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Gender Difference in Academic Self-Efficacy among Students in Public Secondary Schools in Nairobi County, Kenya

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Abstract— *Understanding the gender difference in academic self-efficacy of the secondary schools' students could inform education stakeholders about how best to offer relevant psycho social aimed at facilitating the smooth transition of students from secondary schools to further education and to the world of work. The purpose of this study was to investigate whether there is any relationship between gender and academic self-efficacy of the secondary schools' students in Kenya. The Social Cognitive theory formed the theoretical framework in this study. The test of this ponder comprised of 397 frame four understudies who were drawn from Nairobi County. Purposive, stratified and straightforward sampling procedures were utilized in the choice of the locale, schools and respondents for this study. Questionnaire which was initially piloted to determine their validity and reliability was used to collect data pertaining to academic self-efficacy. The information changed into analyzed qualitatively and quantitatively, guided via way of means of the look at objective. Use frequency and percentage tables to represent data. The study uses a relevant research design, and the Statistical Package for Social Sciences (SPSS) aids inference and descriptive statistical analysis. The hypothesis on the gender difference in academic self-efficacy was tested using independent Sample Test at.05 level of significance. The findings did not prove any significant relationship between academic self-efficacy and gender (= -0.80, df= 367, P>0.05. One of the main meanings and recommendations of the study is that all those interested in education should work together to improve the school and family environment to promote the development of academic self-efficacy for all, regardless of gender.. Further research should longitudinally investigate gender difference in academic self-efficacy across different school subjects, life stages and ages.*

I. INTRODUCTION

Academic self-efficacy is a special category of self-competence which refers to learners' judgment of their own ability and competence in achieving the learning goals (Bandura, 1977). High self-efficacy supports individuals' positive expectations of task outcomes. Conversely, low self-efficacy shrinks individuals' positive experience of the task process, thus encouraging deferment. It is evident that self - positive academic efficacy beliefs empower the students to outperform predicted expectations leading to academic realization and vice vasa (Bandura, 1997; Lent, Brown, & Hackett, 1994). However, human differentiation on the basis of gender is a cardinal phenomenon that affects nearly every facet of people's day-to-day lives and academic self-efficacy is not exceptional. In many settings, there have always been large gender differences or biases in access to education, academic achievement, and continuing education, most often at the expense of girls. Nonetheless, we cannot rule out the idea that, in some regions, boys are at a disadvantage. Therefore, it is crucial to consider how a student's gender impacts his learning so as to highlight a more detailed account of biological and psychological differences between the sexes that play a role in education but are often overlooked or neglected. This in return might facilitate the notion of education for all which is a fundamental human right. A huge body of research indicated a relationship between academic self-efficacy and academic performance (Patricia *et al.*, 2019; Bandura; Chemers *et al.*, 2001; Mcllroy *et al.*, 2015). It was therefore necessary for current research to investigate the gender difference in academic self-efficacy so as to identify and address gender gaps if any and enhance academic outcomes.

II. THEORETICAL AND LITERATURE REVIEW

Social Cognitive Theory of Self-efficacy by Bandura (1986,)

Although Social Cognitive Theory covers many topics, this research has been principally focused on academic self-efficacy, or the beliefs regarding one's competence in successfully completing academic tasks or goals. Self-efficacy was developed by Albert Bandura as part of a broader theory of social learning theory (Ashford & LeCroy, 2010) from which Social Cognitive Theory progressed. The theory of social cognition was proposed by Bandura in response to his dissatisfaction with the principles of behaviorism and psychoanalysis, in which the role of cognition in motivation and the role of context has been largely ignored (Bandura, 1977)

Bandura (1986) devised the term "self-efficacy" to define people's inner beliefs about their ability to have an influence on occasions that affect their lives. Self-efficacy reflects confidence in the ability to control one's motivation, behavior, and social environment. These cognitive self-assessments therefore influence all manner of human experience including learning. For example, self-efficacy determines the goals for which people strive and the amount of energy used toward goal achievement.

Therefore, academic self-efficacy indicates a student's confidence in their ability to organize, execute, and regulate performance to achieve the selected type of academic performance. It applies to multi-level and multi-faceted

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beliefs, which will affect how people feel, think, motivate and behave in various educational tasks.

The theory states that individuals develop gender by imitating role models which is reinforced vicariously. Alternative reinforcement makes the behavior of the model more likely to be imitated in the future. According to Bandura, there must be four processes of imitation. These are attention, retention, reproduction, and motivation. It is important to establish whether gender plays any role in these processes that culminate into learning and subsequent self-judgment of competence. Students may have abilities and personal resources that allow them to perform well but their judgment about what one can and cannot do with them matters most (Bandura, 1995). The current study investigated whether this judgement is influenced by the gender of the students.

