# Gender Differences in the Outcomes of Computer-Assisted Language Instructional Strategies in Essay Writing: Case of Senior Secondary Classes in Ilorin City, Nigeria

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## Abstract

*The study was conducted to determine what contribution gender could make to Nigerian students' disposition to and performance in essay writing when exposed to computer-assisted language instructional strategies. Three senior secondary classes were selected in Ilorin, Kwara State. The pretest-posttest control group quasi-experimental design was employed. Each class was assigned to an instructional strategy (collaborative computer-assisted language instruction, autonomous computer-assisted language instruction, and conventional instruction respectively). The treatment to the groups lasted eight weeks. Computations of means and standard deviation as well as analysis of covariance were used in analyzing the data obtained. The findings showed that gender had significant effect on the students' disposition to and significant effect on the students' achievement in computer-assisted essay writing.*

***Keywords:*** *gender, gender achievement, language instruction strategies*

## Introduction

The multidirectional importance of essay writing skills for school and after-school life has been well established in literature (Graham, 2019; Siregar & Hasibuan, 2021). Reports from various studies across the globe as well as records of students' performance in essay writing from different countries including Nigeria have, however, proved that students' mastery of essay writing skills is poor (Nnamani,

Akabogu, Uloh-Bethels & Ede, 2018; Ugboja, Ifunanya & Offor, 2018). It has been observed that the deployment of computer to language instruction has often engendered increased enthusiasm and improved performance in language learning exercises.

This study was thus carried out using computer-assisted language instructional strategies for essay writing. There have been disagreements in the findings on the influence of gender on technology adoption, utilization, and mastery of learning contents. This study, therefore, particularly sought to answer the question of whether gender would significantly influence the effects of computer-assisted language instructional strategies, all other things being equal, on selected senior secondary school students' disposition to essay writing.

## Background to the Study

The need for a typical Nigerian secondary school student to be proficient in writing is obvious considering the fact that essay writing attracts the greatest percentage of marks in English Language examinations (Kolawole, 2006). Thus, failure in essay writing significantly reduces a candidate's overall score in the subject (Atanda & Jaiyeoba, 2011). Also, good performance in other aspects of English Language as well as other school subjects depends largely on good writing skills because examinations are usually in written forms (Fareed, Ashraf & Bilal, 2016; Kolawole, Adepoju & Adelore, 2000;). Even in the after-school world of work, employees mostly depend on written communication and documentation of strictly official matters.

Nigerian secondary school students' performance in essay writing examinations has, however, been consistently poor and this impacts negatively on their scores in English Language examinations. Closely related to students' poor performance in essay writing is their negative disposition to that aspect of language study (Ekholm, Zumbrunn & DeBusk-Lane, 2018). Disposition is primarily a consequence of experience. Thus, students' previous failure in essay writing results in negative disposition. The negative disposition then precipitates failure in subsequent attempts at essay writing. Disposition, among other factors, thus deserves critical attention when trying to find a lasting solution to the students' problems with essay writing.

Improved disposition and better enhanced recall are among the most salient benefits of a technology-rich learning environment (Stepp-Greany, 2002) and computer is an integral component of such technology. Nigerian secondary school students are excited when working on and with computers (Olatunji, 2011). Murley, Jukes and Stobaugh (2013) observed that appropriate use of technology, computer inclusive,

makes significant positive impacts on learners' disposition, resulting in considerably improved academic achievement.

Specifically, research has shown improved disposition to and performance in writing exercises where appropriate instructional strategies were facilitated with computers, sometimes with additional online facilities, in countries other than Nigeria (Novakovich, 2016). But there is paucity of evidence of deployment of computers to essay writing in Nigeria. Therefore, data on the influence of gender on Nigerian students' disposition to essay writing and achievement in writing exercises in a computer-assisted instruction is generally scarce, if available. The collaborative and the autonomous delivery modes of computer-assisted language instructional strategies were compared in the experiments so documented worldwide. Most of them found improved disposition to and performance in students' writing as a result of the deployment of computer or computer-based technology but findings on the supremacy between the collaborative and the autonomous modes remain inconclusive. In the current study, therefore, both modes were employed. Nonetheless, the major focus was determining if gender would make any difference in the outcomes of the computer-assisted strategies.

