

Determination And Estimation Of Gender Verbal Aptitude Difference Of Delta State Senior Secondary School Students

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Abstract: *The researcher developed a Verbal Aptitude Test (VAT) for Senior Secondary School (SSS) Students in Delta State of Nigeria. The design of the study was instrumentation based on the Classical Test Theory. From a population of 4,379 Senior Secondary School students in 466 Public Senior Secondary Schools in Delta State, 576 students were drawn from SSS class I & II as the sample for the study. Data were analyzed using factor analysis, Kuder-Richardson formula 20, descriptive statistics and t-test. The findings showed that the VAT items have a reliability coefficient of 0.89, valid and did not differentiate between males and females. The findings also showed that SSS students in Delta State performed below the expected mean. Based on the findings, the researcher recommended that: The State Ministry of Education Delta State should find modalities to improve on teaching and learning of English studies.*

Keywords: *Verbal Aptitude Test (VAT), Instrumentation design, Classical Test Theory, Factor Analysis, Kuder-Richardson Formula 20, Descriptive statistics, t-test, Reliability Coefficient and Expected Mean.*

I. INTRODUCTION

Students do not perform well in English in Senior School Certificate Examinations (SSCE) conducted by West African Examinations council (WAEC), National Examinations Council (NECO) and the Unified Tertiary Matriculation Examination (UTME), {See: Vanguard 17/04/2014}. Private employers of labour who engage senior secondary school (SSS) graduates as office clerks, personal assistants, store keeper and so on report of their inefficiency in writing different reports as relates to their places of work. Most employers' negative complains have to do with inability to report official issues in clear and simple English. Also those admitted to read various courses in different higher institutions do not perform well in their first year of admission, (Gladys & Joseph, 2013).

All the above may be as a result of lack of proper teaching of the subject in the SSS classes or lack of proper evaluation of their verbal aptitude (VAT) in the SSS which are rudiments and fundamental aspects of all education training as educational training is rooted in language knowledge and other skills.

SCOPE OF THE STUDY

This study was carried out for the determination and estimation of gender difference in verbal aptitude (VAT) for Senior Secondary School (SSS) students in Delta State of Nigeria. The subjects comprise of male and female students of age thirteen (13) to nineteen (19) years. The test involves the development of multiple choice verbal aptitude. The test items were taken from the general school English curriculum/secondary school syllabuses. In terms of topics, contents or themes; this verbal test is limited to English register and grammar. The English register is limited to entertainments, sports, transportation and religion, family life, building construction and government/politics, while the grammar is limited to all parts of speech (nouns, pronouns, verbs, adverbs, adjectives prepositions, conjunctions and interjections). The purpose of this study therefore was to construct a verbal aptitude test (VAT) for Senior Secondary School (SSS) students in Delta State for determining and estimating gender difference in verbal skills.

SIGNIFICANCE OF THE STUDY

The findings of this study is useful to students, teachers, counselors and school administrators, employers of labour and parents / guidance. The developed verbal aptitude test is helpful in increasing the number of students transiting into post-secondary school with confidence of performance in the first year of admission. Exposing SSS students to VAT enabled them to be conscious of their time, hence have proper time management. This developed test is a yardstick for the teachers to measure student's strengths and weaknesses in English in order to help them increase their abilities.

This developed test adopts the complete procedures for multiple choice objective tests, the rigours involved when learnt by teachers and other test constructors is a sure way to quality assurance in classroom assessment and in any external evaluation exercises.

Multiple choice test items development does not only involve test items construction, but, it also includes test items validation. Test items validation involves at least two of the followings- factor loadings, facility indices, discrimination indices and distracter indices of the test items. The study is also a guide for counselors to diagnose student's verbal aptitude with precision in order to guide and encourage their students in their educational pursuit. To the school administrators, the study is useful for them to get valid, reliable and usable relevant information about their students for administrative functions. The developed test is also useful to employers of labour who employ SSS graduates. This is because any employment made through the administration of this developed test permit the services of employees with high and efficient performance in their places of works, this is because this developed test followed all the rigours contained in a standardized tests. Therefore if all examiners/employers of labour now adopt the outcome of this study, the result is students and candidates with high quality and valid performance, appreciated in different higher institutions, the labour markets and our society as a whole. To parents / guidance the study will be a source of joy as they see their children and wards pass their examination in a single attempt and now saving the cost of paying for a second or more attempt on same examination.