The available literature indicate that self-efficacy has been the core of research interest for the past three decades in the field of educational psychology. Literature also indicate that self-efficacy influences and determines students' choice of learning behaviors, persistence and efforts (Bandura, 1977, 1993). Phan *et al.*, (2020) study with university students in Taiwan echoed the importance of self-efficacy to mediate the relationships among personal resolve, effective functioning and academic striving for optimal academic achievement.

The meta-analysis also indicated that self-efficacy is an important and stable predictor of procrastination that severely inhibits learning (Steel, 2007). The results of other studies on the relationship between academic self-efficacy and academic procrastination are also relatively consistent that academic self-efficacy is significantly negatively correlated with academic procrastination (Ge et al., 2018; Ziegler & Opdenakker, 2018; Przepiorka et al., 2019). A Recent study revealed that an academic self-efficacy intervention could reduce academic procrastination or deferment (Krispenz et al., 2019) hence enhance academic outcome for both male and female.

Previous studies have shown significant gender differences in academic self-efficacy, with male students often showing higher academic self-efficacy (Li, 2010). Huang (2013) found an overall gender difference in the level of academic self-efficacy, with males having higher self-efficacy. In support of Huang (2013), Kifle, Kassawand, Meles, and Astatke (2017) study using 482 students in Woldia College of teachers education showed that there was statistically significant gender difference in students' general self- efficacy in favor of males. Other earlier research findings were consistent with the findings of this study (Pajares, 2006; Schunk & Pajares, 2002).

A study by Azizolla *et al.*, (2016) with students of Zahedan University of Medical Sciences found significant relationship between gender and self-efficacy but in favor of females. Dullas, (2012) and Schnell et al., (2015) showed that there is no significant difference between male and female in their overall Academic Self-Efficacy.

Jenniffer, (2016) in her study with fifth year secondary school students noted that the scores for academic self-efficacy beliefs were slightly higher for female participants compared with male but the difference was not statistically significant. Pirmohamed (2017) conducted a study in British university students and found that active learning strategies, performance goals, and self-efficacy are important predictors of male achievement, while self-efficacy is the only important predictor of female achievement. The present study probed students in public secondary schools which could bring invaluable comparisons and consensus.

A study with primary schools' pupils in England by Webb-Williams (2017) indicated that gender differences in self-efficacy were significant with boys holding a lower sense of self-efficacy than girls coupled with lower performance. This indicate gender differences in various levels of schooling and mainly in favor of females hence the need to address the issue of low self-efficacy among the boy child in all stages of development. However, the discrepancies in these study outcomes call for more research for clarification purposes.

Majority of past researches focusing on content domains showed that males have higher self-efficacy and motivation in the subjects of mathematics/science, and females have higher self-efficacy and motivation in the subject of English (reading/writing). In this respect, Karen, *et al.*, (2017) study with Mexican high school students noted that whereas men had higher self-efficacy feelings towards Math, Sciences and English as a second language; women showed higher self-efficacy in Spanish language. A meta-analysis by Huang (2013) of 187 studies containing 247 independent studies ($N = 68{,}429$) on gender differences in academic self-efficacy identified an overall effect size of 0.08, with a small difference favoring males. Females displayed higher language arts self-efficacy than males in content domain. Meanwhile, males exhibited higher mathematics, computer, and social sciences self-efficacy than females. The current study did not investigate subjects' domains but has made recommendations for further studies on the same.

Fallan and Opstad (2016) study examined how gender and gender-personality interactions separately affect self-efficacy by use of questionnaires based on Meyer-Briggs Type Indicator (MBTI) using university students. Studies have shown that the level of self-efficacy and intensity of female students are significantly lower than those of men of the same age. However, this general conclusion does not apply to all gender personality types. Compared with male peers, the lowest level of self-efficacy of female students in economics only exists in students with intuition and perception (NF) and intuition and thinking (NT), but not in perception and perception (SP) students. In addition, the highest level of self-efficacy of male students only exists in male students of intuition and thinking (NT), but not in male students of NF and SP.

The self-efficacy of female students is also significantly lower than that of male students of the same age. However, this only exists for intuition and thinking (NT) and perception and perception (SP) students, not for female NF students. Male students have a significantly higher intensity of self-efficacy than female students. The overall results include only male students of intuition and thinking (NT), not male students of SP and NF. The main contribution of this research is to show that it is necessary to transcend gender to fully

understand the differences in self-efficacy between students and students. We must be careful to conclude that self-efficacy feels the constant influence of gender. Gender-personality interactions do matter. This study should be replicated in a future study with secondary schools students in Kenya for generalization purposes.