It is indisputable that disposition to and expertise in the use of technology will affect disposition to any exercise that is technology-mediated. Therefore, students' disposition to computer would contribute to their disposition to computer-mediated essay writing exercises. Findings on the influence of gender on disposition to technology are inconclusive (Zhihui, Xitao & Jianxia, 2017). Timothy, Xitao and Jianxia (2015) found no statistically significant gender difference in disposition to technology but also observed that the modest difference was to the credit of the male gender. Atmatzidou and Demetriadis (2016) found no significant difference between males and females in computational skills but females tended to be in need of more efforts than males. In studies by Sadik (2005) and Adigun, Onihunwa, Irunokhai, Sada and Adesina (2015), males were found to be more excited about and better users of computers than their female counterparts. But Hogan (2016) found the females more enthusiastically disposed to computers and better performers in computer-mediated activities than males in an Australian community.

Studies on the impacts of gender on disposition to and achievement in essay writing are ongoing and have made different conclusions. Kim, Al Otaiba, Wanzek and Gatlin (2015) found that girls scored higher in writing than boys even after accounting for language, reading, attention, spelling, handwriting automaticity, and rapid automatized naming. However, in a study by Cheng (2002), the regression analysis results showed that the female students had higher level of writing anxiety than their male counterparts.

Aziz, Jin, and Nordin (2016), advocated more studies into gender as one of three essential elements of writing in the English as a Second Language (ESL) context. This, according to them, is necessitated by the rarity of such studies. The current study was one of the efforts at empirical evidence on the place of gender in students' disposition to and performance in essay writing after being exposed to computer-assisted essay writing instruction.

## Theoretical framework

Gender Role Theory (Eagly, 1987) describes gender roles or sex roles as certain behavioural prescriptions for or expectations from people based on whether they are male or female. The socio-cultural gender roles are integral parts of people's socialisation from childhood. The roles thus become so well ingrained in a person's subconscious that the person's covert interests and overt behaviour are naturally dictated by the imbibed sense of gender roles (Atli, 2017). A person's self-perception is significantly based on how well they successfully conform to the assigned roles. Other people also judge individuals based on the extent to which the person adapts to the assigned gender roles (Smith, Watkins, Burke, Christian, Smith, Hall & Simms, 2013).

It is noteworthy that certain gender roles are peculiar to particular cultural environments while some cut across cultures. For example, some cultures, either deliberately or inadvertently, restrict technical vocations to the male gender while allocating the liberal arts to the female gender (Guangye, 2018). Some cultures have outgrown such stereotypes and occupational gender segregation (Gonäs, Wikman, Vaez, Alexanderson & Gustafsson, 2019; Grönlund & Magnusson, 2018).

The proof of the significant input of culture dynamics to gender roles seems to be in contrast with the implicit theories of ability. It is not surprising that Danthony, Mascret and Cury (2020) found no gender differences in the implicit theories of ability. The differences in male and female abilities may result more significantly from socialisation than biological features. In fact, Gender Role Theory is seen as a subset of the Social Role Theory (Eagly, 2000).

Only about 25% of practitioners in engineering and other technological fields worldwide are females (García-Holgado, Mena, García-Peñalvo & González, 2018)**.** Computer literacy belongs to the technical disciplines. If it is true that the technical fields are male dominated, then it is logical to assume that male students are likely to demonstrate greater self-efficacy in a computer-mediated essay writing exercise than their female counterparts. The finding by Awofala, Akionoso and

Fatade (2017) and Tsai, Wang and Hsu (2019) confirm male participants' better attitude and higher computer self-efficacy than the females.

Gender, too, has been found to play significant roles in students' essay writing. For example, Noroozi, Hatami, Bayat, van Ginkel, Biemans, and Mulder (2020) found female students wrote higher quality argumentative essays than the males. Also, in another experiment by Zhang, Bennett, Deane, and van Rijn (2019), the females had higher mean scores than their male counterparts. In another study by Nnamani and Akabogu (2020), it was indicated that there was no significant gender difference in expository essays of the participants in South East Nigeria. There is ample theoretical and empirical evidence in support of both arguments for and against stability of gender stereotypes and their dynamism (Charlesworth & Banaji, 2021). The gender dynamics as well as the different findings on their influence on essay writing skills and mastery of technology-based activities call for investigations into the interplay of the Gender Role Theory and essay writing in a computer-rich context.

