GENDER DIFFERENCES IN STUDENTS' PERFORMANCE IN HISTORY AT SENIOR HIGH SCHOOLS IN CAPE COAST

Charles Adabo Oppong
Department of Arts & Social Sciences Education
University of Cape Coast, Ghana

ABSTRACT

Gender differences in scholastic achievement test as a function of method of measurement were examined by comparing the performance of male and female history students in three senior high schools in the Cape Coast Metropolis on essay and multiple-choice test items. The T-test for testing difference in means of two samples was used for the analysis. Female students performed significantly better than male students on essay test items. However, there was no statistical difference on multiple-choice items between females and males. It is clear that female students do not have any problem with examination forms; they perform better in all forms of examination. Therefore, it is suggested that ideally the most appropriate test-type for examinations is the multiple-choice test as it favours both genders. Nonetheless, the essay type of examination has its own merits.

Introduction

Concerns about academic performance with respect to males and females have generated a considerable interest in the field of educational testing over the years. Differences in academic achievement of the two genders are likely to contribute disparities in the allocation of cognitive roles in the world of work. Much research on gender differences in testing relate to the type of examination used in educational testing. Essay and multiple-choice type tests are the most popular item formats used in educational institutions around the world (Tozoglu, Gurses, & Dogar, 2004).

Essay and multiple-choice tests are complementarily used to assess students' learning, as each form has its unique advantages as well as limitations. In other words, essay and multiple-choice test items can complement each other to help students develop important cognitive abilities. It appears that the advantages and limitations are associated with gender as most studies on students' performance on the forms of test type tend to be gender bias. Nonetheless, though educational psychology literature that deals with general differences in intellectual and cognitive abilities indicate that, overall, no significant gender difference is apparent in measures of general intelligence (e.g. Gage & Berliner, 1988; Maccoby & Jacklin, 1974), studies on testing suggest that male and female students perform differently on essay tests and multiple-choice test (e.g. Bridgeman & Morgan, 1994). The last two decades have witnessed an increase in studies applying concepts of gender or feminist perspectives to test. Most studies report that females tend to do better in essay type tests than males, and males also perform better in multiple-choice items than females. In different subject areas in public examination in Britain, males have performed better than females on multiple-choice tests compared to their performance on essay-type tests (Harding, 1980; Murphy, 1982). A possible explanation of this finding could be located in the works of Ben-Shakhar and Sinai (1991) and Du Plessis and Du Plessis (2009, who indicated that males were more willing to guess compared to females. Hirschfeld, Moore and Brown (1995) confirmed this statement by stating that more confident students will take more risk and are more likely to guess on multiple-choice examination. Given that females are less confident than males (Hirschfeld, et. Al., 1995), it can be concluded that they are less willing to guess because of penalties that most of the time go with guessing

Bolger and Kellaghan (1990) investigated the impact of gender for three subjects, namely, English, Irish and mathematics. They found that male students performed better on the multiple choice examinations and female students on essay examinations. Bridgeman and Lewis (1994) found similar results for the Advanced Placement (AP) examinations in American and European History, English Language and Biology. Male students were better on all multiple choice examinations, although the difference was not always significant. Female students were better on the essay examinations in European History and English Language, but these results were not significant.

Bridgeman (1991) also investigated basic skills test in New Jersey and found that female students outperformed male students on the essay examination, but he found no gender difference on the multiple choice examination. In economics education literature, this relation is found by Ferber, Birnbaum and Green (1983), Becker and Johnston (1999), Krieg and Uyar (2001) and Du Plessis and Du Plessis (2009). Some studies have also found a positive relation between being a woman and performance on essay examinations (e.g. Lumsden & Scott, 1987; Williams, Waldauer and Duggal, 1992; Harris and Kerby, 1997; Becker and Johnston, 1999; Du Plessis and Du Plessis, 2009).

Ferber et al. (1983), however, found out that not only did male students outperformed female students on multiple choice but also on essay examinations. For a course on Principles of Economics, male students outperformed female students on the essay section of the examination, while for a course in Economics Statistics, the female students performed significantly better than male students on the essay section of the examination. In general, most of the researchers found that female students significantly outperformed male students on the essay examination, while the better performance of male students on the multiple choice examination was not significant.

In accounting, Gul, Teoh and Shannon (1992) investigated the impact of gender on performance on multiple-choice test. They reported no significant gender effects. Lumsden and Scott (1995) considered the economics examination of the Chartered Association of Certified Accountants (ACCA). They reported an advantage for males on the multiple choice part of the examination. For the essay part, they did not find a significant gender effect. Holley and Jenkins (2006) did not also find a significant gender effect neither on essay nor on multiple choice questions. One of the most recent papers that address this topic is Bible et al. (2008). They only reported a significant advantage for female students on the essay part of the examination. There was no regression performed to examine the effect of gender on the multiple choice part.