Other study findings found no gender differences in academic self-efficacy. Dullas (2018) research found no significant difference between male and female in their overall Academic Self-Efficacy. Furthermore a study by Tiyuri, *et al.*, (2018) with postgraduate found no significant difference in research self-efficacy score of students due to gender (P = 0.754) and school (P = 0.364). In support of these opposing views was Ibrahim and Ibrahim (2017) who examined the effect of self-efficacy, positive thinking and gender difference on academic achievement among university students in Saudi Arabia using 220 students. The outcome of the study showed no significant statistical gender difference among the study participants. The discrepancies of the findings could be attributed to social-contextual nature of academic self-concept.

In Kenya, Ochieng (2015) conducted a study among secondary schools' students in Nyakach Sub-County with an aim of examining self-efficacy and academic achievement from mathematic perspective. The sample was 390 secondary school students. The results show that Self Efficacy levels and Academic Achievement of the students are average. Male students seem to have a higher sense of self-efficacy than female students. This explains why female perform poorly in STEM subjects in Kenyan secondary schools. Programs are therefore necessary to instill a sense of self-efficacy in all students in subjects that are gender stereotyped. However, Aurah, (2017) found incongruous results after exploring the relationships between science self-efficacy, gender, and academic achievement among form four students in Kenya by use of 2,139 students. The research results show that there are gender differences in self-efficacy and academic achievement. Female students outperform male students in these two outcome variables. These findings are inconsistent with the extensive research done on gender differences where females always perform poorer than males in science-related courses hence the need for further studies. The current study studied students in urban settings and from different geographical and social orientations hence comparisons are inevitable.

It is notable that the recently reviewed literature investigating relationships between academic self-efficacy and academic achievement have been conducted mainly with students in post-secondary institutions of learning and little has been done in secondary schools and with form four students. Additional studies are therefore important to bring more understanding to the aspect of gender difference in academic self-efficacy.

III. Research Problem

The gender aspect of academic self-efficacy is relevant as it affects students' subject choices and increases the retention in content taught. Consequently, subjects' choices translate into career choices and work force absorption. There is increasing disparities in the academic outcomes of males and females in Kenya. By most accounts, females are falling behind their male peers educationally in terms of pursuance of STEM subjects and graduating from high schools. Some have suggested that the choice of subjects, school completion and subsequent performance is associated with how students feel about themselves. This phenomenon is strongly associated with greater self-efficacy for males than for females. Establishing gender difference in academic self-efficacy can offer valuable insights on how to optimize students learning and performance by use of their own psychological efforts.

IV. Objective of the Study

To investigate gender differences in academic self-efficacy of the public secondary schools' students in Nairobi County.

V. Methodology

The correlation design was adopted for this study due to its ability in determining the relationship between variables where the experimental approach is impossible. In the current study, gender difference in academic self-efficacy was investigated. In this study, dependent variable was the levels of the students' academic self-efficacy while independent variable was the student's gender which was categorized as boys and girls.

The sample consisting of 397 participants was obtained through simple random sampling procedures using Yamane (1967) formula for determining a sample size. Given the level of precision required, the level of confidence and the estimates of attributes present in the population, this formula allows us to calculate the ideal sample size. The formula is also considered appropriate for a large and known population size.

The Yamane formula is stated as: $n = \dfrac{N}{1 + N(e)^2}$

Where n is the corrected sample size, N is the population size and e (0.05) is the desired level of precision (margin of error). A 95% level of confidence is assumed.
Calculation of sample size was done as follows;

$$n = \frac{26477}{1 + 26477(.0025)} = 394$$

The sample for the current study (397) is slightly more than the one recommended by Yamane (1967). According to Martin and Bateson (1986) the larger the sample size the greater the statistical power and acceptability of a study and more the external validity of the study findings. A relatively large sample is also ideal for a correlation study that require more cases for valid and reliable analysis of hypotheses and where there are many independent variables in the study.

Research Instruments

A questionnaire with academic self-efficacy items adopted from Chemers *et al.*, (2001) scale was used to collect data pertaining to the students' self-efficacy. The scale consists of 8 items which were all positive on a 7 point Likert-type scale. Participants were asked to rate their agreement with statements reflecting their level of confidence in their perceived capability or competence to complete their class work or perform certain academic tasks. A sample item is as

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follows; "I know how to schedule my time to accomplish my tasks". The response scale ranged from 1 (Very Untrue) to 7 (Very True). Thus the maximum score that can be obtained by a respondent is 56 and minimum is 8. The total score obtained by each respondent was calculated and the statistical constants for the distribution were found out. Participants who scored between 33 and 56 were be deemed as having high academic self-efficacy. Participants who scored between 8 and 32 were deemed as having low academic self-efficacy. Participants were asked questions such as "I know how to arrange time for homework". Chemers *et al.* (2001) obtained a Cronbach's alpha. A pilot study was conducted in order to ascertain the validity and reliability of these questionnaires.