RESEARCH QUESTIONS

The following research questions were posed to guide the study:

- ✓ What are the item statistics of each item of VAT?
- ✓ What are the factor loadings of each item of VAT?
- ✓ What is the reliability index of the VAT items?
- ✓ What is the difference between the mean scores of the male and female students in VAT?
- ✓ What is the mean score of student in VAT?

HYPOTHESIS

The following hypotheses were formulated and tested at 0.05 level of significance ($p < 0.05$)

- ✓ The reliability index of VAT is not greater than zero.

- ✓ There is no significant difference between the male and female students' mean scores in VAT.
- ✓ The mean score of students in VAT does not differ significantly from the expected mean.

II. RESEARCH DESIGN

The design of this study is Instrumentation/Correlation Research design for determining /estimating difference in gender verbal aptitude of Senior Secondary School students in Delta State.

AREA OF THE STUDY

This research effort enclosed all the senior secondary schools in Delta State. Delta State is a state in Nigeria which encompasses the Urhobo, Isoko, Ukwuani, Itsekiri, Izon, Enuani-Igbos and Ika ethnic nationalities. Delta state is alienated into three educational regions in line with each senatorial areas: Delta North, Delta Central and Delta South having twenty-five local Government Areas with a landmass of about 18,050km² lying approximately between longitude 50.00 and 60.45 East and latitude 50.00 and 60.30 North. It is bounded in the North and West by Edo State, in the East by Anambra, Imo, and River State, South-East by Bayelsa State, and on the Southern flank is the Bight of Benin covering about 160 kilometers of the State coastline with it's headquarter at Asaba.

POPULATION OF STUDY

The target population was all the public Senior Secondary School (SSS) students in Delta State. From this target population, the population of this study was 4,379, this includes of all the 466 SSS students in year two and three (SSS 2 and SSS 3 students) The population of 4,379 students was made up of 2,314 male students and 2,065 female students subdivided into SSS I: 2,334 students and SSS2: 2,045 students.

SAMPLE AND SAMPLING TECHNIQUES

The sample for this study was 576 SSS students. This was got through cluster sampling, purposive random sampling and stratified sampling method. The State was divided into three educational areas. From each of this areas, six senior secondary schools (three from urban and three from rural) were purposively selected. This formed a cluster of 18 senior secondary schools. The next stage was the stratified sampling of students from each of the sampled schools. In each school 4 girls and 4 boys were sampled from SS 2 and same from SS 3 respectively. This resulted in a sample of 16 students in each school. The final sample therefore was 576 students.

III. INSTRUMENT FOR DATA COLLECTION

The basic instrument used for this study was a verbal multiple choice aptitude test instrument developed by the

investigator. The test was made up of one hundred (100) test items. These test items contain four options lettered A-D, but, only one option is correct and the remaining three options served as distracters. The instrument for this research work was developed by the researcher and it is called VAT. The researcher considered the aptitude to be tested (Verbal) and the six levels of the cognitive domains and constructed a test blue print to guide the development of the instrument. The VAT was made up of one hundred and ten (110) test items which was first duly edited by the researcher and then given to specialists in measurement and evaluation in the department of Education, School of Physical Sciences (Imo State University, Owerri) for face and content validation. Subject to recommendations from the specialists' validation, some of the items which made up the test instrument were rejected and others introduced. After this a second appraisal and editing instrument was made, the instrument was then pretested on a demonstrative sample of one hundred (100) students on the basis of which more items were rejected, revised or left in their original form. At this stage the researcher selected the final form of the test based on the result from the pretested items. The final selected items were comparable to the conditions set out in the test blue print. These final carefully chosen items were again given to the persons that initially validated the work for certification before administration.

IV. RELIABILITY OF THE INSTRUMENT

Since the items are of the multiple choice form, the responses to each item were scored dichotomously, in this wise, the Kuder-Richardson formula-20 {K-R₂₀} was used to compute the reliability coefficient indicating the internal consistency. The instrument was given to two different raters for independent rating and their ratings correlated using Person Product Moment Correlation. Using two raters the raters' reliability coefficient of this instrument is 0.89

V. METHOD OF DATA COLLECTION

In administering the instrument, the researcher personally distributed the test items to the subjects/respondents. The subjects were timed and a total of fifty minutes was allowed for the test. Students were asked to stop at the stipulated time and testees response scripts were retrieved by the researcher. In scoring the test, each correctly answered item was scored one (1) mark or one (1) point.

