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The Relationship between Self -Efficacy and Academic Performance in Mathematics and English Language among Secondary School Students in Nyamira County, Kenya

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Abstract

Mathematics and English language are both perceived as very important in the education of both primary and secondary school national examination in Kenya. This is because mathematics is basic for modern scientific development and technology, and English is the language of instruction and also facilitates for communication in the world of work and for social economic upward mobility. However, the national educational curriculum implementation process has not attained satisfactory academic achievement equitably across the genders. The curriculum examinations' vast obsession with grades, cut throat competition under fundamentally diverse and distinct circumstances to the exclusion, or how they are acquired and ability the levels. Managers of the pedagogy, teachers, and parents emphasize ranking system and the elitist principle of selecting out of school instead of recruiting into school but hardly take into account a very instrumental variable, self – efficacy. The primary objectives of study was to determine the relationship between gender differences in self-efficacy and academic performance, and the influence of self-efficacy on academic performance in Mathematics and English language in Nyamira County. The study employed both quantitative and qualitative research techniques. Participants were selected through purposive, stratified and simple random sampling procedures. A sample of 24 public secondary schools was selected for inclusion in the study. These constituted 30% of the total, in proportionate sampling. A total of 240 form four students were selected through simple random sampling for the study. Data was collected through a thirty item questionnaire to students. Data analysis was done using descriptive and inferential statistics

Keywords: ***Self-efficacy, gender and academic performance***

Introduction

Most researchers in education concede that a symbiotic, symmetric relationship exists between education and development. Education remains the singular and most residual factor in economic development (Lawal, 2004; Wilcox, 1992). Pscharopoulous and Woodhall (1995) indicated that true, complete, equitable and endurable development transcends political, ideological inclinations, dominance and economic advancement as measured through such indices as Gross Domestic Product (GDP).

Ogot (2007) argues that science should form the basis of an educational programme that is intended to stay in tandem with modern technological

engagement. Therefore, science is the nerve centre of any educational programme whose ultimate purpose is to significantly influence the pace of economic development of a nation. He writes that, "countries have strengthened their higher education systems in science and engineering fields as a strategy for development, based on the firm belief that knowledge would bolster their economies" (Ogot, 2007).

Gender and Academic Achievement

The desire to attain high literacy levels for both men and women of any nation has been the subject of contemporary educational thinking. The men and women of a nation constitute a source of manpower critical for development. A World Bank report 2008 indicated that there are twice as many illiterate women in the developing world as there illiterate men (Schaefer, 2002). The situation is aggravated by societal impediments placed in the way to access education by girls and women. Laura (1986) stated that even in relatively egalitarian nations of the west, women's subordination is institutionally structured and culturally rationalized, exposing them to conditions of deference, dependence and powerlessness, and poverty. Education for girls is the key to empowerment of women, but the ratio of the educated is highly tilted in favour of boys in rural areas (Anyangu & Mutua, 2009).

Mwai (2008) has argued that subject choices continue to be gendered such as mathematics being considered 'Masculine' and languages as 'feminine'. According to her, the commonwealth secretariat report for the year 2008 on Gender Analysis and schooling processes presents a scathing indictment on the educational practices that perpetuate gender biases in curriculum presentation to pupils. The secretariat notes that girls and boys sit separately almost everywhere and that the girls' aspirations were high but they could not achieve them because of the subjects they did.

UN annual report on Millennium Development Goals (UN, 2008) indicates that the gender parity index in primary education is 95 per cent. In the United States, researchers have found out that mothers of Grade1 children believe boys are better at mathematics and girls at reading Investigations in Japan and Taiwan also found out that mothers had same math preferences for boys than girls. Maree and Erasmus (2006) found that girls enrolled in increasing fewer mathematics and science courses over higher school and college years. Momanyi (2005) notes that fewer female students study mathematics and science at the college as opposed to languages and Art based subjects. The types of courses taken in high school and how students perform in these courses have a direct bearing on acceptance and subsequent admission into college courses, and choice of college major (AAUW, 1999).

Gender disparities tend to widen more in war torn countries of Sub-Saharan Africa and parts of Asia. The problem is compounded by a consistent breakdown in the rule of law. Discrimination abrogates human rights, particularly girls' rights to education and social equality (UNICEF, 2008). Mpfumira (2008) contends that glaring education options for the advancement of women and girls exist in Zimbambwe's education system. Unfairness in provision, equity and access to education for female students is significant. A University of Zimbabwe Lecturer,

Sadza, laments that women were designated towards the arts and humanities and they had limited access to sciences.

