

Gender Responsive Language Use Influencing The Performance Of Girls In Science Subjects In Secondary Schools, Nairobi City County, Kenya

By

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Abstract

The purpose of this research project was to examine how gender responsive language use influences the performance of girls in science subjects in secondary schools in Nairobi City County, Kenya. The contention of the article is that Gender Responsive Pedagogy (GRP), developed by the Forum for African Women Educationalists (FAWE), equips teachers with skills to effectively meet the educational needs of both genders through gender-aware classroom practices. The objective of this paper was to assess how gender responsive language impacts girls' performance in science subjects in Secondary Schools, Nairobi City County, Kenya, grounded in Social Cognitive theory. Employing a descriptive research design, the target was 53 head teachers, 630 teachers, and 4157 girls from 53 schools in Dagoretti South Sub-County. A sample of 15 head teachers, 79 teachers, and 250 girls (totaling 329 respondents) were selected using the Yamane formula. Pilot testing ensured instrument validity and reliability, employing face, construct, and content validity, along with the test-retest method for reliability. Questionnaires and observation schedule was utilized. Quantitative was tabulated, analyzed using percentages, frequencies and presented using pie charts, while qualitative data was thematically analyzed and presented narratively. Findings indicated the significant influence of gender responsive language on girls' science performance in Nairobi City County. The Pearson correlation coefficient between the responses of teachers and girls was determined to be $r = 0.9854$, indicating a strong positive correlation ($r = 0.9854$, $p < .05$). Recommendations included fostering collaboration among educators, policymakers, and researchers to promote gender equity in science education. These findings benefits FAWE, the Ministry of Education, Nairobi City County administration, schools, and future researchers, contributing to the empowerment of girls in education. Collaborative efforts among professionals are essential in promoting inclusive and supportive learning environments for girls, enhancing gender equity in science education.

Key words: Kenya, gender, language, girls, science subjects, secondary schools, Nairobi City County

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1. Introduction

The concept of gender is pervasive across sectors worldwide, spanning institutions, politics, education, civil society, the private sector, and citizens' daily lives (Mlama, 2013). However, secondary schools often overlook gender-specific needs in their educational practices, inadvertently perpetuating discriminatory practices that hinder equitable learning environments, especially for girls (Siefu, 2019; Dagnew, 2011).

This study examined gender-responsive language use in secondary schools, particularly its impact on addressing gender disparities in science subjects. Despite global efforts to promote gender equality in education, secondary schools frequently neglect the diverse linguistic needs of students, perpetuating discriminatory practices that hinder equitable learning environments, especially for girls. The research explored how gender-responsive language use influences girls' performance in science subjects, considering broader societal and cultural factors influencing language usage within educational settings.

Efforts to integrate gender responsiveness in science education at the secondary level stemmed from research findings by the National Council for Science and Technology (NCST) and FAWE, following over 15 years of efforts to engage girls in science (Smith, 2008; FAWE, 2005). European countries have introduced initiatives to promote gender-responsive pedagogy in science education, including mentoring programs and campaigns to challenge gender stereotypes (Belassie, 2018). Similarly, in the United States, strategies such as diverse role models and inclusive language aim to improve girls' performance in science (Austine, 2018).

Despite progress, challenges persist. In Kenya, concerns about girls' performance in science prompted legislative action, yet language use in schools remained a barrier (Belassi, 2020). Efforts to train teachers and administrators in gender-responsive practices yielded positive results, with increased participation and improved gender relations in classrooms (Belassi, 2018). However, the disparity in science performance between genders persisted, highlighting the need for further research and interventions which this paper focused.

Therefore, gender-responsive language use plays a crucial role in addressing disparities in science education, particularly for girls. Initiatives across various continents aim to promote equitable learning environments through inclusive language and pedagogy. However, challenges remain, necessitating continued efforts to dismantle gender stereotypes and promote equal opportunities in science education.