VI. Validity of the Instrument

For the purpose of this study, face, content and construct validity which are non-statistical methods were used to validate the content and instruments employed in the research instrument (Orodho, 2012). Towards this end, the researcher sought the input of professional guidance from research experts comprising of university supervisors who ascertained that the test items are relevant and contain the desired content domain. The tools were also pre-tested (pilot study) and the responses reviewed according to the objectives. To ensure external validity the researcher used random sampling techniques to select respondents in order to guarantee representation and allow generalization of the results to other populations which shares similar characteristics as the sample.

VII. Analysis of Findings

Both qualitative and quantitative data were obtained from the questionnaire which were then scored and coded for statistical analysis by the computer using Statistical Packages for Social Sciences – SPSS – software. The null hypotheses were tested at.05 level of significance using inferential statistical test using Independent Sample t-test to determine if the mean of males and females is related to the levels of academic self-efficacy.

VIII. Data Presentation, Analysis and Discussion

Introduction

Presentation of findings, interpretations and discussions were related to the objective of the study which aimed to establish if there is any gender differences in levels of academic self-efficacy. The characteristic of the respondents by gender was determined and the findings are presented in Table I.

TABLE I. Characteristics of the Respondents by Gender

Variable	Levels	Frequency	Percentage (%)
Gender	Female	182	45.8
	Male	215	54.2
	Sub-total	**397**	**100**

On sex comparison, majority of the respondents were boys even with the application of simple sampling method. If unchecked, it might compromise inclusiveness and equability of education for female.

TABLE II. Level of Academic Self-efficacy of Secondary School Students

Category of Self-Efficacy		Frequency	Percent (%)	Valid Percent
Valid	Low	30	7.6	8.1
	High	339	85.4	91.9
	Total	369	92.9	100.0
	No Response	28	7.1	
Total		397	100.0	100.0

Analyses in Table II demonstrate that majority of the students (339, 85%) have high levels of academic self-efficacy and only a few registered (30, 7.6%) registered low levels of the same. A total of 28 (7.1%) did not respond to the questionnaire which may mean lack of comprehension of the concept of academic self-efficacy. It is hypothesized that self-efficacy is a precursor for academic performance and given the high levels of self-efficacy for the majority of the students in Nairobi County, better academic performance is expected. However, Nairobi County continues to register poor KCSE national examination. This could mean that the students have strong beliefs about their academic capabilities and competence but lacking in strategies for translating this beliefs into academic success. It is also possible that some students are over efficacious hence fail to put effort in their academic undertakings. Students therefore need understanding of self-efficacy, the development of an individual's self-efficacy beliefs and means for modification through interventions utilizing positive applications of the four sources of self-efficacy information.

Furthermore, environmental issues like distractions inherent in the urban areas can prevent students from fully engaging and accomplishing rigorous and challenging tasks in high school despite high self-efficacy. They therefore need counseling and other interventions.

Academic self-efficacy and gender was computed and the descriptive statistics are shown in Table III.

TABLE III. Descriptive Statistics for Academic Self-efficacy versus Gender

	Gender	N	Mean	Sd
Academic Self-efficacy Score	Female	173	43.9480	7.38656
	Male	196	44.5918	8.01516

Note. Sd = standard deviation

Table 3 indicate a higher mean of academic self-efficacy for males (M = 44.59, Std = 8.02) than their counterparts females (M = 43.95, Sd = 7.39). However, the difference (0.64) which is in favor of males is negligible. A higher standard deviation for male (8.10) mean that the academic self-efficacy is more spread out over a wider range of values and a lower standard deviation for females (7.39) indicates that the their academic self-efficacy data points tend to be close to the mean.

Independent samples t-test was used to test the null hypothesis relating to sex differences in the above variable at 0.05 level of significance. The null hypothesis formulated stated that: There were no significant gender differences among students in public secondary schools in Nairobi County in relation to academic self-efficacy. The summary is presented in Table IV.