## Research objectives

The study specifically sought to determine if gender would make any significant difference in:

1. the senior secondary school students' disposition to essay writing after being exposed to computer-assisted language instruction; and
2. the senior secondary school students' achievement in essay writing after being exposed to computer-assisted language instruction.

## Methodology

The study adopted the pretest-posttest control group quasi-experimental research design. Three local governments in Ilorin Township were purposively sampled for their cosmopolitan nature and availability of computer systems. One senior secondary school was selected from each of the three local government areas through purposive sampling. One school was assigned to each of the instructional strategies (Computer-Assisted Collaborative, Computer-Assisted Autonomous, and Conventional Language Instructional Strategies). One intact class of senior secondary school class II was randomly assigned to a treatment. The students in the collaborative instructional class were stratified according to their computer literacy test performance. They were put in collaborating groups of fives, each

group containing a fair share of computer literate A total of 167 students took part in the study.

## Data collection instruments

### *Students disposition to English Language essay writing questionnaire (SDELEWQ)*

This instrument was designed to determine each participant's disposition to essay writing both at the pretest and the posttest stages of the study. It comprised sixteen self-constructed four-Likert-scale items and nine items adopted from Kolawole (1998), thus making a total of twenty-five items that sought to identify the students' disposition to essay writing. The response options were Strongly Agree (SA), Agree (A), Disagree (D), and Strongly Disagree (SD). Fourteen of the items were positively worded in favour of essay writing while eleven were negatively worded to indicate negative disposition to essay writing. Each positively worded item was scored thus: Strongly Agree (SA) =4; Agree (A) = 3; Disagree (D) = 2; Strongly Disagree (SD) = 1. Each negatively worded item was scored as Strongly Agree (SA) =1; Agree (A) = 2; Disagree (D) = 3; Strongly Disagree (SD) = 4

Copies of the instrument were administered on thirty randomly selected students in similar classes that did not take part in the study. The split-half technique was used to analyse the responses. It yielded .86 reliability index.

## Computer-assisted essay writing instructional guides

These were in two different modes: (i) Computer-assisted collaborative essay writing instructional guide (ii) Computer-assisted autonomous essay writing instructional guide. The major difference in delivery between them was that in the collaborative group, the students went into carefully formed groups of fives to write essays on given topics after initial general teacher-moderated discussion while those in the autonomous guide each wrote the essays on their computers after the general initial teacher-moderated discussion.

## English Language Essay writing achievement test (ELEWAT)

This instrument measured each participant's achievement in the writing of different essay types at both pretest and posttest stages. The four-item test was constructed by the researcher in collaboration with five seasoned teachers of senior secondary

class of whom two had been examiners of English Language with the West African Examinations Council for ten years or more. The instrument was judged adequate by specialists in the fields of educational evaluation and language education. The test-retest procedure was employed with each topic on thirty students that did not participate in the study but were in classes similar to those of the participants in the study. A reliability coefficient of .94 was obtained through the test-retest technique

## Process writing computer package

This was designed and developed to facilitate the process approach to essay writing. The self-designed computer package enables users to organize their thoughts right from the individual lexical word level, forming phrases, clauses, sentences, paragraphs, until a whole essay is developed. The gradual steps involved in this writing process were to reduce the mental task into easily manageable bits.

## Trial test

The instruments were trial tested for three weeks in three intact classes in schools that did not take part in the main study. This afforded the researchers first-hand knowledge in preparation for some of the challenges that were likely to be encountered during the actual experiment.

## Training of research assistants

The interactive sessions with the research assistants (the English Language teachers in the respective schools) lasted one week. The instructional materials to be used by each teacher were extensively discussed.

## Administration of pre-test

The pretest lasted one week. The four validated essay questions were administered on the students in the two experimental and one control groups.

## Treatment to the experimental groups

The treatment lasted eight weeks. The teachers of the intact classes taught their students the selected essay topics with their designated strategies.

