



## Research Article

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# Undergraduate Students' Achievement in GST 101 Using Corrected Scores and Uncorrected Scores

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### Abstract

*Students' dependence on guessing so as to pass their examinations prompted this study on Undergraduate Students' Achievement in GST 101 using Corrected Scores and Uncorrected Scores. The study involved the entire students of the first year undergraduate students of the Department of Guidance and Counselling, Delta State University, Abraka, Nigeria. The study adopted a descriptive survey design. Four research questions and three null hypotheses guided the study. Scores obtained by the subjects in the 2018/2019 GST 101 examination were used in the study. Two sets of scores namely, uncorrected scores and corrected scores were analysed using independent samples t-test. The result showed that students' mean achievement in GST 101 differed significantly with respect to uncorrected and corrected scores. Students had a higher mean score in the uncorrected scores. Relating gender separately to corrected and uncorrected scores, the result produced no significant difference. It was concluded that the use of correction formula drastically reduced students' original scores in GST 101. It is hereby recommended that correction formula be introduced in public examination to forestall guessing in examinations.*

**Keywords:** Correction Formula; Guessing; GST 101; Scores

## 1. Introduction

Of all the objective tests used by teachers and examination bodies, the most commonly used is the multiple-choice items. This item format appears to be the most preferred (Naibi & George, 2014, Murayama, 2009). The preference for this format can be attributed to its merits. Some of the merits are the objectivity and uniformity in scoring (Anastasi & Urbina, 2017), applicability to a large group of students (National Teachers' Institute, NTI, 2000) and no bluffing by testees (Egbule, 2008). Some of the shortcomings of multiple-choice items include lack of opportunity for test-takers to improve on their writing skills (NTI, 2000) and susceptibility to examination malpractice and guessing (Murayama, 2009; Ossai, 2019). Since the main purpose of measurement is to provide accurate and relevant information to assist teachers and students in wise decision-making in relation to the success of national educational goals and objectives, Okorodudu, 2012, p. 4, examination malpractice

and guessing pose a very big threat to the validity and reliability of test scores.

An examinee may resort to guess-work when he or she finds a particular test item difficult. Hence, guessing refers to a test-taker choosing any of the responses at random when he or she does not have any idea about the correct option (Kubinger, Holocher-Erti, Hohersinn & Freebort, 2010, cited by Ossai, 2015). A student that has a good knowledge of the concept being examined may not resort to guessing. Rather he or she will critically consider the available options in relation to the stem. In this regard, there is a need for distracters to be plausible in constructing multiple-choice questions (Naibi & George, 2014). According to the authors, all the options in a multiple-choice question should be homogenous with regard to the knowledge being tested.

Making the distracters look similar is an exercise that makes the construction of multiple-choice items difficult and time-consuming. This depends on the ability of the test-constructor. Guessing, earlier mentioned is a factor that is inherent on the testee. Where guessing is involved in testing, then the test scores cannot truly represent the ability of the examinee.

The true score of an individual is shown algebraically (Ubulomi & Amini, 2012) as  $X_o = X_{mf} \pm X_c$ , where  $X_o$  is observed score,  $mf$  represents the true score of an individual while  $X_c$  is error score. From this equation, guess-work comes under  $X_c$ , besides other measurement errors.

Research has shown that women respond significantly to fewer items compared to men when there was a sanction for an incorrect answer (Baldiga, 2012). This corroborates the report of Sinai and Ben-Shakhar (1991) that women had a greater tendency to omit items compared to men. The report, however, showed no gender disparity in achievement in multiple-choice tests.

The study of Ubulomi and Amini (2012) was silent on gender. The scholars studied Determining the Effect of Guessing on Test Scores. A sample of 20 pupils was drawn from a total population of 100 primaries six pupils in Calabar, Nigeria. Using the classical test theory pattern, ten multiple-choice items from chemistry were administered to the pupils. The corrections for guessing formula  $X = R - \frac{W}{n-1}$  was used. It was given by the authors, that  $X$  is the correct score,  $R$  is the number of items answered correctly the number of items answered incorrectly while  $N$  represents the number of options. The result showed that the pupils guessed because they did not possess the ability demanded by the items. It was suggested that examinees should be given simple and unambiguous instructions to avoid guessing; also correction for guessing formula should be used in assigning scores to examinees' responses.

While the foregoing study was gender-neutral, Ossai (2015) investigated 'Gender differences in guessing tendencies in mathematics. A sample of 110 students (56 males and 54 females) was drawn, through purposive sampling technique, from final year secondary school students in Delta North Senatorial District, Delta State, Nigeria. A 50-item multiple-choice test administered by the West African Examinations Council (WAEC) in May/June 2010 was the instrument used in the study. The independent samples t-test analysis showed that there was no significant difference in the mean guessing score of male and female students in the Mathematics test. This result supports the finding of Baldiga (2012) that no gender disparity existed in the multiple tests administered to the subjects chosen.