Since 1963 the government of Kenya has endeavoured to commit a substantial proportion of its GDP on investment in education (Kamunge Report, 1988). Riding on the threshold of tripartite premises; poverty, disease and ignorance, the government's vast investment in education was critical. Education is recognised as an indispensable tool for the social, economic and political, transformation of the citizenry. Equity and access to education is therefore basic for requisite knowledge and skills that are crucial for technological and economic advancement of the country.

Despite consistent and progressive achievements in Kenya's education sector, the conceptual awareness of gender issues in education has not necessarily resulted in its translation into practice (Wango, Musomi, & Akinyi). Although several studies have been done to address gender disparities and education in Nyamira County, no study has comprehensively delved into the issue in relation to self–efficacy and performance in mathematics and English language. Therefore, there was need to undertake this study to determine the influence of self-efficacy on academic performance in noted subjects by gender.

Self-efficacy

Self-efficacy is defined as a person's judgement of their capability to solve particular problems (Bonne & Lawes, 2016). Studies have shown that higher self-efficacy is predictive of higher performance (Bong & Skaalvik, 2003). Meera and Jumana (2016) opine that once a person has acquired a high level of self-efficacy belief, he will become motivated to invest more effort in his life. Bandura (1997, 2000) theorized self-efficacy in his seminal articles the extend the role of self-efficacy as a mechanism to better understand behavioural change in the area of academic performance, cognitive functioning, health, promotion, athletic performance, career choices and coping with mental disorders. Ormrod (2008) agrees that self-efficacy is an important concept in social cognitive theory, which has been widely recognized as one of the most prominent theory about human learning.

Further, Purzer (2011) in her examination of the relationship between team discourse, self-efficacy and achievement, concluded that self-efficacy is positively and significantly correlated with academic achievement. In most of the studies the level of self-efficacy is found to be different between genders.

Why is Self-Efficacy Important in Maths and English?

As Lee & Mao (2016) state that self-efficacy influences students' activities, effort and persistence that it can help predict their motivation and academic performance. Based on their statement, it should be underlined that self-efficacy gives indirect influence to students' performance, i.e. self-efficacy might increase another aspects such as motivation, self-esteem or many others that will indirectly change their activities, strategies or motivation in learning.

A student's maths self-efficacy will influence how much effort the student exerts, and how long the student is prepared to persevere when adversity or failure is encountered. Therefore a student's self-efficacy is likely to affect maths achievement (Bonne & Lawes, 2016).

The power of self-efficacy in predicting learners' performance in language learning is supported by Rahimi & Abedini (2009) who found that students' self-efficacy in listening achievement has significant relation with students' listening proficiency. Hetthong & Teo (2013) also found that writing efficacy can predict learners' writing performance. In their study, their samples are 51 students in their third year majoring English in Department of Languages and Linguistics. From all seven aspects they investigated, overall performances can be predicted by their writing efficacy.

Efficacy and the Gender Dimension in Academic Performance

It is in the area of mathematics where we see even more emphasis placed in self-efficacy studies, perhaps because of the valued role that mathematics plays in academia, high-stakes assessments for admission and scholarships, and the filtering of students in highly technical and specialized careers (Pajares, 2005).

In their study on the relationship between self-efficacy and reading achievement between male and felmale, Kargar & Zamanian (2014) found that there is positive relation between self-efficacy and reading achievement strategies. While in another finding by the authors shows that there is no significant difference between male and female students related to their use of reading achievement strategies nor their self-efficacy, it is possible to assume that gender gives no influence to both factors of individual differences in learning, but one case only cannot be used for deducing something generally.

There are numerous studies in the literature dealing with the relationship between gender and self-efficacy in academic or language learning (Huang, 2013). In the majority of self-efficacy studies, female students have reported greater self-efficacy and self-regulation than have boys in language classes (Huang, 2013; Pajares, 2002). As a result, the three factors-past and recent English learning experience (say, the English level and performance test scores) as well as gender-are highly likely to impact students' degree of self-efficacy.

