17 to 26 (M = 21.25; SD = 4.61) were sampled from both private and public tertiary institutions within Enugu metropolis. They included 108 females (51.2%) and 103 males (48.8%). Purposive sampling technique was used to sample the participants from different tertiary institutions both public and private. The choice of students was based on the idea that the teacher behaviour checklist should be rated by students based on observation of their teacher's general behaviour in school.

Instrument: TQBC

The researchers converted the 20-item TQBC to a checklist, the items were scaled on 5-point Likert response format, ranging from 1= strongly Disagree, 2 = Disagree, 3 = Undecided, 4 = Agree and 5 = Strongly Agree. All the items are directly scored. So, participants were made to complete the 20-item TQBC retained after face and construct validity. An overall score of a

participants will be gotten by summing the responses of the participants on each item on the checklist. Students' demographics were taken also, to help in the data analysis.

Procedure

A total of 250 copies of the questionnaires were administered within 2 weeks. The participants completed the checklist within 5 minutes on the average. The questionnaires were administered by the researchers with the help of research assistants. At the end, 233 copies of the questionnaires were returned out of `which 22 copies were discarded due to error in completion. Hence, 211 copies were scored and used for the factor analysis. Meanwhile, the participants in this study gave their consent to participate after rapport was established between the researchers and the participants to enhance confidentiality and informed consent as well as the briefing they got with regards to the purpose of the study.

Data Analysis

From the data collated from the participants, Teacher Quality Checklist items were examined with SPSS IBM Version 20 using principal component analysis (PCA) and the varimax rotation method for factor extraction on the items. It is worthy to note that principal component analysis uses eigenvalues, and as such, represent the proportion of variance accounted for by the factors. Statistic with SPSS is easy to determine according to Tabachnick and Fidell (2007) inspecting the correlation matrix coefficients of 0.30 is termed factorability of *R* and it was observed that out of the 20 items, 3-items failed to correlate at .30 hence, they were deleted. Furthermore, in evaluating the measurement model of TQBC and a Confirmatory Factor Analysis (CFA) was conducted using IBM SPSS Amos v.23 to ensure accuracy of all the previous analysis, the following statistics were performed; overall Chi-Square (χ^2), Goodness of fit Index (GFI) and Root Mean Square Error of Approximation (RMSEA) (Hooper, Coughlan & Mullen, 2008); Comparative Fit Index (CFI), Tucker-Lewis Index (TLI) (Bentler, 1990, Hu & Bentler, 1999).

Results

The PCA produced one factor that has the power to explain 51.36% of the total variations from the scale variables. However, 17-items correlated at least above .30. It was observed that the *Kaiser-Meyer-Olkin (KMO)* measure of sampling adequacy was .88 for Teacher Quality Checklist which portray a good sampling adequacy, because any coefficient above .50 is good and the items should be factorized (Hair, Anderson, Tatham & Black, 1995; Tabachnick & Fidell, 2007). Also, Bartlett's test of sphericity was significant at $X^2(153) = 1131.100, p < .001$ level of significance which showed that there were patterned relationship in the scale (Barlett, 1950).

Furthermore, the Teacher Quality Checklist was loaded on one factor and as such out of 20-items, only 17-items met the cut-off point of 0.3 and has 17-items measuring Teacher Quality

Checklist. According to Comrey and Lee (1992), in using "variance explained" criteria for deciding the importance of factor loadings: loadings in excess of .71 (i.e., 0.71x0.71=50% of common variance) are considered excellent, 0.63 (i.e., 40% of common variance) very good, 0.55 (i.e., 30% of common variance) good, 0.45 (i.e., 20% of common variance) fair, and0.32 (i.e., 10% of common variance) poor. They concluded that only variables with loadings of 0.32 or greater should be interpreted. From the tables, all the items are for determining the quality a teacher exhibits in his/her teaching responsibilities. The scree plot (see figure 1) showed that out of 3 factors loaded, only 1 factor was able to align with a point on the entire components of the analysis. Therefore, the eigenvalue is plotted against the only component observed in the analysis, meaning that the eigenvalue is above 1.00 on only one factor.