From the above review, it is not clear that the information on the influence gender has on students' performance on multiple choice and essay examinations is fuzzy. Some studies reveal that females do better than males on essay type of examination and males also do well on multiple-choice items. Other researchers also reported findings contrary to this observation. This study addresses this issue again within the context of a new setting and a different. Specifically, the study contributes to the issue of gender and testing by giving evidence among Ghanaian Senior High Schools History students, as previous studies tend to focus on the developed countries of America and Europe and other subjects other than history. The current study, therefore, investigates whether gender has an impact on the performance of history students in some Ghanaian Senior High schools. To find this, the following hypotheses have been formulated based on assumption in previous literature.

Hypotheses

H1: Female students perform better than male students in history essay examination.
H2: Male students perform better than female students in history multiple-choice examination.

Research Method

The respondents for this research were third year male and female history students of three senior high schools in the Cape Coast Metropolis in Ghana namely, Christ the King Academy, Holy Child College and Ghana National College. A simple random sampling technique was used to select 54 of the third year students in all the selected schools. The reason for using Form Three students is that there was the tendency that every student, irrespective of gender and other factors, will take the examinations with a high degree of seriousness since they were preparing to write their final examination. These respondents were made to take a teacher-made test designed by the researcher on topics that they have been treated from the recommended history textbook for Senior High Schools in Ghana. A statistical test of difference in two means was used. The T-test for testing difference in means of two samples reveals difference between two independent samples. This statistical test is chosen for this study because the two groups of respondents are independent.

Limitation of the Study

This study does not look at gender performance on students' final examination results. It could possible that the

findings of the study would be otherwise if students' final examination was used instead of conducting a teacher made test. That is, there is the likelihood that students did not take the test in this study serious. However, the use of only teacher-made test does not undermine the objectivity of this study, but future research could attempt a larger scale study to include the use of standardized test data.

Results

The results are shown in Tables 1 and 2 below. They are presented in the order of the hypotheses formulated.

Essay Test

Hypothesis: Female students perform better than male students in history essay examination.
This hypothesis was intended to ascertain the difference in performance between males and females regarding essay test. To find this, the independent sample t-test was employed to test for the difference and also find out how significant the difference is.

Table 1: Independent t-test on the difference in performance between males and females regarding essay test

Gender	N	M	SD	**T**	**d**f	Sig.
Male	24	11.667	3.773	-2.597	52	0.012**
Female	30	14.567	4.305			

** Significance level .05

A test for differences using the independent sample t-test was used to determine if there is any statistical significance the difference in performance between males and females regarding essay test in history. The descriptive statistics obtained, as shown in Table 1, indicate that female history students on the average performed better (M = 14.567) than male history students (M = 11.667). The Levene's Test for Equality of variances was used to determine whether the difference in the performance between males and females regarding essay test is significant. The test indicated that the variances for the two groups – male and female history students were equal (F = .092, sig. > 0.05), hence a test for equal variances was used.

From Table 1, the mean of female history students (M = 14.567, SD = 4.305) is statistically significantly higher (t = 2.597, df = 52, two – tailed probability < 0.05) than the mean of male history students. This implies that there is significance the difference in performance between males and females regarding essay test in history. As captured in the Table 1, the difference was in favour of females, meaning that they performed better than males in essay test. This is evident in the fact that the mean scores recorded were 11.6667 and 14.5667 for males and females respectively. The conclusion is that females do well in History essay test than males.

Multiple-choice Test

Hypothesis: Male students perform better than female students in history multiple-choice examination.
This hypothesis was formulated to find out whether differences exist in the performance of male and female History students. The results of this are presented in Table 2.

Table 2: Independent t-test on the difference in performance between males and females multiple-choice test

Gender	N	M	SD	**t**	**d**f	Sig.
Male	24	44.583	10.689	.467	52	0.642
Female	30	43.333	8.980			

*Significance level .05

A test for differences using the independent sample t-test was used to determine if there is any statistical significance the difference in performance between males and females regarding multiple-choice tests in history. The descriptive statistics obtained, as shown in Table 2, indicate that male history students on the average performed better (M = 44.583) than female history students (M = 43.333). The Levene's Test for Equality of variances was used to determine whether the difference in the performance between males and females regarding multiple-choice tests is significant. The test indicated that the variances for the two groups – male and female history students were equal (F = .274, sig. > 0.05), hence a test for equal variances was used.