1.1 Research Problem

Science provides a wide range of competitive career opportunities and prospects to economic empowerment for students who pursue it. Although many educational institutions present equal opportunity for both boys and girls for pursuit of the subject, records have shown that girls have

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not performed as well as boys in the subject. Despite Kenyan government presenting equal opportunity for the continual empowerment of girls and boys in participation in science subjects in secondary school level, girls have still continued to drop the subjects as a result of performing dismally as compared to the male counterparts. Owing to the significance and quest for better performance for girls in this important aspect of education, several scholarly studies have been done. Students get to pursue what teachers tend to encourage them to do based on how teachers express how they feel about the strength of students. A study conducted by the Forum for African Women Educationalists (FAWE, 2017) have revealed compelling evidence suggesting that gender-responsive language use significantly influences students' performance in science subjects. The study nevertheless did not specifically mention the extent to which girls' performance in science was influenced. It is on the basis of the gaps in these previous researches that this paper sought to determine the influence of gender language use on performance of girls in science subjects in Dagoretti South sub-County.

1.2 Objective

The objective of this study was to establish the influence of gender responsive language use on performance of girls in science subjects in Dagoretti South Sub- County, Nairobi, in order to enhance desired girls' performance's in science.

1.3 Research Hypothesis

There is no statistically significant relationship between gender responsive language use and performance of girls in science subjects in Dagoretti South Sub- County, Nairobi.

2.0 Literature Review

Gender responsive language use is defined as the use of language that addresses girls and boys as persons of equal respect, dignity, value and integrity (Belassi, 2018). It involves use of language precisely with the aim of shunning explicit or implicit exclusion of one gender and empowering the capacity of each gender in an equivalent manner. The gender gap in science education has received significant attention, with calls for global gender parity in science-related careers (World Science Forum, 2017). Reports such as the Education for All (EFA) Global Monitoring Report highlight substantial gender disparities in science subject performance, particularly in primary and secondary education (Brad, 2019). In Africa, over 70% of girls in secondary schools do not pursue science careers, partly due to systemic failures within schools and cultural perceptions associating science predominantly with males (McKinsey's Power of Parity Report, 2017). Initiatives like the Forum for African Women Educationalists (FAWE) aimed at enhancing education quality for girls and reduce the gender gap in science education.

Mouli (2019) investigated the impact of language use on girls' performance in science by studying how primary school pupils in Pakistan perceive science subjects. The study uncovered language as a potent influencer of gender perceptions in science, either reinforcing or alleviating bias depending on its usage. Teachers, influenced by their traditional backgrounds, education, socialization, and experiences, were found to exhibit gender bias in their speech. This bias tended to favor boys, seen as more suited to science subjects, while girls were directed towards

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non-science subjects perceived as less technically challenging. The cultural backdrop, with its ingrained gender roles and educational norms, largely contributed to this bias.

Adedoyin and Ogunyinka (2017) investigated the reasons behind girls' underperformance in science subjects in Nigerian secondary schools. Their findings highlighted how stereotypical teaching methods directed girls towards non-science fields like arts and humanities, while boys were steered towards science. Societal norms in Nigeria often dictate that girls assume subordinate roles, while boys are encouraged to pursue leadership positions, typically associated with excelling in science. This bias was evident in the language used by teachers and the depictions found in scientific books, where boys were portrayed in central roles like doctors, engineers, and pilots, while girls were depicted in subordinate roles like cooks, air hostesses, and housewives, reinforcing the perception that science is primarily for boys and other fields are for girls.

Moreover, the prevalent use of masculine language norms marginalizes the mindset of girls and deteriorates their mentality in struggle for parity with their counterpart boys. Language use particularly impacts young girls in educational settings, where they are still shaping their identities and aspirations. As girls enter classrooms, they often carry preconceived gender stereotypes influenced by cultural and societal norms, which may be reinforced by parental attitudes. Continuous exposure to language that diminishes female empowerment contributes to girls disengaging from science subjects as they progress in their studies. This linguistic bias fosters a sense of not belonging in the field of science, further exacerbated by repeated encounters with biased language.