## Data analysis

The obtained data were analysed with descriptive as well as inferential statistics. The pretest scores were compared with the posttest. So, every response instrument, including the instrument on disposition to essay writing and the achievement test, was administered at both pretest and posttest stages. Each essay was scored against 50 marks based on the following mark allotments: Content= 10 marks, Organisation = 10 marks, Expression – 20 marks, and Mechanical Accuracy = 10 marks. The descriptive statistics comprised computation of means and standard deviations while the inferential statistics included analysis of covariance. Analysis of covariance was employed to partial out the effect of the covariates.

## Findings and Discussion

### Effect of gender on students' disposition to essay writing and achievement in computer-assisted essay writing

*Ho1*: There is no significant main effect of gender on students' disposition to essay writing in a computer-assisted essay writing environment.

Table 1: *Summary of ANCOVA of Posttest Students' Disposition to Computer-Assisted Essay Writing by Gender*

| Source | Sum of Squares df | Mean Square | F | Sig. |
|---|---|---|---|---|
| Covariate (PreDisposition) | 8820.234 | 1 | 8820.234 | 568.523.000* |
| **Main Effect:** | | | | |
| Gender | 145.479 | 1 | 145.479 | 9.377.003* |
| Residual | 2544.343 | 164 | 15.514 | |
| Total | 13119.305 | 166 | | |

* Sig. at $P < 0.05$

Table 1 shows that gender has significant effect on the students' disposition to essay writing ($F_{(1,164)} = 9.38$: $P<0.05$) in the computer-assisted instruction environment. This implies that the posttest students' disposition to essay writing in experimental and control groups differed significantly by gender. Therefore, the null hypothesis is rejected.

This finding is in contrast with those of Timothy, Xitao and Jianxia (2015), Hogan (2016) and Atmatzidou and Demetriadis (2016) in which there was no significant gender difference in disposition after computer-assisted essay writing instruction. This difference might have resulted from cultural differences between the locales of the earlier studies and Nigeria, which is the context of the current study. Where access to computers is so easy that both males and females always use them for various purpose and there are no cultural bias labelling technology-based fields as exclusives of males, the degree of excitement at the opportunity to use them for essay writing may not significantly differ by gender. In Nigeria, however, the labelling of technological fields as male preserves could either discourage females from computer-mediated activities or provoke serious and aggressive competition from the female-folk, thus resulting gender tussle. The conscious gender competition could then result in significant difference in disposition to computer-assisted learning exercises.

It is noteworthy that there were gender differences in the earlier studies cited. The differences were simply not significant. This means the difference between their findings and the current one is in the degree of gender differentials. To show the exact gender that demonstrated greater positive impact on the disposition to essay writing resulting from the computer-assisted instruction, the following table becomes necessary.

Table 2: *Descriptive Statistics Comparing the Gender Disposition to Essay Writing*

| Gender | Mean | SD. | N |
|---|---|---|---|
| Male | 68.71 | 8.709 | 78 |
| Female | 75.20 | 7.923 | 89 |
| Total | 72.17 | 8.890 | 167 |

From the table, females had better disposition with mean 75.20 ±7.923 while the males had mean 68.71±8.923. This shows that females demonstrated more significant improvement than males in disposition to essay writing after the experiment. The researchers had observed from the outset of the experiment that most of the female students were more excited about the opportunity to use computers for language learning than their male counterparts. It was obvious that the males, being more adventurous, had used computers for more activities than the females, thus being less excited than the latter.

The educational implication of the foregoing is that educational materials' producers and teachers of essay writing, and indeed all school subjects, have to always work towards new learning experiences so that students' curiosity may be aroused and sustained. If students are made to believe that there is nothing newer than computer-assisted instructional strategies can add to their excitement about essay writing, the exercise will be a business as usual.

This finding also has implications for the observation by Yücel and Rızvanoğlu (2019) that negative stereotypes against females regarding technology still persist. The female participants in the current study showed greater excitement at deploying computer to their essay writing exercises. Therefore, the stereotype of computer-phobia and computer apathy once held about females has been empirically challenged.

*Ho2:* There is no significant main effect of gender on students' achievement in computer-assisted essay writing.

