



Ministry of Education

Gender Mainstreaming Practices in Basic Education and Teacher Training in Kenya



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REPORT | SEPTEMBER 2024

Foreword

The Government of Kenya, through the Ministry of Education, in line with Sustainable Development Goals (SDG) 4 and 5, is committed to providing quality education and attaining gender parity at all levels of education. Specifically, SDG 4 focuses on ensuring inclusive and equitable education and promoting lifelong learning opportunities for all while SDG 5 seeks to achieve gender equality and empower all women and girls. Therefore, the commitment by the Kenyan government to gender parity in education ensures that all barriers to gender equality are eliminated. This promise is also captured in the African Union Agenda 2063, which targets the attainment of full gender equality in all spheres of life by 2063.

To this end, Kenya has instituted various policy and legislative reforms which have been implemented as the Government seeks to promote access, equality, and equity in the education sector. These policies include the Free Primary Education (FPE) policy, which mandated the provision of free primary education to all children of school-going age; the Free Day Secondary Education (FDSE) policy introduced in 2008 to make the costs of secondary education affordable; subsidies or capitation grants provided by the government to all secondary school students enrolled in public day schools to promote access, transition, and academic outcomes. These policy interventions have improved access to education, as seen through the improved Gross Enrollment Rates (GER). For instance, since the launch of the FPE policy in 2003, the GER has increased over the years to 104% in 2018. In 2020, the national GER for the pre-primary level stood at 111%. The GER for boys was slightly higher at 112, while that for girls was 111%. Moreover, in 2020, at the primary level, the GER was 98%, a drop from 100% in 2019. At the secondary school level, the GER was 77% in 2020, up from 71% in 2019. Boys generally registered a higher GER of 79% than their female counterparts whose GER stood at 75%.

In addition to the policy interventions, the Kenyan government continues to promote access, equity, and inclusivity in education through initiatives that reduce disparities based on gender, disabilities, and location (rural and urban). One such policy intervention is the Education and Training Sector Gender Policy. Launched in 2015, the purpose of this policy was to promote gender equality in terms of access, equity, and equality in the education sector. The policy was also aimed at enhancing the empowerment of boys and girls, men and women for effective participation and contribution to national development by all. Despite these efforts, there are gaps in the promotion of gender equality in Kenya that are attributable to disparities in education and economic opportunities, representation, and adequate access to health. Therefore, when the policy window opened for the 2015 Education and Training Sector Gender Policy review, the Ministry of Education was keen on using empirical evidence for policy formulation. The Ministry of Education Kenya indicated that one key challenge in the implementation of the 2015 Education and Training Sector Gender policy was a lack of structured implementation, and a monitoring and evaluation framework. Moreover, there was no evidence of what was working well and what was not, in the policy implementation.

It is in response to this that the Ministry of Education and African Population and Health Research Center (APHRC) conducted a study in 2023, whose overall objective was to provide policy-relevant evidence for action on mainstreaming gender issues during curriculum implementation in basic education in Kenya. The findings of this study indicate that teacher training, pedagogical practices at the basic education level, and institutional practices generally fall within the gender awareness on the Gender Integration Continuum Framework (GIFC). However, being aware of these policies and guidelines is not sufficient, as deliberate steps need to be taken to ensure that the school community implements such policies.

Preface

The government of Kenya has continually sought to promote gender access, equality and equity in the education sector through policy and legislative reform implementation over the years, which has resulted in record improvements in the enrolment of boys and girls. The Constitution of Kenya, 2010, led to a new legal framework that mandated a review of the gender policy. The Bill of Rights provides that every person has the right to education. In 2011, the National Gender and Equality Commission was constituted as an Act of Parliament to reduce gender inequalities and coordinate and facilitate mainstreaming gender issues, persons living with disabilities and other marginalized groups in the national development agenda.

The Education and Training Sector Gender Policy, launched in 2015, aimed to promote gender equality in terms of access, equity, and equality in the education sector and to enhance empowerment for effective participation and contribution to national development by all (Republic of Kenya, 2015). The Ministry of Education has established a gender-in-education unit to coordinate and ensure gender responsiveness (Republic of Kenya, 2016). Despite these efforts, notable gender disparities in education performance indicators are still observed at all levels of the education and training sector, with regional disparities disproportionately affecting arid and semi-arid regions, rural areas, and urban informal settlements.

In collaboration with the Ministry of Education, the African Population and Health Research Center (APHRC) has co-generated evidence to evaluate gender mainstreaming practices in basic education and teacher training in Kenya. This research was informed by limited evidence of what was working well vis-à-vis what did not work in implementing the Education and Training Sector Gender Policy. Furthermore, the Ministry of Education was keen on using evidence in the gender and education policy review.

This research report highlights findings on how the teacher-training curriculum prepares teachers to implement gender-mainstreaming strategies within the basic education sector policies and guidelines. The research reports on the status of gender mainstreaming practices inside the classroom during teaching and learning and how these influence school attendance, choice of subjects, and academic performance. Lastly, the study reports on the vital school programs and strategies by the government and private sector to promote gender equity in basic education.

We would like to call upon all education stakeholders and partners to take cognizance of this report's findings, policy recommendations, and strategic interventions to target efforts to promote gender access, equality, and equity in the education and training sector.

Acknowledgment

This research report was prepared by the research team within the Human Development (HD) unit at the African Population and Health Research Center (APHRC) in partnership with the Ministry of Education – Directorate of Policy, Partnerships, and East African Community Affairs (DPPEAC). We acknowledge the diligence of APHRC colleagues for coordinating the day-to-day activities of the study, including training field enumerators, data collection, report writing, and policy dialogue activities.

We thank the Ministry of Education for the technical guidance during the study design, planning engagement of education stakeholders in ten counties, supporting data collection activities, presenting research findings at the Comparative International Education Society (CIES), and coordinating the research findings validation workshop. We appreciate the technical team from the DPPEAC for participating in a two-day workshop to review and provide feedback on the technical report. We thank the leadership of DPPEAC for nominating APHRC to participate in the ministry-led technical working group that is reviewing and revising the 2015 Education and Training and Sector Gender Policy.

This provided a platform to share the research findings through the evidence-sharing workshops and utilize the evidence generated to inform the policy review. We appreciate the leadership and support from the County Directors of Education (CDEs) in the ten study sites during the data collection activities. We thank the teachers, students, head teachers, curriculum support officers, quality assurance and standards officers, teacher training colleges, teacher trainers, and trainees in the target counties for participating in the study.

Lastly, we extend our gratitude to the Center for Global Development (CGD), which invested in this research study and has enabled us to provide relevant evidence on gender mainstreaming issues within institutions of basic education and teacher training in Kenya.

