

Assessment Score of University Lecturers

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Abstract

The study investigated the types of score used by University lecturers for assessing students. A sample of 6000 lecturers was randomly selected from 12 universities in Nigeria. A questionnaire indicating raw score, percentage, Z-score, T score, percentile and stanine was administered to the lecturers. Data analysis involved the use of percentage and chi-square. Results showed that most of the university lecturers use raw score in assessing students' achievement after their semester examinations. There was the need to correct measurement error by transforming raw score of students to Percentile, Z-score, and T-score. These have implications for educational measurement. Recommendations on the appropriate score for assessing students by their lecturers were made.

Keyword: Assessment, Standard scores and Education

Introduction

In Nigeria Universities, score of each undergraduate student as recorded by lecturers is the total number of points made on correct responses in a given task or set of questions. A student's final score is the addition of continuous assessment score and semester examination score. Usually, lecturers lecture students to cover their course content areas in semesters. During the semester, students are continuously assessed. The score from such assessment is recorded for each student. This forms part of the final assessment. Moreover, Students are made to take an examination at the end of each semester.

The score on continuous assessment and examination score are added to give a total score for each student. That is, whatever a student obtains is based on 100 marks or points. This is best considered as the student's raw score because it is not converted to percentage. The 100 marks should not be confused with percentage. The percentage implies converting continuous assessment score and examination score respectively to obtain the derive score for each student. In a percentage system, teachers can convert each individual student's score to a percentage and then average (Eggen & Kauchak, 1994). Again, the raw score of a student is compared with an open-ended group scores with letter grades and grade points. Those commonly used in the universities are: 70-100 = A = 5; 60-69 = B 4; 50-59 = C = 3; 45-49 = D = 2; 40-44 = E = 1; and 0-39 =F=0.

There is nothing wrong in comparing undergraduate students' scores with open ended grouped scores. Letter grades and grade points. The greatest problem is the comparing of students' raw scores with the predetermined standard. Raw scores on students' performances have no meaning except well interpreted (Gronlund, 1976; Kpolovie, 2002; Osadebe, 2003). The Federal Ministry of Education, Science and Technology (1985) has since observed this problem and then recommended the use of percentile and standard scores in schools. This also implies that Nigeria University lecturers should convert undergraduate students raw scores to percentile and T-score.

The percentile rank of a score could be obtained by totaling all the frequencies below plus half the frequency of the score and divide by the total number of cases then multiply by 100. That is, it is the percentage of score below and at the midpoint of a given score. This is in line with Angoff (1976); Aiken (1979) Joe (1995) and Ukwuije (1996). The problem associated with percentile rank is that the results sometimes indicate unequal distribution of scores. This is one of the reasons why T-score is usually recommended.

The use of T- score has been approved by Aiken (1979) and Nunnally & Bernstein (1994). The T-score is an extension of Z-score . It is necessary to convert Z-score to T- score. This ill serve users needs as well as remove negatives and decimals associated with Z-score (Osadebe, 2001). The T-score is computed as $IOz + 50$. This helps to minimize measurement errors associated with raw scores. The result will show a normal distribution of scores.

The issue at stake is whether or not the University lecturers have started implementing the Federal Government of Nigeria policy on scoring of students' performances. Hence, the true situation about the types of score used in Nigeria Universities could be determined through investigation. Therefore, this study set to investigate types of scores used by university lecturers to determine the performance of undergraduate students after their semester examination?

Research Questions

The following questions guided the study:

1. What is the type of score used by lecturers for assessing undergraduate students in Federal, State and Private Universities? What is the type of score used by male and female university lecturers in assessing undergraduate students?
2. What is the type of score used by male and female university lecturers in assessing undergraduates' students?
3. What is the appropriate score for assessing students?

Hypotheses

The null hypotheses below were tested at .05 level of significance.

HO₁ There is no significant difference between university-type of lecturers and the score used in assessing undergraduate students.

HO₂ There is no significant difference between male and female university lecturers on the type of score used in assessing undergraduate students.