The study by Ossai (2015) also falls in line with the inconsistency in reports concerning gender disparity in Mathematics achievement (Brandy & Eisten, 1995); Kadiri, 2004). This scenario appears to characterize another core subject in Nigeria's educational system, English Language. Several studies (Babalola & Oyinloye, 2012; Olanipekun, 2015; Obiefuna & Oruwari, 2015; Fan, Umaru & Nseendi, 2016; Ossai, 2019) point to the fact that the mean achievement of students in the English language did not differ significantly by gender. However, the mean achievement of the female subjects was higher in all the researches.

These researches contradict the one conducted by Fakaye (2010). Fakaye investigated 'Students' Personal Variables as Correlates of Academic Achievement in English as a second language in Nigeria. From a population of 2000 second year (SS II) students in colleges located in Ikorodu North and South Local Government Areas of Lagos State, a sample of 400 students were drawn. Existing scores,

questionnaire and ability test were used to collect data. Among others, the result showed that achievement in the English Language differed significantly by gender. Male students performed better than their female counterparts. Apart from the gender difference, this study has also shown that male students out-performed females, contrary to the earlier researches reported.

This paper focuses on undergraduate students' achievement difference in relation to the uncorrected score and corrected score. Specifically, undergraduate students' scores in Use of English and Library, GST 101, offered in Delta State University, Abraka will be studied. GST 101 is a core course that is meant to equip fresh students with linguistic skills and skills required in the use of the library (Mowarin & Uwaifo, 2003). Such skills prepare students for the academic work ahead of them.

The choice of this course as the focus of this study was informed by the poor performance of students in the English Language at the secondary school level and the use of English in higher institutions. The percentage performance of candidates at credit level and above in the West African Senior School Certificate Examination, WASSCE (May/June) in at least five subjects including English Language and Mathematics were 25.99, 23.71, 30.91, 38.81 and 36.57 for 2009, 2010, 2011, 2012 and 2013, respectively. The credit passes were 31.28%, 31.28%, 52.97%, 59.22% and 49.98% respectively for 2014, 2015, 2016, 2017 and 2018 (Asuru, 2019). This shows that performances have been very poor from 2009 to 2015. The situation improved in 2016 and 2017 only to fall back again in 2018. The author held that the situation is the same in our institutions of higher learning as the same candidates graduate to that level. The result, according to the author, many University graduates parade certificates they cannot defend. Examination Ethics Project in Nigeria, cited by Asuru (2017) reported that examination malpractice is common in Nigerian schools.

Also showing poor performance in the standard of English in our schools are the studies conducted by Popoola and Olubunmi (2013) and Olanipekun (2015). Popoola and Olubunmi (2013) conducted a study on 'A correlated analysis of students' SSCE grade and performance in first year Use-of-English: A case study of Fountain University, Oshogbo, using a sample of 194 students drawn from first-year students of Fountain University, Oshogbo. The data collected were subjected to statistical treatment using the Product Moment Correlation co-efficient. Among others, the result showed that there was no correlation between SSCE grades and scores obtained from the examination on Use of English. This implies that SSCE grades do not truly reflect the performance of students at that level.

The study by Olanipekun (2015) was on Analysis of Students' Academic Performance in General English at Kwara State College of Education (Technical), Lafiagi, Nigeria. The study sampled 286 students from all the students who took General English IV (GSE 221) in the 2012/2013 session in the college. The use of t-test and descriptive statistics showed that students' performances in the course were very poor. However, the result was not gendered specific. In line with the work of Popoola and Olubunmi (2013), the study also shows that students in our tertiary institutions are deficient in the English Language.

Apart from the poor performance of students reported in some of the reviews, nearly all the works reviewed showed that there was no gender disparity on students' achievement in the English Language in Nigerian schools. The present study by this researcher is on differences in undergraduate students' achievement in GST 101, with specific reference to gender, in order to confirm or contradict earlier studies. The study differed from others because it made use of uncorrected scores and corrected scores in relation to guessing.

### 1.1 Statement of the Problem

The performance of candidates in the English language in the Senior School Certificate Examination is not encouraging. Undoubtedly, this affects the number of candidates gaining admission into institutions of higher learning in Nigeria. The reason for this is that the English Language is a core requirement for admission into tertiary institutions and universities.

Even in institutions of higher learning, the standard of spoken and written English is poor. This

is ascribed to the fact that ill-equipped graduates of secondary schools transit into higher institutions, ill-prepared for academic activities. The result is poor performance in the various courses/faculties of studies. In particular, the performance of candidates in the Use-of- English is discouraging. A lot of students take the course as a carry-over course.