Abbreviations and Acronyms

AMREF	African Medical Research Foundation
APHRC	African Population and Health Research Center
ASAL	Arid and Semi-Arid Land
BOM	Board of Management
CIES	Comparative International Education Society
CGD	Center for Global Development
CSOs	Curriculum Support Officers
ECDE	Early Childhood Development and Education
EFA	Education for All
EMIS	Education Management Information System
FAWE	Forum for African Women Educationalists
FDSE	Free Day Secondary Education
FGDs	Focus Group Discussions
FPE	Free Primary Education
GEE	Generalized Estimating Equations
GER	Gross Enrollment Rate
GIC	Gender Integration Continuum
GLM	Generalized Linear Model
IGWG	Interagency Gender Working Group
KICD	Kenya Institute of Curriculum Development
KIIs	Key Informant Interviews
KNBS	Kenya National Bureau of Statistics
KNEC	Kenya National Examinations Council
MoE	Ministry of Education
NACOSTI	National Commission for Science, Technology and Innovation
NER	Net Enrollment Ratio
NGEC	National Gender Equality Commission
PCA	Principal Component Analysis
PTA	Parents Teachers Association
QCA	Qualitative Comparative Analysis
SAGAs	Semi-Autonomous Government Agencies
SGBV	Sexual and Gender-Based Violence
SMT	Science, Mathematics and Technology
STEM	Science, Technology, Engineering and Mathematics
TPD	Teacher Professional Development
UNESCO	United Nations Educational, Scientific and Cultural Organization
UNICEF	United Nations International Children's Educational Fund

Proposed citation: APHRC & MoE, Kenya (2024). *Gender Mainstreaming Practices in Basic Education and Teacher Training in Nairobi*. African Population and Health Research Center & Ministry of Education.

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Executive Summary

Executive Summary

This report evaluates gender mainstreaming in basic education and teacher training in Kenya. Since independence, the government of Kenya has implemented legislation, policy, and reforms that have targeted to improve access to, participation, and transition at various levels of education. The efforts, including the Free Primary Education (FPE) policy, the Free Day Secondary Education (FDSE) policy, subsidized secondary school, and a 100% transition policy from primary to secondary schools, have contributed to the attainment of gender parity in education. However, regional gender disparities still exist in favor of boys across all levels of education, particularly in the arid and semi-arid regions. The Education and Training Sector Gender Policy 2015, is the key guideline for promoting gender equality in and through education at all levels with a focus on access, equity, and equality to enhance empowerment, participation, and civic engagement for all.

The current review of the Education and Training Sector Gender Policy 2015 provided a research opportunity to assess what has been working well or not within the policy to reduce gender inequalities in access, participation, and achievement at all levels of education. The African Population and Health Research Center (APHRC), and the Ministry of Education Kenya, with support from the Center for Global Development (CGD), co-generated evidence to assess the implementation of the policy. Specifically, the study sought to i) Examine how the teacher-training curriculum prepares teachers to implement gender-mainstreaming strategies (such as actual training skills and processes) within the basic education sector; ii) Examine how gender mainstreaming is practiced inside the classroom during teaching and learning; iii) Assess the relationship between effective pedagogical practices that mainstream gender issues and students' school attendance, choice of subjects, and academic performance; and iv) Evaluate the availability of institutional policies, practices, and guidelines that have been put in place to mainstream gender issues and the extent to which they influence gender mainstreaming in education.

Methodology

The study utilized a concurrent mixed-methods approach. Quantitative data was generated from student and institutional questionnaires, classroom observations, and knowledge, skills, and attitudes surveys administered to teacher trainers and trainees. Qualitative data was generated from Key Informant Interviews (KIIs) with Quality Assurance and Standard Officers (QASOs), Curriculum Support Officers (CSOs), and Ministry of Education officials. Secondary data included the Kenya Certificate of Secondary Examination (KCSE) results, the Kenya Certificate of Primary Examination (KCPE) results, and the Diploma Teacher Education Training Curriculum (DTETC). Data was collected from 26 pre-primary institutions, 126 primary and 124 secondary schools in the 10 counties with the highest child poverty rates, and 7 Diploma Teacher Training colleges.

Quantitative data analysis involved the use of means, frequencies, proportions, ratios, and various statistical tests, including the Wilcoxon Signed Rank tests, to assess differences in the mean tallies of classroom observation items, and T-tests to assess the differences in the mean for normally distributed data of gender-equitable teaching practices. Chi-square tests were used to test differences in proportions or for categorical associations between variables. Regression analyses were used to assess the relationship between the gender pedagogical practices in classrooms and student learning outcomes, school attendance, and subject choice. Qualitative data was analyzed thematically where similar views were collated from various categories of respondents and deductions made on the general perceptions of the phenomenon of interest. A coding report organizing the qualitative data into themes of interest was then generated and used to summarize key findings.

Findings

An examination on how the teacher-training curriculum prepares teacher trainees to respond to the basic education sector gender policy through gender mainstreaming in teaching and learning:

- The findings revealed that teacher trainees had a relatively good understanding of gender-equitable teaching and learning practices from an equity perspective. Most trainees agreed that encouraging equal participation, extending positive reinforcement to girls and boys, and maintaining eye contact while allowing both male and female students to speak without interruption are all important.
- There was limited understanding of the importance of gender responsive lesson planning, support, and assistance for female students in STEM and gender responsive classroom setup. A review of the curriculum indicated that gender mainstreaming was not built into the teacher training curriculum and, thus, was not taught as a topic of a stand-alone unit. The general knowledge and understanding demonstrated by the teacher trainees were mainly acquired from general courses, such as child development and psychology, inclusive education, and from other private training.
- There was also a misalignment in the assessment framework used in the Teacher Training Colleges (TTCs), where teacher trainers assessed gender inclusive teaching during teaching practicum assessment. In contrast, teacher trainees were unaware that it is an assessment component.

An examination of whether gender responsive pedagogical practices are utilized in basic education classrooms revealed that:

- There were no significant gender differences in the teaching practices among pre-primary and primary school teachers. However, at the secondary level, there were gender differences in the teaching practices. For instance, teachers engaged boys more than girls during literacy and STEM classes.
- At the primary level, the main reasons for absenteeism for both boys and girls were domestic responsibilities, sickness, and lack of food. In contrast, at the secondary level, the main reasons were school fees, sickness, pregnancy and parenting challenges for girls, and paid work outside the home for boys.
- On optional subject selection at secondary school, more boys than girls opted to select physics and geography, whereas a higher proportion of girls intended to select Christian Religious Education/ Islamic Religious Education.