From Table 2, the mean of male history students (M = 44.583, SD = 10.689) is not statistically significantly higher

(t = .467, df = 52, two – tailed probability > 0.05) than the mean of female history students. This implies that there is no significant difference in performance between males and females regarding multiple-choice tests in history. The null hypothesis is therefore accepted, meaning that there is no statistically significant difference between the performance of males and females when it comes to multiple-choice test. However, as reported in the Table 3, males performed better than Females in multiple-choice items though the difference is not statistically significant. This is evident in the fact that the mean scores recorded were 44.53833 and 43.3333 males and females respectively.

Discussion

This study considered gender differences in Ghanaian Senior High School students' performance in History in relation to essay test and multiple-choice test items. The results of the analyses showed that females perform better than males in essay-type test. This finding is consistent with many previous studies (e.g. Bible et al., 2008; Bridgeman, 1991; Bolger & Kellaghan, 1990; Harding, 1980; Murphy, 1982) and contradicts others (e.g. Ferber et al., 1983). The majority of the studies in the literature on testing indicate that females do better than males when it comes to essay examinations. The better performance of the female students can be explained by a number of possible reasons.

The first one is the fact that females perhaps do well in novel situations than males, as reported by Kimbell (1989). That is, females have natural instincts towards fine motor activities such as reading and writing. The second reason for the better performance of the female History students could be that they might be more motivated to study and perform well than male History students. Collapsing the two reasons, it can be concluded that females are more motivated to study courses that involve reading than males and this is mostly influenced by their interest in reading (Delaere & Everaert, 2011).

Another assumption could be that females generally use the English Language more often in their communication than males, hence, their ability to perform better in examinations requiring the use of the English Language in writing the responses. Thus, students who are proficient in English are more likely to score high marks in examination requiring writing than in multiple-choice test. A final possible explanation for the superior performance of the female History students is the fact that they may have a higher writing ability than their male counterparts. Maccoby and Jacklin (1974) put it that males outperform females in mathematical and spatial subjects, and that females have greater verbal abilities which help them when it comes to writing. It can also be argued that, some essay questions in History examinations are gender biased. It means that two persons, with the same ability, have a chance to answer a question correctly depending on their gender or other personal characteristics. This could explain the superior performance of the female students. There is the possibility that the group which scored high on the essay questions could be successful in their college history courses than students at the opposite side.

Regarding the multiple-choice test, Table 4 shows that there is no significant difference between the performance of male and female students, even to the extent that the mean performance of both category of students was almost the same. This implies that the performance of males and female on multiple-choice test in this study is somewhat equal and that differences only exist in their mean scores. This finding conflicts some earlier studies (Bridgeman, 1991; Gu et. al., 1992) and also corroborates the findings of others (e.g. Harding, 1980; Murphy, 1982). The literature is in favour of males because females are more risk averse than males and that the latter guess when it comes to multiple-choice test. This could have resulted in male students guessing more than their female counterparts and doing so correctly (Delaere & Everaert, 2011). This conclusion is supported by Ben-Shakhar and Sinai (1991) and Du Plessis and Du Plessis (2009), as they all found that males were more willing to guess compared to females. Hirschfeld, Moore and Brown (1995) confirmed this statement by stating that more confident students will take more risk and are more likely to guess on multiple-choice examination and that females are less confident than males.

Another possible reason could be found in Skinner's (1983) that females changed their answers on multiple-choice tests twice as often as males. He suggested that this behaviour may have a negative effect on the performance of timed tests. Pascale (1974) found that even though males did not change their answers as often as females, when they did they were more successful. One can assume that females performed better as their male counterparts in the present study because students were not informed about any penalties that would go with guessing, so female students might have also indulged in the practice of guessing.

Conclusion

Results from this study show that there is significant difference in academic performance between male and female History students on essay examination while no significant difference exist regarding multiple-choice examination. By implication, female History students do better than their male counterparts on essay test items. They also do well as their male counterparts when it comes to multiple-choice items. Findings showing gender difference in essay testing have serious ramifications in the assessment of History students and the educational system as a whole. Not only are essay test scores being used to predict such things as academic success, they are considered for determining which students are accepted into college and University programmes and for awarding scholarships. There is, therefore, the need to find good remedies that would help male students to backup in terms of their performance in essay test items.

The conclusion drawn triggers one critical question: what is the best test form History teachers could use based on the results of this study? The answer needs to take into account the performance of both male and female students. The findings suggest that female students do not have much problem with examination forms, they perform relatively better in all forms of examination. Therefore, it can be concluded that the most appropriate form for examinations is the multiple-choice form as it favours both genders. Nonetheless, the essay type of examination has its own merits which cannot be accommodated by the multiple choice tests. The reason is that the use of multiple-choice items would mean that no gender is put at a big disadvantage compared to the other form of examination. Therefore, the multiple choice form is the most appropriate examination form for both male and female history students.