Literature Review

University lecturers are expected to lecture the students in their subject areas then assess them and score appropriately. This will help determine students' achievement after teaching and learning. Assessment is the use of valid and reliable test, observation, questionnaire, interview and other instruments in obtaining information about a student's behaviour upon which judgment is made (Osadebe, 2013). The main focus of assessment is to analyze information provided by many tests, interview, observation and to combine the information to make complex and important judgments about individuals (Murphy & Davidshofer, 1988; Osadebe, 2012). Assessment has been defined as the processes and tools teachers use to make decision about students (Eggen and Kaushak, 1994). Assessment forms an integral part of university education. It serves various functions. It helps to determine students' achievement. It provides a feedback to lecturers about teaching and learning for improvement. It helps for the adjustment of students and their promotion from one class to the other. Indeed, it helps to determine students' grade and class of degrees. There are two types of assessment. There include continuous assessment and single assessment usually called examination. Continuous assessment is the type of assessment that takes place in every teaching and learning process. If a lecturer teaches the students five times, it must be five times assessment. This approach seems to be the best (Osadebe, 2009). That is, the assessment is continuous. It covers the cognitive, affective and psychomotor domains. Moreover, it should be systematic, comprehensive, cumulative and guidance oriented. This is in line with the Federal Ministry of Education, Science and Technology guidelines (1985).

The second type of assessment is the single assessment usually called examination. This is where the students are taught a given content areas within a semester. At the end of the semester, the assessment or examination is administered once. Whatever a student scores is recorded. The examination is only valid if all the content areas that were taught are presented to students for examination.

However, to obtain the overall raw score for each student, the continuous assessment score is added to the examination score. The problem here is that the lecturers recorded raw score for each student instead of transforming to percentile or standard scores, before recording. The transformation of scores helps to remove the errors associated with raw scores. It appears that most lecturers are not good in converting raw score to Percentile rank, Z-score, T-score and Stanine (Osadebe, 2001). The study has provided on how to solve the problem. The percentile rank and standard scores were used appropriately in this study. This became necessary to ensure normally distributed.

The use of percentile rank is in line with Gronlund (1985), Angoff (1976), Ebel (1999), Aiken (1979), Joe (1995), Ukwuije (1996) and Osadebe (2001). The use of Z-score and T-score are also in line with Aiken (1979), Nunnally and Berntin (1994), Kpolovie (2002) and Osadebe (2003).

Method

The sample consisted of 6000 university lecturers made up of Federal, State, and Private Universities. The sample was made up of 3000 male and 3000 female university lecturers. The instrument for data collection was a questionnaire. It was designed to obtain information from Nigeria university lecturers on the types of score for assessing undergraduate students. The instrument for data collection was constructed with a high construct and face validity. The items were analyzed with Cronbach Alpha reliability. An index of 0.81 was obtained as the

coefficient of internal consistency. The coefficient was significant at 0.05 level. This made the instrument very suitable for the study. Percentage, Z-Score and T-Score were used to analyze the research questions. Chi-square (χ^2) was applied to test the hypotheses at .05 level of significance.

The percentage used was based on the number of lecturers using the types of score (Raw score, Percentage, Z-score and T-score). The chi-square used the frequency count of the lecturers using three types of score. The percentile rank, Z-score and T-score were derived from the raw score of the lecturers in a semester examination. Percentile ranks was determine as the percentage of score at the midpoint of the given raw score distribution. The z-score is the difference between each raw score of student from the achievement test conducted by the lecturers then divided by the standard deviation of the raw score

$$\left(Z = \frac{X - \bar{X}}{SD} \right)$$

The T-score was calculated as $10z + 50$. The 10 and 50 are constant. The 10 is the standard deviation of the T-score. Z is the calculated z-score while 50 is the mean of the T-score. The T-score of each raw score was derived using the T-score formula ($T = 10z + 50$). The T-score has equal interval and help to remove the errors associated with the raw scores.

Results

The three research questions and two hypotheses for the study were presented and analyzed as follows:

Research Question One: What is the type of score used by lecturers for assessing undergraduate students in Federal, State and Private Universities?

Table 1: Percentage Analysis on Score- type of lecturers in Federal, State and Private University Assessing Undergraduate Students.

Score-Type	University-Type		
	Federal %	State %	Private
Raw Score	95	97	98
Percentage	0.5	0.3	0.2
Percentile	0	0	0
z-Score	0	0	0
T-Score	0	0	0
Stanine	0	0	0
Total	100	100	100

The above table presents the response of university lecturers on the types of score used in assessing undergraduate students in Nigeria. It was observed that 95% of the lecturers in Federal universities use raw score; 97% in State Universities; and 98% in Private universities also use raw scores. The table also indicates that 5% of the lecturers use percentage scores in Federal universities; 3% in States universities; and 2% in private universities. Furthermore, the results revealed that the scores of percentile; Z-Score. T-Score, and Stanine were not used by the lecturers in Nigerian Universities to assess the undergraduate students. Generally, the type of score often use by the lecturers is raw score.

Research Question Two: What is the type of score use by male and female university lectures in assessing undergraduate students?