An examination of the associations between gender-equitable teaching practices and academic outcomes revealed that:

- At both primary and secondary levels, the use of gender-equitable practices positively influenced learning outcomes in English and STEM subjects. The use of gender-equitable teaching practices was significantly associated with increased academic performance in English at the primary level and Biology, English, Mathematics, and Physics at the secondary level.
- The odds of school attendance increased if gender-equitable interactions and gender responsive classroom environments were utilized during instruction, and if the schools had a higher gender mainstreaming compliance score.
- Other factors that significantly influenced school attendance at primary and secondary levels included the availability of a school feeding program and library facilities.
- The odds of selecting Chemistry and Physics as optional subjects at the secondary level increased if the subject teacher was easily approachable and if the subject was considered applicable to the intended future career.

Lastly, the study examined the strategies (policies, practices, and guidelines) implemented at the institutional level to mainstream gender issues and to what extent such strategies promoted gender mainstreaming in basic education:

- More than 40% of public and private primary and secondary schools did not have guidelines on sexual harassment and gender-based violence for teachers and students in the schools. In addition, majority of the schools that indicated they had the guidelines could not avail them to the research team.
- More than 98% of the schools had separate toilet facilities for boys and girls; however, most schools did not have separate toilets for learners with special needs.
- At the pre-primary level, the teaching staff was predominantly female (82%), whereas the proportion of male teachers was more than that of the female teachers at the primary level (54%) and secondary level (75%).
- At the primary and secondary levels, most male teachers were allocated to teaching STEM subjects.
- Quality Assurance and Standards Officers addressed gender issues during school visits in 60% of primary and 46.9% of secondary institutions. However, the focus on gender issues during school visits by the Public Health Officers (PHO) was low in both primary (36.6%) and secondary (22.1%).
- The composition of the Board of Management (BOM) and the Parent Associations (PA) in private and public primary and secondary schools was predominantly male.

Conclusion

Whereas the implementation of the Education and Training Sector Gender Policy, 2015 falls within the gender-aware level on the Gender Integration Continuum Framework (GICF), the study highlighted key gaps teacher training, pedagogical practices at the basic education level, and institutional practices. At the teacher training level, there is need a review of the teacher education curriculum to be more gender-responsive. There is also need to capacity building of pre-service and in-service teachers to be more gender-responsive in their pedagogical practices. Lastly, deliberate steps should be taken to ensure that all institutions at basic education level and training are gender inclusive in their practices, guidelines, and programs.

Policy Recommendations

Based on the study findings, the study team proposes policy recommendations and strategic interventions in line with each thematic area of the Education and Training Sector Gender Policy 2015.

Gender Inclusive Teacher Training:

- Include engendered instructional approaches in the training modules in the Diploma Teacher Education Curriculum Guides.
- Gender mainstreaming could be taught explicitly as a stand-alone unit or integrated into the teaching methodology in the learning areas.
- Gender mainstreaming should also be a target of the assessment in the teacher training courses and practicum experience.
- Provide capacity building for teacher trainers on gender mainstreaming in the curriculum.
- Strengthen coaching, mentorship, and modeling of best practices in gender mainstreaming for training.
- Allocation of financial resources to support the implementation of gender mainstreaming in all areas of teacher education.

Access:

To strengthen the nutritional support to schools to enhance school attendance especially for learners in marginalized areas.

- Expand the EduAfya medical scheme to cover primary schools to enhance school attendance.
- Institutionalize targeted interventions to increase the enrollment and attendance for boys and girls based on regional disparities and student gender. For instance, have programs to reduce pregnancies at secondary school levels or programs to support pregnant and parenting adolescents.
- Sensitize communities on the availability of resource centers and schools that support SNE and promote enrollment, retention, and transition of children with special needs.
- Build the capacity of teachers and school administrators on the availability of Educational Assessment Resource Centers to refer learners with special need for assessment and support.
- Establish and equip Educational Assessment Resource at county and sub-county levels to evaluate and identify learners with special needs.
- Equip basic education institutions with facilities and trained teachers to support students with special needs.

Equity:

- Enhance school management structures such as BoM and Parents Associations that are gender inclusive – formation, representation, training, and discussions.

Quality Education:

- Capacity building on gender inclusive teaching practices in basic education for both in-service teachers and teacher trainees.
- Strengthen quality assurance and monitoring for effective implementation of gender equity in education and training at the college and school levels.
- Enhance supervisory mechanisms (head teachers, QASO, and CSOs) to ensure effective gender mainstreaming practices in the classroom.

Safety, Security, and Gender-Based Violence:

- Require/mandate institutions of learning to have guidelines on safety, security, and gender-based violence accessible to students, teachers, and non-teaching staff.
- Sensitize teachers, students, and non-teaching staff (including the board of management and parent associations) on the institutional guidelines.
- Develop a monitoring and evaluation framework for ensuring compliance e.g., on student diaries, posters, and seminars).
- Gender inclusivity in regards to provision of separate toilets for male and female learners and teachers should continue.
- Training on gender-based violence and sexual harassment for teachers, Quality Assurance and Standards Officers (QASO), and Curriculum Support Officers is needed to build their own capacity to handle the cases if they arise and build the capacity of other teachers, students, and colleagues.
- Establish and implement standard operating procedures for reporting GBV and abuse in and out of school for learners, teachers, and non-teaching staff and legal redress for perpetrators of abuse and GBV.

Nurturing and Mentoring:

- Deliberate efforts to encourage girls to pursue STEM subjects and careers at an early age through formal mentorship programs to encourage STEM careers and role modeling.
- Encourage female teacher trainees to pursue STEM-related subjects and male teacher trainees to pursue humanities and languages.
- Provide incentives and create an enabling environment for students, particularly females, to participate in research and STEM courses.
- Provide incentives and create an enabling environment for students, particularly males, to pursue careers in the teaching profession in pre-primary and primary.
- Disseminate gender-friendly information on STEM degree programs and innovation, careers, job creation, and employability to learning institutions.

Governance and Management:

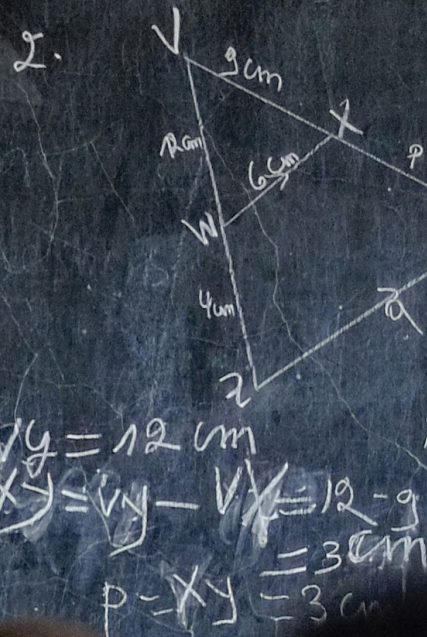
- TSC and relevant stakeholders should ensure equal representation of male and female teachers in school and in leadership positions.
- Encourage and empower female teachers and parents to take up leadership positions in schools (administrative, HoD, BoM, and PA).
- Continue to encourage equal representation of students in leadership positions.