According to (Kayaoğlu, 2012), gender can construct one's social, cultural, and psychological. He further argues that it might be able to affect one's choice in learning too and that males have more positive attitudes towards technological equipment in language learning, whereas females do not feel as confident as males. Girls are significantly better in learning second or foreign language than boys and commonly, males have a more negative view and a less uptitude towards foreign language than females. It is argued that males tend to use more logic and fit in science than language, but technological equipment in language learning can change their view about it.

Purpose of the Study

Study aimed at investigating the influence of self- efficacy on academic performance. The study looked into relationship between gender and self-efficacy as they apply in performance of mathematics and English language among secondary school students. It sought to determine whether the type of school has a bearing on the level of students' self-efficacy -single-sex schools and co-educational schools were involved in this study.

Research Objectives

This study pursued the following research objectives:

1. To investigate the relationship between self-efficacy and academic performance in English language among secondary school students.
2. To investigate the relationship between gender and academic performance in English language among secondary school students.
3. To investigate the relationship between self-efficacy and academic performance in Mathematics among secondary school students.
4. To investigate the relationship between gender and academic performance in Mathematics among secondary school students.
5. To investigate the influence of type of school on self-efficacy of secondary school students.
6. To investigate the relationship between gender and self-efficacy among secondary school students.
7. To investigate the relationship between self-efficacy and academic performance among secondary school students.

Significance of the Study

This study investigated the concept of self-efficacy and how it influences performance levels in mathematics and languages among boys and girls. Educational administrators, managers and teachers will use it to evaluate their teaching and learning resources. It is hope that the findings will assist in better interpretation of the educational programme, inculcation of positive attitudes and values and in seeking support from key stakeholders. According to Bandura (2005), self-efficacy enhances task accomplishment and therefore teachers will find it particularly important to strengthen activities and learning approaches that enhance learners' self-efficacy. A learner who is high in self-confidence expresses willingness and readiness to learn. Emphasis should be directed towards efforts to raise learners' competence and confidence basically through exposure to realistic success experiences with tasks at hand (Pajares, 2002). The planners and curriculum evaluation officials will find the findings helpful in planning

workshops, in-services courses and seminars for teachers because of their central role in curriculum interpretation and implementation at Classroom level.

Scope of the Study

This study was conducted in Nyamira County. It was limited only to public secondary schools in the County and the population comprised Form 4 students. The study focused on self-efficacy among secondary school students and how it influences academic performance in mathematics and English language between the genders.

Research Methodology

This was a correlational and causal comparative (ex post facto) research design. Correlation and causal comparative research focuses on explanations of why certain things happen in a given social setting or what happens if a social actor manipulates some independent variables (Clegg, 2004).

The research population for the study comprised all Form 4 students in 77 public secondary schools in Nyamira. The study sample comprised of 240 Form 4 students in 24 schools which were sampled from the 77 public secondary schools. The researcher involved the Form 4 as an examination class. This is because being an examination class; the students were expected to master all abilities and adjustments within their behavioural repertoire to be successful. It was prudent to investigate their self–efficacy beliefs in relation to the examination ahead. The researcher used stratified sampling technique to obtain single sex schools and co-educational schools. Single sex schools were purposively sampled.

The researcher selected the 2 boys' schools and used simple random sampling to pick 2 girls' schools. Also 20 co-educational schools were selected using simple random sampling as it gives each individual an equal and independent opportunity to be selected into the sample (Mugenda & Mugenda, 1999). Simple random sampling was used to select participants from boys' schools, girls' schools and co-educational schools. In single sex schools 10 Pieces of paper indicated PS-participating student were given. The rest were indicated NP-not participating. Both types were shuffled and all students in each participating stream were asked to pick. In co-educational, boys and girls were separated before administering the questionnaire. Each sex from the participating stream was given five PS-participating students and the rest NP- not participating student. The study adopted a balanced research design. Equal proportions of female and male participants were involved. Biographical form, self-efficacy questionnaire and document analysis were used in data collection. To ascertain the reliability of the instrument – questionnaire, test- retest method was used and the Pearson product moment correlation was employed to compute the correlation coefficient. For analysis of data on self–efficacy, set descriptive statistics such as percentages, means, and standard Deviations were used. Inferential statistics such as the t-test and Pearson product moment correlation, one-way analysis of variance and chi-

square were used to determine the associations among variables. The researcher incorporated the use of computer technology in the analysis of data. The coded responses of the respondents were entered into the computer and analysed using the statistical package for social sciences (SPSS).