3.0 Research Design and Methodology

The study used descriptive design aimed at observing and describing gender bias against the girl child. The study was conducted in secondary schools in Dagoreti Sub-County, Nairobi City County. The target population was 53 schools, 53 head teachers, 630 teachers, and 7685 girls. Sample size was 329 respondents determined using Yamane's formula. The research instruments included interviews, questionnaires and observations schedule. Quantitative analysis employed descriptive statistics and presented using pie charts while qualitative data were analyzed narratively.

4.0 Results and Discussions

The demographic information for the girls, teachers, and head teachers such as age, gender, and experience were established. Results showed all girls were under 20 years old, indicating an appropriate educational age range. Teachers' age and gender distribution revealed majority in the 31-40 age group, predominantly female, suggesting potential role models for girls but also highlighting the need for gender balance in the teaching profession. Work experience analysis indicated a significant portion of teachers have 8-11 years of experience, potentially enhancing education quality. Head teachers were predominantly aged 41-50, with gender parity, while experience data showed a majority had over 15 years of headship experience, indicating ample guidance potential for girls' education.

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In regard to how gender-responsive language use impact girls' performance in science subjects in Dagoretti South Sub-County, Nairobi. The findings from teachers and girls are presented in Table 5.1 and 5.2 respectively.

Table 4.1: Response from the teachers

Rating on the effect of gender responsive language use by teachers	Frequency	Percentage
Very high extent	29	39
High extent	31	41
Some extent	8	11
Small extent	5	6
No extent at all	2	2
Total	75	100

Source: Field Data 2023

Table 4.1 reveals teachers' opinions on the impact of gender-responsive language use. The data shows that a significant proportion of teachers, 39%, believe it has a "Very high extent" effect, while 41% consider it to have a "High extent" effect. Conversely, a smaller percentage, 11%, perceive its effect to be either "Some extent" (8 teachers) or a "Small extent" (5 teachers). Only 2% of teachers believe it has "No extent at all."

These findings indicate a widespread recognition among teachers of the importance of gender-responsive language in the classroom, with most acknowledging its potential to influence girls' interest and performance in science subjects positively. This acknowledgment likely stems from initiatives by organizations like FAWE, UNESCO, KICD, and CEMASTE, which advocate for gender-responsive language to enhance girls' participation and success in science. However, the relatively lower proportions of teachers perceiving its impact to be "Some extent" or "Small extent" suggest a need for increased awareness and education on the significance of using gender-responsive language. Failure to address this may hinder efforts to create a conducive learning environment for girls in science subjects.

Of concern are the few teachers (2%) who believe gender-responsive language has "No extent at all." Their reluctance to embrace this approach may impede progress toward gender equality in education. Continuous professional development for teachers is essential to foster understanding and promote the adoption of gender-responsive language, ensuring a comprehensive approach to addressing attitudes toward its use

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Table 5.2: Response from the girls

Rating on the effect of gender responsive language use by girls	Frequency	Percentage
Very high extent	91	43
High extent	77	37
Some extent	20	9
Small extent	16	8
No extent at all	6	3
Total	210	100

Source: Field Data 2023

In table 5.2, it is clear that, majority of girls (43%) agree that "Very high extent" effect. Similarly, 77 girls (37%) feel that it has a "High extent" effect. This is commendable efforts by their teachers. However a few of the girls(3%) still feel that that gender responsive language has No extent at all in improving in science subject. This, though few may be attributed to attitudes and other factors that need to be addressed.

During the interviews conducted with the 15 head teachers regarding the study on gender-language use influencing the performance of girls in science subjects, significant aspects that emerged supported the teacher's responses in regard to the influence of gender-responsive language use as indicated by the various responses below from the head teachers.

Head teachers (1) recognized that the absence of gender-responsive language had a detrimental effect on girls' performance in science subjects.

Head teachers (2) acknowledged that when teachers employed exclusive and biased language, it created an environment that discouraged girls from actively participating and excelling in science learning.