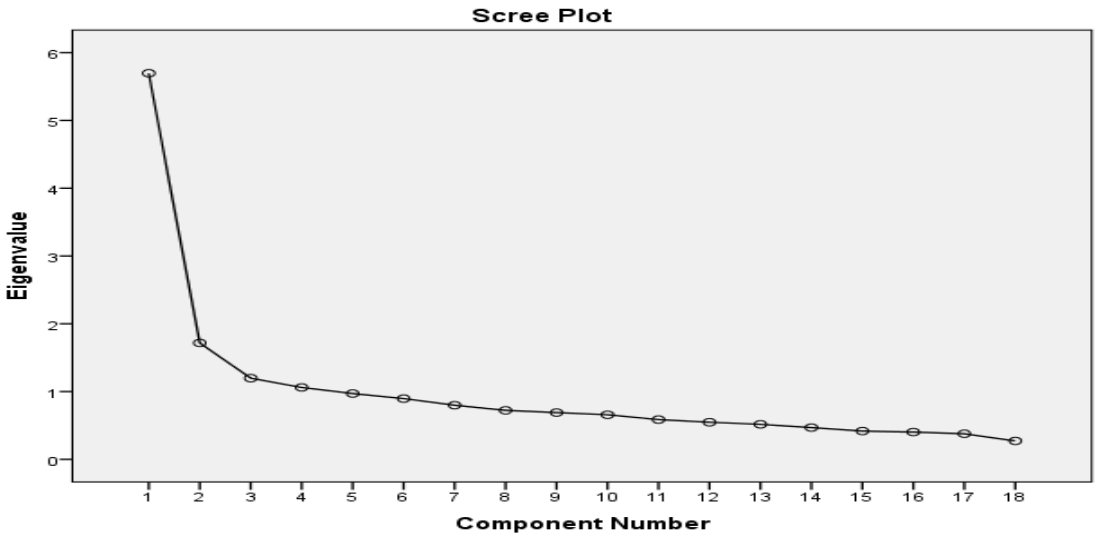

Figure 1: *Scree plot for the one-factor TQBC*

The result of CFA showed that Chi-square was significant with $\chi^2_{(93)} = 1707.71$, $p < 0.01$). The Root Mean Square Error of Approximation (RMSEA) index was 0.05, which is lower than the recommended critical limit of 0.08 (Hu & Bentler, 1999; Seo, Torabi, Blair & Ellis, 2004). Again, the Goodness-of-Fit Indices (GFI) = 0.97; Comparative Fit Index (CFI) = 0.91, and Tucker Lewis (TLI) = 0.96. According to Hu and Bentler (1999) a CFI and TLI larger than .95 indicate relatively good model–data fit in general principles and as such they are all within the acceptable limits. We performed this CFA using this structure (see figure 2).