Findings

The summary of the study findings as per the objectives is as follows:

Self-Efficacy and English

The study established that there was no relationship between students' self-efficacy and performance in English. The result of the chi-square test confirmed that students' scores in English in secondary schools in Nyamira County relate with their self-efficacy X2=131.287df=108, p<0.05. There was significant relationship between the two variables.

The study further established that there was a significant difference between the means of female and male students in their performance in English in secondary schools. An independent – samples t test was calculated comparing the mean scores of female students to the mean score of male students found a significant difference between the means of the two groups of students (t (238) =-1.590, p< .05). The mean of the female students was significantly higher (m=38.68, sd=14.23) than the mean of male students (m=35.98, sd=12.11). This result indicated that the means were not equivalent, and the female students had scored a higher mean than the male students in English.

The study further revealed that there was a difference in performance in English among the types of secondary schools in Nyamira. One-way ANOVA comparing the examination scores of students who took the English test indicated significant difference among the school types (F (2, 237) =10.419, P<.05. Tukey's HSD was used to determine the nature of the differences between the school types. This analysis revealed that students from boys' schools scored lower (m=35.10, sd=10.80) than students from mixed schools (m=36.28, sd= 13.05). Students from girls' school (m=49.70, sd =11.17) scored a higher mean than the mixed schools (m=36.28, sd= 13.05). The girls' schools scored a higher mean than boys and mixed schools. For the mean of the boys schools (m=35.10, sd=10.80) was not significant different from the mean of mixed schools (m=36.28, sd= 13.05).

Self-Efficacy and Mathematics

The study also established that students' performances in Mathematics is not related to students' self-efficacy. The result of the chi-square test confirmed that students' scores in Mathematics in secondary schools in Nyamira does relate with their self-efficacy X2=131.287df=108, p<0.05. There was significant relationship between the two variables.

It emerged clearly from the study that there was no significant relationship between student's academic performances in Mathematics and students' gender in secondary school in Nyamira County. An independent – samples t test was calculated comparing the mean scores of female students to the mean score of male students. No significant difference was found {t (238) =-.938, p> .05}. The mean of the male students (m=26.55, sd=18.72) was not significantly different from the mean of female students (m=28.85, sd=19.17).

It was also established from the study that the performance in Mathematics in secondary schools had relationship with school type. One-way ANOVA comparing the examination scores of students who took the mathematics test indicated significant difference among the school types (F (2, 237) =16.94, P<.05. Tukey's HSD was used to determine the nature of the differences between the school types. This analysis revealed that students from mixed schools scored lower (m=25.48, sd=18.44) than students from boys' schools (m=27.55, sd= 17.22). Students from girls' school (m=49, sd =9.34) scored a higher mean than the boys' schools. The girls' schools scored a higher mean than boys and mixed schools. For the mean of the mixed schools (m=25.48, sd=18.44) was not significant different from the mean of boys schools (m=27.55, sd= 17.22).

Self-Efficacy and Types of Schools/Gender

The study also revealed that student's self- efficacy had no relationship with secondary school type in Nyamira County. The result of the chi-square test confirmed that students' self-efficacy in secondary schools in Nyamira does not depend on the school type, X2=.914df=4, p>0.05. There was no significant relationship between the two variables.

Another finding of the study was that student's self-efficacy had no relationship with secondary school students' gender in Nyamira. The result of the chi-square test confirmed that students' self-efficacy in secondary schools in Nyamira does not depend on the students' gender, X2=2.269df=2, p>0.05. There was no significant relationship between the two variables.

Conclusion and Recommendations

In conclusion, self-efficacy is a very vital tool to the 'joie de vivre' of our thinking, feelings, behaviour and our body's general well-being. Pajares (2002) contends that self-efficacy beliefs are based on the assumption that the beliefs that individuals create and develop and hold to be true about them form the very foundation of human agency and are vital forces in their success or failure in all school endeavours.

This study endeavoured to find out the relationship between self-efficacy and academic performance in Mathematics and English language among secondary students with the hope that the knowledge of these relationship will lead to a better performance in both in secondary schools. The observation that there is a relationship between a students' self-efficacy and performance, and there is no

relationship between their self-efficacy and school type and student gender is an indication that it is important to look at the role of self–efficacy in successful learning in all secondary schools to enhance academic performance. Social-cognitive theorists propose that self-efficacy is an important factor within an individual, which mediates between cognition and affect resulting into changes in academic performance (Zimmerman, 1995).

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