However, care should be taken in generalizing the findings and suggestion of this study as the underlying samples are from three second cycle institutions. This does not undermine the finding of this study. Other researchers could consider more schools so as to further illuminate our knowledge on issues raised in this study.

References

Becker, W.E., & Johnston, C (1999). The relationship between multiple choice and essay response questions in assessing economics understanding, *The economic record,* 75(231), 348-357

Ben-Shakhar, G., & Sinai. Y. (1991) Gender differences in multiple-choice tests: the role of differential guessing tendencies, *Journal of Educational Measurement,* 28(1), 23-35

Bible, L., M.G. Simkin, & Kuechler, W. L (2008) Using multiple-choice tests to evaluate students〞understanding of accounting, *Accounting education: an international journal,* 17, S55-S68

Bolger N., & Kellaghan, T. (1990) Method of measurement and gender differences in scholastic achievement, *Jounal of Educational Measurement,* 27(2), 165-174

Bridgeman, B., (1991) Essays and multiple-choice tests as predictors of college freshman GPA, *Research in higher education,* 32(3), 319-332

Bridgeman, B., & Lewis, C. (1994). The relationship of essay and multiple-choice scores with grades in college courses, *Journal of Educational Measurement,* 31(1), 37-50

Bridgeman, B., & Morgan, R. (1994). *Relationships between differential performance on multiple- choice and essay sections of selected AP exams and measures of performance in high schools and colloge*. New York: College Entrance Examination Board.

Delaere, D. & Everaert, P. (2011). *Performance on multiple choice and essay examinations.* Universiteit Gent. Universiteit Gent Press.

Du Plessis, S. & Du Plessis, S. (2009). A new and direct test of the 'gender bias' in multiple-choice Questions, *Stellenbosch Economic Working Paper*

Ferber, M.A., Birnbaum, B. G & Green, C. A. (1983). Gender differences in economic knowledge: a reevaluation of the evidence, *The Journal of Economic Education,* 14(2), 24-37

Gul, F.A., Teoh, Y. H & Shannon, R. (1992). Cognitive style as a factor in accounting students" performance on multiple choice examination, *Accounting Education,* 1(4), pp. 311-319

Harding, J. (1980). Sex differences in performance in science examination. In R. Deem (Ed.), *Schooling for women's work.* London: Routledge & Keegan Paul.

Harris, R.B., & Kerby, W. C (1997). Statewide performance assessment as a complement to multiple-choice testing in high school economics, *Journal of Economic Education,* 28(2), 122-134

Hirschfeld, M., Moore, R. L & Brown, E. (1995).Exploring the gender gap on the GRE subject test in economics, *Journal of Economic Education,* 26(1), 3-15

Holley, J.H., & Jenkins, K E. (1993). The relationship between student learning style and performance on various test question formats, *Journal of Education for Business,* 68(5), pp. 301-308

Kimbell, M. A. (1989). A new perspective on women's math achievement. *Psychological Bulletin,* 105, 198-214.

Krieg, R.G., & Uyar, B (2001). Student performance in business and economics statistics: Does exam structure matter?, *Journal of Economics and Finance,* 25(2), 229-241

Lumsden, K.G., & Scott, A. (1995). Economics performance on multiple choice and essay examinations: a large-scale study of accounting students, *Accounting Education,* 4(2), 153-167

Maccoby, E. E. & Jacklin, C. N (1994). *The psychology of sex difference.* Stanford CA: Stanford University Press.

Murphy, R. E. L. (1982). Sex differences in objective test performance. *British Journal of Educational Psychology*, 6, 169-174.

Pascale, P. J. (1997). Changing initial answers on multiple-choice achievement tests. *Measurement and Evaluation in Guidance,* 6, 236-238.

Skinner, N. F. (1983). Switching answers on multiple-choice questions: Shrewdness or shibboleth? *Teaching of psychology*, 10, 220-233.

Tozoglu, D., Tozoglu, M. D., Gurses, A. & Dogar, C. (2004). The students' perceptions: Essay versus multiple-choice type exams. *Journal of Baltic Science Education*, 2 (6): 52-59.

Williams, L. K. (1991). A Synthesis of Research Studies on the Performance of Male and Female Accounting Students. *The Woman CPA*, 53(2), 12-15

Williams, M.L., Waldauer, C & Duggal, V. G. (1992). Gender differences in economic knowledge: an extension of the analysis, *Journal of Economic Education, 23*(3), 219-231