Head teachers (4) pointed out that use of language that perpetuated gender stereotypes and inequality hindered girls' engagement and hindered their confidence in science education.

Head Teachers (9) pointed out that teachers are trying their best to use gender responsive language. This is because of the workshops and the seminars they have been attending.

Head teacher (7) It is important to use gender-responsive language that promotes equal opportunities and eliminates gender biases. By adopting inclusive language, teachers can create an environment that encourages all girls, regardless of gender, to actively participate in science subjects.

The Head teachers, teachers and girls that revealed large extent of gender responsive language supports Mouli (2019) research on the influence of language use on perception of science subjects by primary school pupils in Pakistan. Mouli (2019) revealed language use to be a

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powerful tool in shaping the gender perception of science subject and depending on how it was used, it reinforced or alleviated gender bias. The study revealed that teachers were susceptible to exhibiting gender bias in their speech as a result of their traditional backgrounds, education, socialization and experiences.

From the findings, it is revealed that head teachers also note the importance of teachers using gender responsive languages and vice versa. By using language that reflects the diverse contributions and achievements of both genders in science, teachers can challenge preconceived notions and provide girls with positive role models to look up to. This can help in breaking down barriers and inspiring girls to pursue their interests in science subjects.

Furthermore, the researcher's observations also supported the importance of gender-responsive language use in the classroom. The researcher noticed that in three classrooms for one physics and two chemistry lessons, teachers consciously used inclusive language saw higher levels of engagement and participation from girls in science subjects. Conversely, in two lessons in biology where exclusive or biased language was used, girls seemed less motivated and hesitant to actively participate. In fact very few girls were asking and answering questions and others seemed sleepy.

However, a few head teachers, teachers and girls who had No extent at all supports Adedoyin and Ogunyinka (2017) who revealed that the stereotypical teaching methodologies encouraged girls to pursue non-science related fields like arts and humanities while boys were encouraged to pursue science. Another study also revealed that the standard use of masculine nouns and pronouns in unspecified genders subdued the female gender to regard themselves as minority (Samantha, 2019).

The analysis revealed a strikingly robust correlation between the responses of teachers and girls, with the Pearson correlation coefficient yielding a remarkable value of $r = 0.9854$, indicating an exceptionally strong positive correlation ($r = 0.9854$, $p < .05$). Moreover, the coefficient of determination (R^2) stands at an impressive 0.971, implying that a staggering 97.1% of the variability in the girls' responses can be elucidated by the teachers' responses. This finding underscores a profound association between the two variables, suggesting an intricate interplay and a substantial influence of teacher feedback on the responses of girls. Such a high degree of correlation signifies not merely a statistical relationship but rather a profound interconnectedness, highlighting the pivotal role teachers play in shaping and influencing the responses and behaviors of their students.

5.3 Conclusion

The study concludes that using inclusive language promotes equity and a positive learning environment. Challenging stereotypes, empowering communication, role modeling, and addressing bias through language can inspire girls' engagement and confidence in science.

5.4 Recommendations

Based on the study's objective, the recommendations are as follows:

- i. Promoting gender-responsive language use is essential in educational settings, where schools and educators should actively endorse inclusive, neutral, and stereotype-free language in classrooms.

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- ii. Teachers must be encouraged to steer clear of reinforcing traditional gender roles or biases.
- iii. Providing professional development on gender-responsive language use can enhance teachers' awareness and effectiveness in fostering an inclusive learning environment.
- iv. It's crucial to educate teachers, girls, and school administrators about the language's impact on girls' performance in science, fostering open discussions to deepen understanding of language's role in shaping attitudes.
- v. Creating a supportive environment is key, cultivating a classroom atmosphere where girls feel empowered to actively engage in science subjects, expressing their ideas and interests without fear of judgment or bias.
- vi. Continuous assessment of the implementation of gender-responsive language practices and their impact on girls' performance in science is necessary. This allows for the identification of areas for improvement and the measurement of intervention effectiveness.

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