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Introduction

1. Introduction

1.1 Background

Global policies and education interventions implemented to achieve the Education for All (EFA) goals, Millennium Development Goals (MDG) 2 and 3, and the Sustainable Development Goals 4 and 5, have focused on achieving gender parity in access to education (Aikman & Rao, 2012; United Nations, 2015). Gender parity in access to education is also a priority of the African Union Agenda 2063 as well as the Continental Education Strategy for Africa (CESA) 2016 – 2025 which emphasizes gender equity, equality, and sensitivity throughout education. Further, the East Africa Community (EAC) treaty prioritizes issues of gender equality in all EAC endeavors. These education policies and interventions have consequently resulted in improved access to education. For instance, the primary school net enrolment rate in the low-middle-income contexts improved from 83% in 2000 to 101% male and 99% female in 2022 (UNESCO Institute for Statistics, 2022).

In Kenya, since independence, policy and legislative reforms have been implemented as the government seeks to promote gender access, equality, and equity in the education sector. Kenya has also recorded improvements in school enrollment for both girls and boys attributed to the policies and strategies initiated by the Ministry of Education and other stakeholders (Mumiukha et al., 2015). For instance, the Free Primary Education (FPE) policy instituted in 2003, and the Free Day Secondary Education (FDSE) in 2008 (Republic of Kenya, 2003b; Ministry of Education, 2007). The constitution of Kenya recognizes basic education as a fundamental human right of every Kenyan child, thus providing for the right to free and compulsory primary education, including persons with disabilities, by increasing the number of eligible boys and girls transitioning into and completing secondary education (Republic of Kenya, 2010). The Basic Education Act (2013) guarantees the right of every child to free and compulsory basic education. The 100% transition from primary to secondary school policy was rolled out in 2018 to complement the FDSE policy. Together, these policy interventions have improved access to education (Republic of Kenya, 2020).

In addition, one of the core guiding principles of the Basic Education Curriculum Framework is diversity and inclusion. The framework seeks to prepare learners to appreciate different forms of diversity race, ethnicity, gender, language, culture, and religions. Gender is considered a pertinent and contemporary issue to be infused into the curriculum content. The framework emphasizes on the need for teachers to be equipped with skillsets to effectively implement inclusive policies and practices (Kenya Institute of Curriculum Development, 2017).

The motivation for the study was to co-generate primary evidence with the Ministry of Education on the implementation of the Education and Training Sector Gender Policy 2015 to inform the review of the policy.

1.2 Study Objective

The overall objective of this study was to provide policy-relevant evidence for action on mainstreaming gender issues during curriculum implementation in basic education in Kenya.

The specific objectives were to:

1. Examine how the teacher-training curriculum prepares teachers to implement gender-mainstreaming strategies (such as actual training skills and processes) within the basic education sector policies and guidelines.
2. Examine how gender mainstreaming is practiced inside the classroom during teaching and learning.
3. Assess the relationship between effective pedagogical practices that mainstream gender issues and students' school attendance, choice of subjects, and academic performance.
4. Evaluate the availability of institutional policies, practices, and guidelines that have been put in place to mainstream gender issues and the extent to which they influence gender mainstreaming in education.

The study was guided by the following research questions:

1. How does the teacher-training curriculum in Kenya respond to the basic education sector gender policies regarding gender mainstreaming in teaching and learning?
2. Does the gender policy in education (as viewed from the lens of teacher pedagogical strategies and practices inside the classroom) enhance gender mainstreaming, and how do the observed strategies relate to students' (boys/girls) school attendance, choice/preferred subjects, and academic performance?
3. What strategies (policies, guidelines and practices) have been put in place at institutional level to mainstream gender issues and to what extent do they promote gender mainstreaming in basic education?

1.3 Theoretical Framework

This research is situated within the fundamental principles of the Gender Integration Continuum (GIC). According to the Inter-agency Gender Working Group (IGWG), this theoretical framework allows for the categorization of how policies and practices treat gender norms and equality in their design and implementation, into "gender blind", "gender aware", (IGWG, 2017). Gender blind is used in reference to policies and practices that ignore gender norms and considerations. "Gender aware" refers to policies and practices which deliberately address both unforeseen and anticipated gender-related effects in their design and implementation (see *Figure 1*).

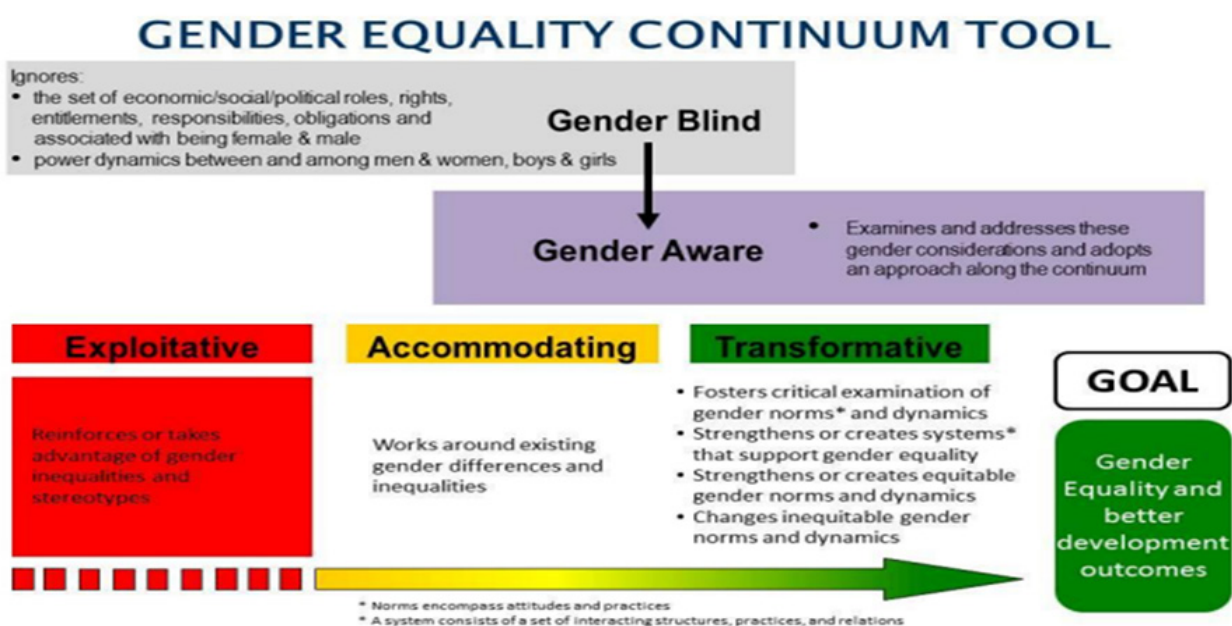


Figure 1: Theoretical framework (Source: Inter-agency Gender Working Group, 2017)

In line with the GIC framework, converging evidence indicates that for access, equity, and equality to be attained fully, and to break the systemic barriers and challenges that women and girls as well as marginalized learners (with disabilities and from low socio-economic status) continually face, government systems need to be gender aware in the implementation of policies and practices. This approach should guide the efforts to find solutions to overcome these challenges and establish mechanisms for breaking barriers.