VI. METHOD OF DATA ANALYSIS

Research question 1, 2 and 3 were answered using Factor Analysis. Research question 4 was answered using Kurder Richardson formula 20 (K-R₂₀) and Research question 5 was answered using descriptive statistics. Hypotheses 1 and 2, were tested using t-test while the determination of Expected Mean Scores was done by finding the average of the maximum possible score in the test or half the maximum possible score in the test (see Katie, 2017).

ANALYSIS AND RESULT OF RESEARCH QUESTIONS

RESEARCH QUESTION ONE: What are the item statistics of each item of VAT?

From the analysis of data collected the 39 good items of VAT have item characteristics or facility indices range from 0.37 to 0.61 and discrimination indices range from 0.30 to 0.47. These ranges are the indices of validity of the VAT items.

ANALYSIS AND RESULT ABOUT RESEARCH QUESTION 2.

RESEARCH QUESTION 2: What are the factor loadings of each item of VAT?

From the analysis of data collected, the factor loadings of the VAT items range from 0.72 to 0.95. These ranges are again the indices of validity of the VAT items

ANALYSIS CONCERNING RESEARCH QUESTION 3 AND HYPOTHESIS 3

{RQ 3: What is the reliability index of the VAT items?}

{Ho 3: The reliability index of the VAT items is not greater than zero.}

n_o	n_o of	\bar{x}	S	α	tcal.	t-tab.	Decision
39	312	60.96	9.63	0.89	26.11	2.02	reject

Note: S = Standard deviation, α = K-R20 reliability

Table 1: Reliability index of VAT

With reference to table 1 and the analysis of data collected, the 39 items of VAT with 312 student respondents in the upper 27% and lower 27%, the table 1 showed item mean of 60.96 a standard deviation (S) of 9.63 with correlation coefficient of 0.89. The t-cal. is 26.11 and the t-tab. is 2.02. Since the t-cal is greater than t-tab, the null hypothesis (Ho1) is rejected. The alternative hypothesis (Ha 1) which states: The reliability index of VAT items is greater than zero is accepted.

ANALYSIS CONCERNING RESEARCH QUESTION 4 AND HYPOTHESIS 4:

{RQ 4: What is the difference between the mean scores of the male and female students in VAT?}

{Ho 4: There is no significant difference between the male and female students' mean scores in VAT}.

n_i	n_s	$\bar{x}_m - \bar{x}_f$	S	α	tcal.	ttab.	Decision
39	288	0.32	6.63	0.89	0.29	2.02	accepted

n_i = number of items, n_s = number in each gender,
 \bar{x}_m = mean of males
 \bar{x}_f = mean of females
S = standard deviation,
 α = alpha reliability

Table 2: Mean score difference of male and female students in VAT

With reference to table 2 and the analysis of data collected, the males and females in the verbal aptitude test have a mean difference of 0.32, the coefficient of correlation is 0.89, t-cal. is 0.29 while the t-tab. is 2.02. Since the t-tab is greater than t-cal, the null hypothesis (Ho 1) is therefore accepted. It states: there is no significant difference between the male and female students' mean scores in VAT.

ANALYSIS CONCERNING RESEARCH QUESTION 5 AND HYPOTHESIS 5

{RQ 5: What is the expected mean score of students in VAT?}

{Ho 5: The mean score of students do not differ significantly from the expected mean}

n	μ	\bar{x}	tcal	ttab.	Decision
39	19.5	22.94	3.13	2.02	reject

n = number of items, μ = expected mean, \bar{x} = actual mean

Table 3: The expected mean and actual mean scores of students in VAT

With reference to table 3 and the analysis of data, the 39 items of VAT have an expected mean of 19.5 and an actual mean of 22.94, the t-cal. is 3.13 and the t-tab. is 2.02. Since the t-cal is greater than t-tab, the null hypothesis is rejected. The alternative hypothesis which states that; the mean scores of students in VAT differ significantly from the expected mean is therefore accepted.

VII. SUMMARY OF THE FINDINGS

Based on the results summarized above, the following findings were gotten from the study:

- ✓ The scores obtained from the thirty-nine (39) good items of the Verbal Aptitude test are valid and reliable.
- ✓ There are no significant difference in the performance of male and female students in verbal skills
- ✓ Delta State Senior Secondary School Students Verbal Aptitude is lower than expected.
- ✓ Verbal Aptitude Test (VAT) does not differentiate between genders.

EDUCATIONAL IMPLICATIONS OF THE FINDINGS

The implication of VAT is that it does not discriminate between genders; therefore VAT is able to provide a non-bias selection of Delta state SSS students.

RECOMMENDATIONS

Delta State Ministry of Education should improved on teaching and learning of English Studies.

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