Table 2: Percentage analysis on score-type of Male and Female Lecturers for Assessing Undergraduate students Undergraduate students.

Score-Type	Sex		Total
	Male %	Female %	
Raw Score	47.50	50	97.50
Percentage	2.50	0	2.50
Percentage	0	0	0

Z-Score	0	0	0
T-Score	0	0	0
Stanine	0	0	0
Total	50.00	50.00	100

N=6000

The Table II above shows that 6000 university lecturers were studied. 47.50% of the male lecturers use raw score in assessing their students while 50% of the female lecturers use same. Again 2.5% of the male lecturers use percentage while no female lecturer indicate the use of percentage. The table revealed that both male and female lecturers do not use percentile, Z -Score, T-Score and stanine in assessing the undergraduate students. It was observed generally, that the male and female lecturers use raw score in assessing their students.

Research Question Three: What is the appropriate score for assessing students score,

Table III: conversion of raw score to percentile rank, Z- score, T- score and Grade.

Raw Sore X	Frequency F	Cumulative Frequency Below CFb	Percentile Ran (PR) F/2	$\frac{x - \bar{x}}{SD}$	T-score 10z-50	Grade
75	1	59	99	1.8	68	B
74	0	59	95	1.7	67	B
73	2	57	97	1.6	66	B
72	1	56	94	1.5	65	B
71	0	56	93	1.4	64	B
70	1	55	93	1.3	63	B
69	0	55	92	1.2	62	B
68	2	53	90	1.1	61	B
67	0	53	88	1.0	60	B
66	1	52	88	0.9	59	C
65	2	50	85	0.8	58	C
64	1	49	83	0.7	57	C
63	2	47	80	0.6	56	C
62	10	37	70	0.5	55	C
61	0	37	62	0.4	54	C
60	3	34	59	0.3	53	C
59	0	34	57	0.2	52	C
58	3	31	54	0.1	51	C
57	2	29	50	0.0	50	C
56	1	28	49	-0.0	49	D
55	1	27	46	-0.1	48	D
54	0	27	45	-0.2	47	D
53	1	26	44	-0.4	46	D
52	1	25	43	-0.5	45	D
51	2	23	40	-0.6	44	E
50	5	18	34	-0.7	43	E
48	0	18	30	-0.8	42	E
47	2	16	28	-0.9	41	E
46	1	15	26	-1.0	40	E
45	0	15	25	-1.1	39	F
44	6	15	25	-1.2	38	F
43	2	13	23	-1.3	37	F
42	0	12	22	-1.4	36	F

41	1	12	21	-1.5	35	F
40	0	7	20	-1.6	34	F
39	5	6	11	-1.7	33	F
38	0	6	10	-1.8	32	F
37	1	5	9	-1.9	31	F
36	2	3	7	-2.0	30	F
35	0	3	5	-2.1	28	F
34	0	3	5	-2.3	27	F
33	1	2	4	-2.4	26	F
32	0	2	3	2.5	25	F
31	1	1	3	-2.6	24	F
30	1	0	1	-2.7	23	F

Mean (X) = 54.3 standard Deviation (SD) 11.5

The table III above shows how the raw score of students from 75 to 30 were converted to percentile, Z- score and T — score with their respective grades. These types of scores have been recommended by the Federal Ministry of Education, Science and Technology for use in schools in Nigeria. Initially the highest raw score of 75 could be graded A. But when the score was converted to T — score, the new score and grade became 68 and B. This is because the error associated with the raw score was removed with the following formulae:

$$Z = \frac{x - \bar{x}}{SD} \quad T\text{-score} = 10z + 50.$$

The SD in the formula is standard deviation or error to be removed. The percentile rank of 75 is 99. The percentile and T-score help to normalize the raw scores. The mean of the distribution is 54.3 while the standard deviation is 11.5. The 50th percentile or median is at 57 raw score. It was observed that a student with 40 raw score had grade D but after removing the error associated with raw score through Z-score and T-score, the new score and grade became 39 and F. When raw scores are converted to standard scores, a student's score could be compared with his or her group. T-score has an equal interval. This is not the case with percentile rank that has different intervals. The result implies that T-score is appropriate for university lecturers to use in assessing students. The T-score of students should be graded with A,B,C,D,E,F. and not raw scores with the letter grades as commonly used in Nigeria Universities.

Hypothesis one (HO_i): There is no significant difference between university-type of lecturers and the score used in assessing undergraduate students.

Table IV: Chi-square (X²) test analysis of University type and score-type used by university lecturer.