1.4 Conceptual Framework

Effective gender mainstreaming practices in basic education settings directly correlate with several factors, including improved participation of students during the learning process, learning outcomes, high teacher self-efficacy, motivation to pursue STEM careers path among female students, and academic performance. In addition, it is reflected in the gender representativeness of the leadership in the education settings (leadership in the classrooms, school administration, teaching and non-teaching staff); stakeholders' competence or knowledge in gender mainstreaming; availability and implementation of policies and guidelines curriculum to support gender mainstreaming in education. The education sector particularly needs to equip teacher trainees and practicing teachers with knowledge of the content on pedagogy and gender mainstreaming practices. Teachers should promote access, equity, and equality through inclusive pedagogical practices, such as social interactions with students. Gender mainstreaming practices and teacher training are highly interconnected as the quality of teacher training influences teaching practices, indirectly influencing learning outcomes. Similarly, effective school, government, and private sector gender mainstreaming contribute to student learning outcomes. The detailed conceptual framework is shown on *Figure 2*.

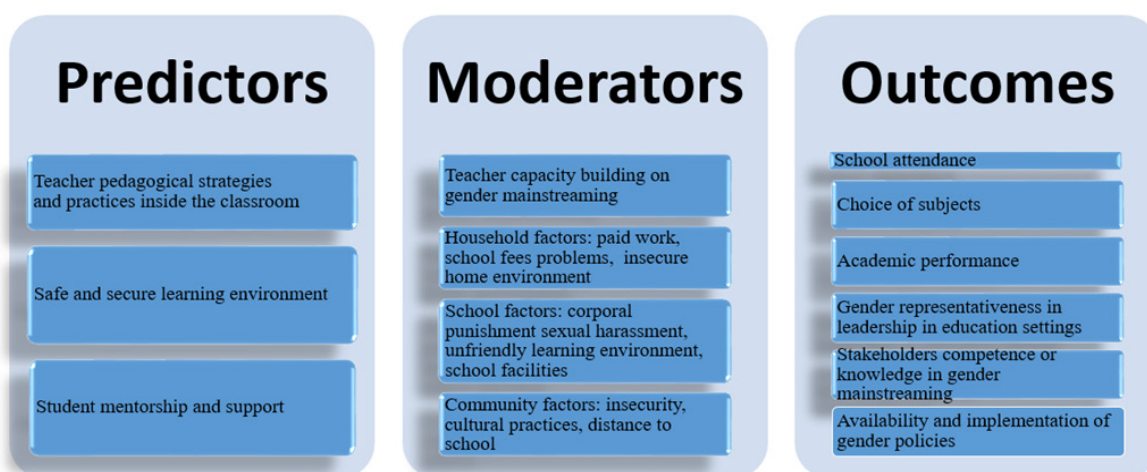


Figure 2: Conceptual framework

1.5 The Education and Training Sector Gender Policy 2015

In this section, we highlight the Education and Training Sector Gender Policy (referred to as Gender Policy henceforth) that was rolled out in 2015 after the revision of the 2007 gender policy. The main objective of the gender policy is to promote gender equality in and through education at all levels. It is guided by the fundamental principle of equal participation between women and men, and girls and boys, as well as inclusion. The six objectives of the policy are:

1. Reduce gender inequalities in access, participation, and achievement at all levels of education.
2. Support equal participation of women and men as decision-makers in shaping the educational policies and practices for sustainable development.
3. Increase participation in education for disadvantaged girls and women, boys, and men, including Orphans and Vulnerable Children (OVC), people with special needs, people living in Arid and Semi-arid Lands (ASALs), as well as the rural and urban poor
4. Ensure a gender responsive curriculum design, development, and implementation.
5. Improve participation in research, SMT subjects, and STEM courses by providing mentoring programs to all learners in the education sector.
6. Ensure a safe and secure learning and work environment free of any form of sexual harassment and gender-based violence.

The policy goals and statements are premised on the following six thematic areas:

1. **Access:** To increase participation of all learners, including out-of-school learners in gender responsive education programs.
 - a. Expand access to gender-sensitive and responsive quality education.
 - b. Make all educational institutions gender, age, and disability friendly.
2. **Equity:** To enhance gender equity at all levels of education.
 - a. Provide equitable resources, opportunities, and participation for all learners regardless of age, gender, culture, and disability.
 - b. Ensure gender-equitable provision of Alternative Provision for Basic Education and Training (APBET) and Adult, Continuing Education (ACE) opportunities.
3. **Quality Education:** Eliminate gender inequalities by providing quality education and training.
 - a. Institutionalize a gender responsive quality curriculum in the sector.
 - b. Institutionalize a gender responsive and inclusive quality curriculum for teacher education and development.
 - c. Mainstream gender in teacher education and development.
 - d. Ensure a flexible gender responsive SNE curriculum.
4. **Safety, Security, and Gender-based Violence:** A safe, secure and conducive learning and work environment for all in the sector.
 - a. Create a safe and protective learning and work environment to prevent sexual harassment and gender-based violence at all levels of the education and training sector.
 - b. Provide a safe and secure environment for all learners.

- c. Develop and implement policies that address GBV at all levels of education and in the workplace.
- d. Establish modalities for dealing with sexual harassment and GBV in the education sector.

5. Nurturing and Mentoring: Develop gender responsive mentorship and role modelling programmes for all learners.

- a. Integrate gender responsive, nurturing, and mentoring aspects in the delivery of education.
- b. Provide mechanisms to enhance participation in STEM by all learners at all levels of education.
- c. Facilitate gender-balanced participation in STEM and innovation in academic programs.
- d. Institute mechanisms to ensure participation and retention in STEM and Innovation courses.

6. Governance and Management: To establish structures for good governance practice and management that ensure gender responsiveness at all levels of education.

- a. Enhance gender equality and gender responsiveness in governance, management, and research in the education sector.
- b. Establish structures for good governance practice and management that ensure gender equality at all levels of the education sector.
- c. Collaborate and network with partners and stakeholders to promote gender-sensitive and gender responsive education awareness.
- d. Streamline advocacy on gender equality and training programs for gender mainstreaming.
- e. Ensure adequate and gender-balanced staffing in Special Needs Education (SNE) institutions.
- f. Ensure gender empowerment through responsive budget allocation for the provision of essential materials.
- g. Ensure gender balance in deploying teachers and instructors at all levels.
- h. Facilitate gender empowerment at all levels.
- i. Improve the data and information management to ensure gender sensitivity and disaggregation by age and sex at all levels.