Students of Delta State University, Abraka fall into this category of students. Every year, many students fail GST 101; they come back to take the course again. It is good to find out the nature of their little performance. Is performance gender-specific or is it due to guessing? These will be addressed using the corrected score and uncorrected score.

### 1.2 Research Questions

The study was guided by the following research questions:

1. What is students' mean achievement in GST 101 using uncorrected score?
2. What is students' mean achievement in GST 101 using a corrected score?
3. What is students' mean achievement in GST 101 by gender, using
  - a. uncorrected score?
4. What are students' mean achievement in GST 101 by gender, using the corrected score?

### 1.3 Hypotheses

The following null hypotheses directed the study:

1. Students' mean achievement in GST 101 does not differ significantly due to corrected score and uncorrected score.
2. Students' mean achievement in GST 101 does not differ significantly by gender when uncorrected scores are used.
3. Students' mean achievement in GST 101 does not differ significantly by gender when corrected scores are used.

## 2. Methodology

The study employed an *ex-post facto* research design. Four research questions and three null hypotheses were generated for the study. The entire population of 87 first-year undergraduate students were drawn from the Department of Guidance and Counselling, Delta State University, Abraka. Considering the size of the population, the researcher decided to involve all the subjects in the study. Scores from GST 101 examination conducted by the General Studies Directorate in the 2018/2019 session were used in the study. The maximum scores were one hundred, resulting from a 100-item instrument. The least pass mark was forty-five per cent. Correction for guessing formula was applied. Thus, there were two sets of scores: uncorrected scores and corrected scores. The research questions were answered using meanwhile the null hypotheses were tested at .05 level of significance using the independent samples t-test.

## 3. Results

The research questions and hypotheses were respectively answered and tested as follows:

**Research question one:** What is students' mean achievement in GST 101 using uncorrected score?

**Table 1:** Mean and standard deviation of students' achievement in GST 101 using the uncorrected score

	N	Mean	Standard Deviation
Score	87	54.79	8.326

Table 1 showed that students' mean achievement in GST 101 using uncorrected scores is 54.79; this score represents a 'C' grade which is an average score in the university grading system.

**Research Question two:** What is students' mean achievement in GST 101 using the corrected score?

**Table 2:** Mean and Standard deviation of students' achievement in GST 101 using the corrected score

	N	Mean	Standard Deviation
Score	87	38.69	11.200

Table 2 showed that students' mean achievement in GST 101 using corrected scores is 38.69; this score represents and 'F' grade (fail) in the University's grading system.

**Research Question three:** What is students' mean achievement in GST 101 by gender using uncorrected score?

**Table 3:** Mean and Standard deviation of students' achievement in GST 101 by gender using uncorrected score

Sex	N	Mean	Standard Deviation
Male	33	53.61	8.306
Female	54	55.52	8.332
Total	87	54.79	8.326

Table 3 showed that students' mean achievements in GST 101 by gender using uncorrected score are 53.61 and 55.52 respectively for male and female students. They both represent a 'C' grade (average) in the University's grading system.

**Research Question Four:** What is students' mean achievement in GST 101 by gender using the corrected score?

**Table 4:** Mean and Standard deviation of students' achievement in GST 101 by gender using the corrected score?

Sex	N	Mean	Standard Deviation
Male	33	38.09	11.114
Female	54	40.67	11.243
Total	87	39.69	11.200

Table 4 showed that students' mean achievements in GST 101 by gender using corrected score are 38.09 and 40.67 for male and female students respectively. They both represent fail in the University's grading system.

**Hypothesis one:** Students' mean achievement in GST 101 does not differ significantly due to corrected score and uncorrected score.

**Table 5:** Independent samples t-test of students' mean achievement in GST 101 due to corrected scores and uncorrected scores

Group	N	Mean	SD	df	t	sig.
Corrected Score	87	39.69	11.200			
Uncorrected Score	87	54.79	8.326	172	- 10.094	.006

Table 5 shows that students mean achievements in GST 101 with respect to corrected scores and uncorrected scores are respectively 39.69 and 54.79; the standard deviations are 11.200 and 8.326, respectively, while the t-value is - 10.094; testing at an alpha level of .05,  $df = 172$  and  $P = .006$ , the null hypothesis of no significant difference is rejected since the p-value is less than the alpha level of significance. This implies that students' mean achievement in GST 101 differs significantly due to corrected score and uncorrected score. The mean achievement of uncorrected scores is greater.

**Hypothesis two:** Students' mean achievement in GST 101 does not differ significantly by gender when uncorrected scores are used.