Table 3: *Summary of ANCOVA of Posttest Students' Achievement in Computer-Assisted Essay writing by Gender*

| Source | Sum of Squares df | Mean Square | F | Sig. |
|---|---|---|---|---|
| Covariate (PreDisposition) | 13670.411 | 1 | 13670.411 | 146.873.000* |
| **Main Effect:** | | | | |
| Gender | 467.320 | 1 | 467.320 | 5.021.026* |
| Error | 15264.532 | 164 | 93.076 | |
| Total | 29695.713 | 166 | | |

* Sig. at $P < 0.05$

Table 3 shows that gender has significant main effect on the students' achievement in essay writing after the computer-assisted instruction ($F_{(1,164)} = 5.02$: $P<0.05$). This implies that the posttest students' achievement in essay writing in experimental and control groups differed significantly by gender. Therefore, the null hypothesis is rejected.

While Table 3 simply shows that gender has significant main effect on achievement, Table 4 pinpoints which of the two genders improved more significantly than the other.

Knowing which gender more appreciably improved in essay writing achievement after both were taught with computer has serious pedagogic implications. It is thus helpful to determine what strategies to adopt and what instructional materials are more appropriate for each gender.

Table 4: *Descriptive Statistics Comparing the Gender Achievement in Essay Writing*

| | | | |
|---|---|---|---|
| Male | 66.21 | 12.822 | 78 |
| Female | 70.48 | 13.600 | 89 |
| Total | 68.49 | 13.375 | 167 |

From the table, females performed better with mean 70.48±13.6 while males had mean 66.21±12.82. This is consistent with the logical expectation that the degree of improvement in disposition to an activity will determine the magnitude of the progress to be made in the mastery of the concerned activity. Females had a greater disposition mean and expectedly recorded better improved achievement in essay writing after the computer-assisted essay instruction. This further proves that any effort at ensuring students' improved essay writing without adequate attention to means of boosting the students' disposition to essay writing cannot produce maximum results.

The findings from the current study have shown that gender is truly a factor to take into consideration when making decisions about the instructional materials as well as the strategies to employ in order to achieve improved students' disposition to and performance in essay writing. As earlier postulated by gender role theorists, gender is a strong determinant of whether people would see themselves as made for certain endeavours or not, based on societal stipulations and expectations (Eagly, 1987 & 2000). Females had been found to be better at essay wring than males (Noroozi, Hatami, Bayat, van Ginkel, Biemans, & Mulder, 2020; Zhang, Bennett, Deane, & van Rijn, 2019). The significant difference in favour of the females in the current study shows that the influence of the gender role that preconditions males to be better handlers of computers, as found by Awofala, Akionoso and Fatade (2017) as well as Tsai, Wang and Hsu (2019) was not strong enough to negate the females' essay writing superiority. Some activities and instructional materials that a particular gender is very familiar with may produce little or no excitement in members of the gender while the same may be new and exciting to the opposite gender. There is, therefore, a need for a dexterous mix of a variety of materials and strategies.

## Conclusion

The findings from this study have shown that students' disposition to computer-assisted essay writing instruction significantly determines their achievement in essay writing. Significant improvement in the students' disposition to essay writing was observed after they had been exposed to the two delivery modes of computer-assisted essay writing instruction. Their achievement scores, too, were significantly improved as a result of the strategies. This further proves the efficacy of computer to engender higher achievement in students' disposition to and achievement in essay writing. Gender was found to have significant effect on the output of the computer-assisted instruction. The female participants recorded higher means than the males in both disposition and achievement in essay writing after exposure to the same computer-assisted essay writing instructions. This could mean the females were more excited working with computers for essay writing than their male counterparts.

## Recommendations

With reference to the findings and conclusion drawn from study, it can be recommended that:

1. Gender factors should be taken into serious consideration when deciding to employ computer-assisted essay writing instruction to maximise the benefits of the strategy;
2. Language teacher educators should emphasise on the need disabuse the minds of language teachers in training against the influence of gender stereotypes but when opting for computer-assisted essay writing pedagogic; and
3. Governments and schools should encourage in-depth research into gender dynamics in computer-assisted essay writing classrooms so as to be able to maximise them for effective instruction.

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