Source: Ministry of Education Science and Technology, MoEST (2015)



Literature Review

2. Literature Review

2.1 Definition of Gender Mainstreaming

Gender mainstreaming encompasses the consistent and systematic integration of gender equality issues into the development and implementation of policies, plans, programs, and projects at all levels, including national, community, school, and classroom (Ministry of Education, 2015; Forum for African Women Educationalist [FAWE], 2018). Generally, gender mainstreaming includes spreading the responsibility of gender across units or departments, the development and implementation of anti-discrimination policies, and action plans on gender equality. Furthermore, it entails developing and implementing sexual harassment and violence-free policies, systematic gender analysis tools that guide the policy design and implementation process, and continuous gender analysis to highlight gender inequality. At the institutional level it involves producing gender-disaggregated statistics, use of gender impact assessment methods, and gender budgeting (Daly, 2005).

In the education sector, gender mainstreaming entails gender sensitivity in developing and implementing school programs, curriculum development, governing and managing schools, teaching, and using learning materials, budgeting, and activity implementation as an ongoing activity (Frei & Leowinata, 2014). As an ongoing process, it involves various activities, including the identification of gaps and raising awareness on gender equity, promoting and building support for change, resource mobilization and provision, capacity building, as well as monitoring and evaluation of the process. Capacity building through gender training is critical for gender mainstreaming as it enhances awareness, competence, knowledge, and practical skills about gender equality, consequently leading to changes in self-perception, relational behavior changes, beliefs, and problem-solving skills.

2.2 Gender Responsive Teacher Training

According to UNESCO (2015), gender equality in teacher education encompasses several practices and policies including the gender responsive institutional culture, teacher attitudes, gender responsive policies, implementation of gender responsive pedagogy, and use of gender inclusive materials. Researchers pinpoint that integrating gender mainstreaming and sensitivity in teacher education programs encourages and strengthens gender inclusive pedagogy (Bramberger, 2015; Kreitz-Sandberg, 2013). Global efforts to promote gender inclusivity in teacher education are evident through toolkits on gender mainstreaming for capacity building for teachers and teacher educators. The Gender Responsive Pedagogy toolkit by the Forum for African Women Educationalists (2018) is widely used in African country contexts.

Other notable challenges in teacher training is gender imbalance and the notable decline in the number of trainees enrolling in the teaching profession and low male participation in pre-primary and primary education (de Salis et al., 2019; Mills et al., 2004). Studies indicate that the main reasons behind the low participation of male teachers in early childhood education are the identification and perception of early childhood teaching as “women’s work,” low salaries and status, and fear of being accused of sexual abuse (Anliak & Beyazkurk, 2008; Bhana et al., 2022). According to Bozkurt (2021), a likely reason for the unequal number of male and female teachers is male teachers’ preference for secondary school teaching positions, as the positions are better paying. There has been a global call to improve the participation of male teachers in early childhood and primary education by changing the deeply held gendered attitudes that they do not have the capacity to nurture and support children (Anliak & Beyazkurk, 2008; Peeters et

al., 2015). Some of the key reasons for the low participation of female teacher trainees in math and science careers are teacher-student interactions, teaching strategies, and instructional materials during their education process and the gender stereotype that these subjects are male domains (Archer et al., 2010; Makarova et al., 2019; Morales, 2016). Cvencek et al. (2011) pinpointed that as early as second grade, children were already demonstrating the stereotype that math is for boys, and boys were encouraged to identify with math more strongly than girls. These stereotypes are also seen in higher education (Verdugo-Castro et al., 2022).

2.3 Gender Inclusive Classroom Practices

Effective teaching practices that pay attention to the specific needs of boys and girls are critical for students' academic achievement and socio-emotional well-being in general. These effective practices include; appropriate language use to promote gender inclusion and equality, considering gender differences during lesson planning, and selecting teaching and learning materials, methodologies, activities, and classroom arrangement and setup (FAWE, 2018, 2020). The consideration of effective gender responsive practices promotes gender equality and empowers learners, encourages learner-centered pedagogy, establishes mutually supportive interactions between students and teachers, and cultivates safety and an inclusive learning environment (Ngware et al. 2012; FAWE, 2015, 2018).

In sub-Saharan Africa, teaching and learning practices have been shown to be gender-biased, characterized by use of abusive and negative language, unequal participation of boys and girls, use of gender insensitive teaching and learning materials that perpetuated gender stereotypes, and inadequate sanitation facilities (FAWE, 2015). Teachers are often unaware of the stereotypical beliefs that drive gendered school practices and interactions and typically reinforce or ignore rather than challenge them (Kostas, 2023; Namatende-Sakwa, 2021). This lack of awareness and these subsequent practices have been attributed to teacher training programs in Africa, which overlook opportunities to equip teachers to reflect on and challenge gender biases inherent in the curriculum and pedagogical practices.

However, in contexts where teachers have been trained, there are notable levels of awareness exhibited through quality teaching practices. For instance, Mollaw et al. (2023) teachers were more gender aware and utilized practices that ensured equal participation of boys and girls, using materials and instructional methods that catered to their specific learning needs. Similarly, the use of gender responsive learning strategies is an effective teaching approach that has resulted in improvements in students' achievements and attitudes in biology lessons (Akhigbe et al., 2020). The use of gender responsive practices also results in improved academic outcomes for girls, change in student behaviors and attitudes, greater participation of girls in the classroom processes, school committees, and leadership roles, and higher gender awareness among boys (Bever, 2014). It has been proposed that critical efforts to close gender gaps in science education are to mainstream gender responsive pedagogy into science education activities and teacher pedagogy delivery anchored through quality teacher training (UNESCO, 2017).

In Kenya, evidence indicates notable gender disparities in teaching and learning. For instance, teachers tend to pay more attention to boys than to girls in the class, which accounts for individual differences in learning outcomes (Ngware et al., 2012). In another study, Forssman and Jacobsson (2016) examined the implementation of gender mainstreaming strategic plans in secondary education in Kisumu County. The findings revealed that teachers were unaware of the details of the plan, there was high inequality in enrollment for boys and girls, and that girls' career aspirations were not well guided.