Score-Type	University type				Degree of freedom	Calculated X ²	Critical X ²	Decision
	Federal	State	Private	Total				
Raw saw	1940(193.3)	1940(193.3)	196(193.3)	5800	10	2.88	18.31	Accept
Percentage	100(6.7)	60(6.7)	40(6.7)	200				
Percentile	0	0						
Z-score	0	0						
T-score	0	0						
Stanine	0	0						
Total	2000	2000	2000	2000				

The Table IV above presents frequency observed and frequency expected of university-type and type of scores used by lecturers in assessing their students. The calculated chi-square value of 2.88 is less than the critical chi-square value of 18.31 at .05 level of significance. The hypothesis was accepted. The results implied that there is no significant difference between university-type and types of score use in assessing the students. All the lecturers used raw scores in assessing their undergraduate students.

Hypothesis two (HO₂): There is no significant difference between male and female university lecturers on the type of score used in assessing undergraduate students. Chi-square (X²) Test Analysis of Male and Female Lecturers on Score-type for Assessing Students.

Table V: Chi- square (X²) test analysis of male and female lacquerers on score – type for assessing students.

	Score-Type										
	Raw score	Percentage	Percentile	Z-score	T-score	Stanine	Total	Degree of freedom	Calculate d X ² value	Critical X ²	Degree of freedom
Male	2850 (292.5)	150 (7.5)	0	0	0	0	3000	5	7.88	11.07	Accept
Female	3000	0	0	0	0	0	3000				
Total	(292.5) 5850	150	0	0	0	0	0				

The Table V above shows frequency observed and frequency expected of male and female university lecturers on score-type for assessing their undergraduate students. The calculated chi-square value of 7.88 is less than the critical chi-square value of 11.07 at .05 level of significance. The hypothesis was therefore, accepted. The results maintain that there is no significant difference between male and female university lecturers on the type of scores used in assessing undergraduate students. Both male and female lecturers commonly use raw scores in assessing their undergraduate students.

Discussion

The result of the study revealed that lecturers use raw scores in assessing their undergraduate students after their semester examinations. This was found among lecturers in Federal, State and Private Universities in Nigeria. The raw scores used are often compared with the letter grades of A (70-100), B (60-69), C(50-59), D(45-49), E(40-44), F(0-39). It has been pointed out that raw score is often associated with error (Nunnally, 1986; Eggen & Kauchak, 1994). It was because of the need to correct this error in observed score that required the use of Z-score and T-score. The amount of error could be identified through the standard deviation. Percentile rank often shows unequal distribution of scores. This problem associated with the percentile rank has been pointed out by Joe (1995). Stanine in some cases require a linear transformation to ensure a normal distribution of scores (Ukwuije, 1996). Z-and T-scores could be easily normalized (Aiken, 1979).

The Z -score has negative values and in some cases, not easy to interpret. The T- score takes care of all these problems (Osadebe, 2001). It has equal intervals. It is easy to interpret with the letter grades. This reason made T -score an appropriate score for assessing undergraduate students by their lecturers. Therefore, lecturers in Nigeria universities need to convert the raw score of their students to T -score and interpret with letter grades and score intervals of A(70-100) = 5 points, B(60-69) = 4 points, C (50-59) = 3 points, D(45-49) = 2 points, E(40-44) = 1 point, F(0-39) = 0 point. All these have implication for educational measurement.

Conclusion

The assessment score of university lecturers in Nigeria has been investigated. It was found that both male and female lecturers in Federal, State and Private universities use raw score in assessing their undergraduate students.

It was pointed out that raw score of students is often associated with error and needs to be converted to other types of score.

The use of percentile rank, z-score and T-score help to normalised the raw score of lecturers. It was observed that percentile rank has unequal interval. The Z-score should be converted to T-score because of negative values associated with it. T-score has equal interval. This made the T-score more appropriate for use in the assessment of students.

Recommendations

Therefore, T-score was recommended as the appropriate type of score for assessing undergraduate students after their semester examinations. University lecturers should always use valid and reliable test in assessing students and ensure that raw score is converted to Z-score and T-score. The Federal Ministry of Education, Science and Technology in its handbook on continuous assessment recommended the use of percentile and T-score, and this should be practiced by all university lecturers. The National Universities Commission should ensure that university lecturers in Nigeria use the same standard for assessment as T-score is being recommended as an appropriate score. Lecturers should first convert raw score of students to T-score, and interpret with numerical and letter grades of. 70 and above; = A.60-69=B,50-59=C.45-49=D.40-44=E,0-39=F. A computer with a statistical package could be used by lecturers to ease the conversion of raw score to T-score and other related types of score.

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