**Table 6:** Independent samples t-test of students' mean achievement in GST 101 by gender using uncorrected scores.

Group	N	Mean	SD	df	t	sig.
Male	33	53.61	8.306	85	- 1.040	.692
Female	54	55.52	8.332			

Table 6 shows that students' mean achievements in GST 101 by gender using uncorrected scores are 53.61 and 55.52 for males and females, respectively. The t-value is - 1.040,  $df$  is 85 while the standard deviations are 8.306 and 8.332 for males and females, respectively. The p-value is .692; testing at an alpha level of .05, the null hypothesis of no significant difference is upheld since the p-value of .692 is greater than the alpha level of significance. This implies that students' mean achievement in GST 101 does not differ significantly by gender when uncorrected scores are used.

**Hypothesis three:** Students' mean achievement in GST 101 does not differ significantly by gender when corrected scores are used.

**Table 7:** Independent sample t-test of students' mean achievement in GST 101 by gender using corrected scores.

Group	N	Mean	SD	df	t	sig.
Male	33	38.09	11.114	85	- 1.041	.683
Female	54	40.67	11.243			

Table 7 shows mean achievement by gender in GST 101 as 38.09 and 40.67 respectively for males and females, using corrected scores. With  $df$  of 85, a p-value of .683 and t-value of - 1.041, the standard deviations are 11.114 and 11.243 for males and females, respectively. Testing at an alpha level of .05, the null hypotheses of no significant difference is retained given that the p-value is small than the alpha level. Thus, students' mean achievement in GST 101 does not differ significantly by gender when corrected scores are used.

#### 4. Discussion of Findings

Students' mean achievement scores in GST 101 with respect to research questions one and two are 54.79 and 38.69, respectively. These scores represent the uncorrected score and the corrected score, respectively. A closer look at the difference in the scores shows that students' achievement in GST 101 declined by as many as 16.10 marks. That is, the uncorrected score exceeded the corrected score. The difference between the two scores amounted to 29.4% of the uncorrected score. This questions the validity and reliability of the scores obtained by the research participants.

The hypothesis test of no significant difference between the two mean scores showed that students' mean achievement in GST 101 differed significantly on the basis of uncorrected score and corrected score. The implication of this result is that many of the candidates guessed because they did not have a good knowledge of the concepts tested. When guessing becomes a factor in test

administration, then candidates' true achievement cannot be ascertained. The result from the hypothesis test is in line with Ubulomi and Amini (2012) who reported that some primary school pupils resorted to guess-work in the science test given to them because they lacked the knowledge of the ability expected by the examiner. In addition, one can infer that the distracters in the multiple-choice items were plausible. That is, they functioned very well by attracting those with little or no idea about the knowledge examined. This corroborates the works of Naibi and George (2014) who held that all the options in a multiple-choice test should be homogenous with regard to the knowledge being examined.

With respect to gender, research question three showed that students' mean achievement scores in GST 101, using uncorrected scores, were 53.61% and 55.52% for males and females, respectively. Similarly, for corrected scores, research question four indicated that the mean achievement scores for males and females were 38.09% and 40.67%, respectively. The mean scores for both genders (when the scores were not corrected) were average scores ( a 'C' grade) in the University's grading system. When the scores were corrected, both groups failed the course, according to the university's grading pattern. With respect to gender and uncorrected scores, the null hypothesis was retained. The implication of this result is that gender has no influence on uncorrected scores. Both genders must have received equal attention in the classroom. The result agrees with the reports of Olanipeken (2015); Umaru and Nseendi (2016); Ossai (2019) that students' achievement in the English language did not differ significantly by gender. However, Fakaye (2010) observed that males did better than females in the English Language. This contradicts the present finding.

The hypothesis test based on gender and corrected scores showed that mean achievement in GST 101 did not differ significantly. The implication of this result is that no gender was given preference in the classroom. This is in keeping with Nigeria's National Policy on Education (Federal Government of Nigeria, FGN, 2014), which specifies that education every Nigerian child should have equal access to education. This finding is in line with that of Ossai (2015) who discovered that students' mean guessing score in mathematics did not differ significantly by gender. The finding also agrees with Baldiga (2012) who held that there was no gender disparity in students' responses to multiple-choice items. The result, however, is at variance with the position held by Sinai and Ben-Shakhar (1991) that women were more willing to omit items in objective test items compared to men. In other words, women are unwilling to do guess-work in their responses.

It is noteworthy from the results of this study that gender and the separate variables, corrected and uncorrected scores, both resulted in the null hypotheses being upheld. This further adds to the larger group of scholars who have reported that gender disparity does not exist in academic subjects such as English language and mathematics.

#### 4.1 Conclusion

Many of the research participants obtained their GST 101 scores through guessing. This is evident from the big difference between the uncorrected scores and corrected scores. Thus, the scores do not truly reflect the ability of the students. However, students' gender played no significant role in the two sets of scores.

#### 4.2 Recommendations

The use of the correction formula should be encouraged in public examinations. This will make test-takers guard against guess-work in examinations.

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