2.4 Mentorship and Role Models are Critical for Gender Equitable Student Success.

Access to education and training is not sufficient for vulnerable women and girls to succeed and break through barriers. Mentorship thus plays a critical role in education and in helping girls understand their own sense of significance. Evidence indicates that increasing the number of female teachers has a strong effect on the enrolment of girls albeit with a limited or mixed effect on achievement (Haugen et al., 2014). Female teachers are pivotal role models in girls' participation in STEM subjects and future careers. Some studies suggest that parents' preference to enroll their daughters in school depends on whether there are female teachers (Herz et al., 2004; Rihani, 2006). In a multivariate analysis of data from 222,000 households in 30 developing countries, Huisman and Smits (2009) found that in addition to socioeconomic and demographic household characteristics, parents' decisions regarding their children's education were also influenced by the number of female teachers in a school. They also found that enrollment of girls faced with socio-cultural barriers was highest in schools with female teachers.

2.5 Gender Responsive Teaching and Learning Materials

Evidence from sub-Saharan African countries indicate the teaching and learning materials (TLMs) specifically textbooks are gender imbalanced with under representation of the female gender and being portrayed as the weaker gender compared to men (Kabir et al., 2021; Namatende-Sakwa, 2018). Equal gender representations that break the stereotypical norms is important for the TLM as the messages transmitted strongly impact children's attitude and perceptions in relation to their role in society (Foulds, 2013). The elimination of gender bias in textbooks would help foster the attainment of gender equality in primary and secondary education as gender bias in images and texts may reduce girl's academic achievement (Blumberg, 2008). The Kenya Institute of Curriculum Development (KICD) has taken deliberate steps to address gender issues by revising the basic education teaching and learning materials to be gender inclusive and responsive and revising the teacher training curriculum to include aspects of inclusivity in teaching and learning.

2.6 Institutional Policies, Practices, and Guidelines on Gender Mainstreaming

Targeted strategies and practices should be implemented to make education environments safe and secure, free of gender-based violence, bullying and sexual harassment for students, teachers, and nonteaching staff. According to UNESCO (2016), school-related gender-based violence - affecting more than 246 million children yearly - comprises acts or threats of sexual, physical, or psychological violence occurring in and around schools, perpetrated because of gender norms and stereotypes and enforced by unequal power dynamics (UNESCO, 2016). In Africa, reports show that pupil-pupil and teacher-pupil sexual harassment is prevalent in schools, with about two out of five school principals acknowledging sexual harassment between pupils in their primary schools (UNESCO, 2015).

Some of the policies instituted by the government of Kenya to eliminate GBV and sexual harassment include: The Sexual Offences Act, 2006; the Protection against Domestic Violence Bill, 2015; the Family Protection Bill, 2001; the Children's Act, 2022 which safeguards children from abuse, violence, and exploitation; and the 2018 School Health Policy. Despite these efforts, sexual harassment of girls is still prevalent in school settings (Abuya et al., 2012; Ruto, 2009). This has negatively impacted girls'

attendance and effective participation in learning activities (Elimu Yetu Coalition, 2003; Vanner, 2018). Findings from the Kenya 2019 Violence Against Children Survey (Republic of Kenya, 2019) indicate that childhood sexual violence was experienced by 16% of females and 6% of males before age 18. Further, 1% of females experienced the first incident of childhood sexual violence at age 13 or younger, 27% between age 14-15, and 55% between ages 16-17.

2.7 Gender Equitable School Leadership

Research evidence highlights that women are generally under-represented in leadership positions and key decision-making roles in education settings due to the long-held traditional colonial practices that view only men as capable leaders (Chege & Sifuna, 2006; Hockett, 2021; Lopez & Rugan 2018; Warrington & Kiragu, 2012). Combat (2014) showed that despite there being more female teachers in municipal primary schools in Kenya, they tend to hold fewer administrative positions, with the main barriers being a lack of role models and mentors, male-centered attitudes about leadership, family responsibilities, gender socialization, the influence of patriarchy and belief in meritocracy.

There remains the gender stereotype that women are not as good in leadership as men, despite research evidence indicating minimal differences in leadership between men and women (Msila, 2013). As a result of this stereotype, female school leaders receive more inspections from education authorities than new male heads, lacking respect from the school community if not married, and being negatively stereotyped if they have different religious affiliations from the community (Dzimiri & Jita, 2022). Oyeniran (2020) highlighted that social-cultural factors, especially in the African context where women are perceived as subordinate to men and are not allowed to make decisions or, in extreme cases, not allowed to talk in front of men, also hinder women from taking up leadership roles in the schools. The study also showed that female school heads often face a challenge integrating family obligations with work responsibilities and sometimes are forced to quit their workstations or break up with their spouses. Female school heads also face negative attitudes from parents and teachers (Shava et al., 2021).



Methods

3. Methods

3.1 Study design

This study utilized a concurrent mixed-methods approach to explore the relationships between measures, such as gender-equitable pedagogical approaches on students' school attendance, academic outcomes, and choice of subjects.

3.2 Study Setting

Data for the present study was collected from basic education institutions spread over 10 counties in Kenya with the highest rates of child poverty - above 60% (KNBS, 2017). The KNBS (2017) indicate that child poverty relates to a child's multidimensional deprivation as a result of the inability to access one or more basic needs or services. Child poverty beyond 60% indicates that children residing in these counties are more deprived and thus vulnerable. The counties were Busia, Garissa, Mandera, Marsabit, Tana River, Turkana, Samburu, Wajir, Nairobi, and West Pokot, which have been portrayed in *Figure 3*. Nairobi was selected even though the child poverty rate was estimated to be at 7%, because of the presence of many urban informal settlements. Data was also collected from 7 purposefully sampled Diploma Teacher Training colleges in the following Counties; Kiambu, Kakamega, Mombasa, Garissa, Nyeri, and Machakos. Five of the colleges had training programs for early childhood development and primary education, while two focused on secondary education.