TABLE IV. Independent Samples t-Test for Sex Differences in academic Self-efficacy

		T	Df	Sig. (2-tailed)
Academic Self-efficacy Score	Equal variances assumed	-.80	367	.425
	Equal variances not assumed	-.803	366.307	.423

*Note.*Df= degree of freedom

The independent samples t- test provided evidence that there were no significant gender differences in academic self-efficacy among the form four students in Nairobi County at 0.05 level of significance (t= -0.80, df= 367, P>0.05). These findings failed to reject the null hypothesis that there is no statistically significant gender difference in academic self-efficacy. This implied that both boys and girls experienced almost the same levels of academic self-efficacy. Thus, the section of the null hypothesis relating to gender differences was accepted.

IX. Discussion

The findings of this study are in line with those by Ceylan (2015), Comelo, 2017,) Amir (2016), Dullas, (2012) and Schnell *et al*., (2015) which showed that there is no significant difference between male and female in their overall Academic Self-Efficacy. These findings, however, are contrary to a number of previous studies where a significant gender difference in academic self-efficacy was evidenced. For example Chavez *et al.*, (2014), Karen's (2015, Shkullaku (2013) and studies showed gender difference in favor of girls while D'Lima, Winsler and Kitsantas, 2014 and an earlier study by Pajares, 2006; Schunk and Pajares, 2002 showed gender differences in favor of males.

Fallan and Opstad (2016) research on personality types shows that the self-efficacy level of female students is significantly lower than that of male students. However, the general result that male students have significantly higher self-efficacy strength than their female peers does only encompass male intuition and thinking (*NT*) students and not the male sensing and perceiving (*SP)* and intuitive and feeling (*NF)* students. Personality therefore is an important factor to consider when designing self- efficacy enhancing programs.

Moreover, although not tested in the present study, majority of research suggests a gender gap in academic self-efficacy favoring males over females in some content domains such as mathematics, computer, and social sciences (Schober *et al.*, 2018; Nyamwange, 2016; Chiungjung, 2013; Huang, 2013), economics (Fallan & Ospstal, 2016);). Physics (Cavallo, Potter, & Rozman, 2004) while Ceylan (2015) and Camelo *et al.*, (2017) study in language learning motivation favored females. Huang (2013) explained that gender difference in academic self-efficacy is largely influenced by content domain.

Despite these contrasting finding, previous researches have consistently demonstrated the importance of the effect of self-efficacy on performance (Hannon, 2014; Siriparp, 2015). For example among the female sample, self-efficacy was the only significant predictor of academic performance, whereas among males, it was one of the strongest predictors of academic achievement. It appears that male and female students with a strong sense of self-efficacy are likely to exert a higher amount of effort into goals they believe themselves to be capable of achieving (Peterson & Arnn, 2008), which translates into academic success.

The discrepancies of the findings could be attributed to differences in the nature of samples used in these studies, social-contextual nature of academic self-concept, geographical variations and the subject domains in which the study is carried out. Most of the studies that used a specific self- efficacy approach found gender difference while those that used general self- efficacy domain found no significant gender difference in academic self-efficacy. The current study used a general domain hence the absence of any significant gender differences in the academic self-efficacy. This is attributed to the fact that males and females had higher levels of self-efficacy in the specific subjects and that students' high self-efficacy in a specific domain enhances their achievement in that domain.

It is evident that the, relationship between self-efficacy and gender remains an unresolved question since the literature shared is inconclusive yet self-efficacy is important in aiding students improve in the academic performance.

This finding has an important practical implication. The importance of self-efficacy and its influence on academic performance needs to be considered seriously by all education stakeholders and other competent individuals interested in students' academic well-being from early years of education. This will allow both men and women to be successful throughout the process and better prepare for success in their transition to the university level (Morton, Mergler, &Boman, 2014). There is need to identify ways through which the self-efficacy of both male and female students can be perpetuated, improved and sustained throughout in order to ultimately enable them to perform and achieve to their highest potential. This can be done by providing constructive feedback throughout the year, which incorporates positive and encouraging references to the student's work. A positive feedback experience for students has been found to lead to an increase in self-efficacy, increased efforts to learn, and as a result an increase in performance (Dupret, 2015).

X. Conclusion

In this findings, girls were found to have an academic self-efficacy mean score of 43.95 (SD 7.4) and boys 44.59 (SD 8.01).The independent samples t- test provided evidence that there were no significant gender differences in academic self-efficacy among the form four students (t= -0.80, df= 367, P>0.05). It is clear that all students irrespective of their gender need to be exposed to sources of self-efficacy (mastery experiences, vicarious learning, verbal persuasion, emotional state). Guidance and counseling programs in schools should address the students' issues of self-efficacy while teachers can use pedagogic strategies that are relevant in building and nourishing the students self-efficacy such as cooperative learning in which students work together and help one another. This is likely to promote more positive self-

evaluations of capability and higher academic attainments than do individualistic or competitive ones.

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