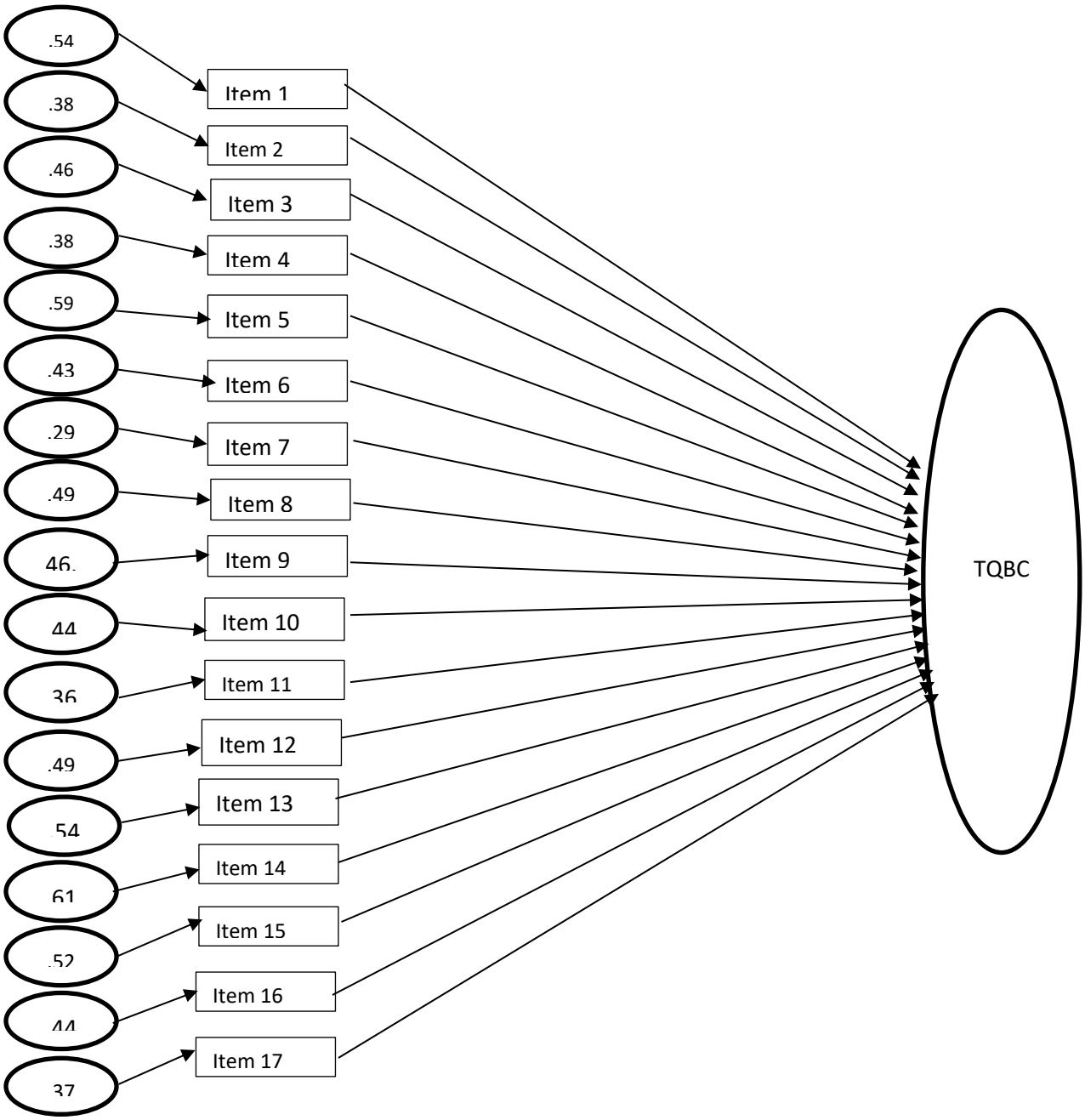

Figure 2: Confirmatory Factor Analysis of one factor structure model of TQBC.

Furthermore, the researchers examined the internal consistency indices using SPSS version 20. According to Fan and Thomson (2001) that the confidence interval (CI) have to be established around a coefficient alpha. This was established using Cronbach's alpha at 95% confidence interval for the internal consistency reliability index. Hence, the Cronbach's alpha reliability for the one dimension; teacher quality behaviour checklist is (0.86), this indicates that the items are internally consistent. There was no significant mean difference between male and female responses on TQBC scores with $F(1, 210) = 0.16$, $p = 0.68$. Based on the above, tables below show items and their loadings for Teacher Quality Checklists as follows;

Table 1: Factor loadings for Teacher Quality Checklists

	Extraction
Item1. My teacher is knowledgeable about his/her subject area	.566
Item 2. My teacher is always punctual to class	.637
Item3. My teacher is a good listener	.584
Item4. My teacher can serve as a role model to me	.541
Item5. My teacher does explains things clearly	.473
Item6. My teacher's class is always interesting	.577
Item7. My teacher covers the basic topics before examination	.530
Item8. My teacher spends time to help students academically	.452
Item9. My teacher is not a bully	.454
Item10. My teacher treats all students equal	.484
Item11. My teacher has self-control	.498
Item12. My teacher is considerate about students' feelings	.625
Item13. My teacher updates his/her ideas	.498
Item14. My teacher is objective in grading scripts	.481
Item15. My teacher encourages new ideas	.568
Item16. My teacher answers questions while teaching	.604
Item17. My teacher does not compromise in the discharge of his/her duties	.737

Table 2. Scale Statistics: Means and standard deviation for Teacher Quality Behaviours Checklist (on 85 points Likert response format)

	Males		Females		Total sample	
	M	*SD*	*M*	*SD*	*M*	*SD*
TQBC	53.26	12.33	54.59	12.76	53.93	12.55

Study 2: Validation of TQBC Scale Using Undergraduate Students

Method

In study 1, we worked to determine the internal consistency of the TQBC scale items as well as their structure. The second study was carried out to provide evidence of TQBC validity using convergent, concurrent and divergent validates

Participants

A total of 184 participants, between the ages of 17 to 28 years (*M* = 22.74; *SD* = 4.77) were sampled from the population of tertiary institutions in Anambra state, which was quite different from those in study 1. Demographically, 81(44.02%) were males and 103(55.98%) were females.

Instruments

School Teacher Effectiveness Questionnaire (STEQ) developed and validated by Akram (2018) was used as an instrument for data collection. The STEQ comprises 26 items with 5 factors. The items of the factors were scaled as Never (1), Rarely (2), Sometime (3), Often (4), and Always (5); meaning that the students' perceptions as never would indicate that their teachers never demonstrated effectiveness in that item and standard, and students' perceptions as always would indicate that their teachers always demonstrated effectiveness in that particular item and that standard.

Procedure

The researchers collected data from tertiary institution after exhibiting the processes used in study 1. However, 250 copies of the questionnaire were shared while 212 were returned (84.80% response rate). The participants were instructed on the response pattern and duration for the completion of the questionnaire. Twenty-eight copies of the questionnaire were discarded due to error in completion and 184 copies were scored and used for the data analysis.

Data analysis

The researchers after employed means, standard deviation and internal consistency reliability to compute the data collected from the field. Furthermore, correlational statistics (bivariate) was used to depict the relationship between STEQ and TQBC.

Results

The analysis as shown in table 3 below, indicates a concurrent and convergent validation of TQBC with STEQ. The results reveal that a significant negative relationship between Teacher quality behaviour checklist and School Teacher Effectiveness Questionnaire.

Table 3: Bivariate correlation between TQBC and STEQ

		1`	2
1	TQBC	(0.91)	
2	STEQ	-.62*	(0.88)

P< .001. Cronbach alpha appears in diagonal parentheses

Discussion

In the validation process of TQBC, the correlations show that Teacher quality behaviour checklist were significantly and positively related to School Teacher Effective Questionnaire. This implies that students who rated their teachers' behaviour to be qualitative also rated them to be effective, Therefore, the two scales are empirically sound to test different qualities of a teacher. The PFA revealed one factor component, all the internal consistency and validation coefficients are all adequate. Factor analysis was carried out which produced checklist that will be used in determining teacher quality among teachers as determined by their students. A Cronbach Alpha coefficient of .86 was obtained for the checklists which indicated a high degree of acceptability (Anastasi & Urbina, 1997). The study provided norms for the scales thus; 53.94 for the checklists, meaning that scores higher than the norms indicate manifestations of adequate teacher quality, while scores lower than the means indicate manifestations of inadequate or lack of teacher quality. So, having satisfied all the requirement for scale development and validation, in terms of internal consistency, factorization and validation, the 15-item Teacher Quality Behaviour Checklist is now a measure to be used in assessing teacher/lecturers qualities in educational institutions.

Implication of the Study

The major implication of this study is that the scales have practically revealed that teachers ought to have qualities they should exhibit in the discharge of their responsibilities in the classroom and outside the classrooms. Therefore, this will help education managers, head of institutions and governments to appraise and measure the activities of teachers accruing from

their day to day interactions and encounters with their students. Finally, this can serve as criteria for evaluating lecturers in schools for an award and promotion.

Recommendations

The researchers hereby recommend this scale to education managers, head of universities, ministry of education and other stakeholders in the educational sectors to utilize this checklist in determining the quality of teacher to engage and reward.

Conclusion

To this end, it was concluded that the scales 'Teacher Quality Behaviour Checklist "was developed and designed to determine the qualities teachers ought to possess in the discharge of their responsibilities in and out of classroom and the scale is highly reliable valid. This scale be used for determining best lecturer awards in tertiary institutions.

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