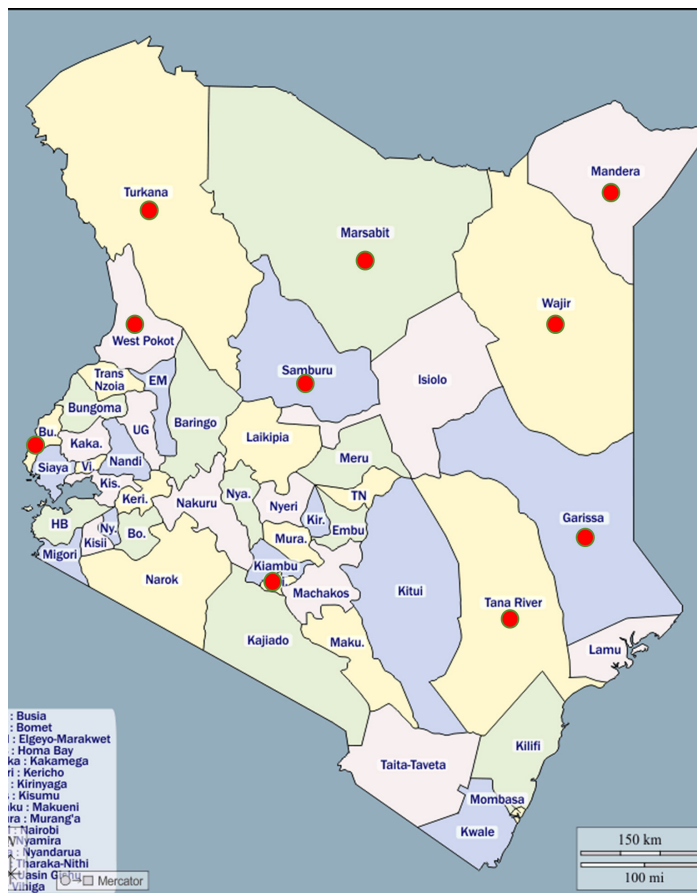


Figure 3: Map of Kenya showing the target study Counties

3.3 Study Participants/Population

The study participants for the quantitative component included 250 institutional heads, 4,662 learners in primary grade 6 and secondary school form two, 7 teacher trainers, and 166 teacher trainees. In addition, qualitative data included 10 focus group discussions with students in primary and secondary schools, 16 in-depth interviews with teachers in primary and secondary school, 10 key informant interviews with CSOs/QASOs, 7 in-depth interviews with teacher trainers, 7 focus group discussions with teachers trainees, 1 key informant interviews with a KICD official, and 1 key informant interview with Ministry of Education official. Further, the secondary data sources included KCPE and KCSE assessment data from 2017 to 2022 and the Diploma, early childhood development, primary and secondary teacher training curriculums.

3.4 Sampling Strategy

The overall sampling strategy considered school performance in the standardized national examinations of academic year 2021 namely the Kenya Certificate for Primary Education (KCPE) and Kenya Certificate of Secondary Education (KCSE). Particularly, schools were listed in the 10 Counties and grouped into three categories based on their performance - low, medium, and high performing. Thereafter, quintiles were created, with schools falling in the lower two (40%) quintiles constituting low-performing schools, those in the 3rd quintile categorized as the middle-performing schools, and those in the upper two quintiles (top 40%) categorized as best-performing category. *Table 1* below highlights the distribution of schools categorized based on performance (low, middle, and high) in the 2021 national examinations for each county.

Table 1: Categorization of all schools and sampled schools by performance quintiles

Primary							Secondary					
	All schools 2021 performance			Sampled schools' performance in 2021			All schools 2021 performance			Sampled schools' performance in 2021		
	Bottom 40%	Middle 20%	Top 40%	Bottom 40%	Middle 20%	Top 40%	Bottom 40%	Middle 20%	Top 40%	Bottom 40%	Middle 20%	Top 40%
Busia	40.4	19.7	40.0	50.0	21.4	28.6	40.5	20.3	39.3	41.7	16.7	41.7
Garissa	40.1	20.3	39.6	50.0	8.3	41.7	40.0	20.0	40.0	46.2	30.8	23.1
Mandera	40.2	20.1	39.7	27.3	27.3	45.5	40.4	34.0	25.5	28.6	35.7	35.7
Marsabit	40.0	20.0	40.0	38.5	23.1	38.5	41.5	19.5	39.0	50.0	16.7	33.3
Wajir	40.2	20.1	39.7	46.2	15.4	38.5	40.0	20.0	40.0	54.6	9.1	36.4
West Pokot	40.1	20.0	39.9	50.0	14.3	35.7	40.1	20.4	39.5	41.7	25.0	33.3
Tana River	40.3	20.1	39.6	23.1	30.8	46.2	43.2	29.7	27.0	58.3	16.7	25.0
Turkana	40.2	19.9	39.9	33.3	41.7	25.0	41.4	19.0	39.7	46.2	15.4	38.5
Samburu	40.3	20.2	39.5	33.3	25.0	41.7	40.9	20.5	38.6	50.0	16.7	33.3
Nairobi	40.0	20.0	39.9	50.0	16.7	33.3	41.3	18.8	39.9	38.5	15.4	46.2
Total	40.2	20.0	39.9	40.5	22.2	37.3	40.8	20.7	38.5	45.2	20.2	34.7

A sample of 250 schools (25 in each county, i.e. 13 primary schools and 12 secondary schools) and 5,000 students (i.e. 20 students in grade 6 or Form 2 depending on the level) was targeted. The total number of schools (sampling frame) from the ten counties was 3,320 schools in primary level and 980 in secondary level, from which the sampled schools were obtained.

3.5 Data Collection Procedures

Ethical Consideration

Prior to data collection the research team obtained research approval from the APHRC internal research ethics committee. Additionally, research ethical approval was obtained from the Africa Medical and Research Foundation (AMREF) Ethics and Scientific Review Committee and then the research permit obtained from the National Commission for Science, Technology, and Innovation (NACOSTI). The Ministry of Education Kenya gave permission to access schools.

Research Assistant Recruitment

The recruitment of research assistants was conducted in June 2022 as per the APHRC procedures and policies, which included advertising for the positions, shortlisting candidates, and conducting interviews for successful candidates. As is the practice at APHRC, and to ensure fairness, priority was given to qualified applicants from the respective counties where the study was conducted. Sixty research assistants were recruited – 6 in each of the 10 sampled counties. There was an equal representation of male and female research assistants from the 60 individuals hired.

Research Assistant Training

All the research assistants participated in rigorous 5-day training conducted in Nairobi. The training encompassed a general study overview, objectives, significance, research design, and data collection procedures. The participants were also trained on research ethics and were provided with a comprehensive review of the qualitative and quantitative data collection tools. The research assistants were required to demonstrate the ability to administer the quantitative surveys and the qualitative guides with high competence using the data collection tools (SurveyCTO). Therefore, during training, the research assistants performed roleplays and mock interviews through administering the tools to their peers. Similarly, a small group of 25 research assistants were trained on classroom observation procedures, including completing the observation checklists and filming the classroom, saving and uploading the data files. They practiced filming and generating high-quality videos. The data submitted during these mock trials were checked for consistency and reliability. Feedback was provided to the research assistants, and all the observed discrepancies were discussed. This process was also utilized to check for unclear survey items, which were also discussed and revised accordingly. The interrater reliability assessment scores at the end of training were above 80% an indication of a high degree of agreement between the research assistants.

Actual Data Collection

Prior to the start of fieldwork activities, a meeting of the County Directors of Education from each of the target counties was convened in Nairobi, where these key education stakeholders were briefed on the study and their role in supporting research activities as well as validation and dissemination activities. Data was collected from August to October 2022 by a team of 60 enumerators recruited from the target counties. The research assistants sought written consent from the participants. The head teachers gave consent for the learners in their schools to participate in the study. This was followed by the research assistants seeking verbal assent from the learners. All interviews were conducted in a quiet space to ensure confidentiality.

For classroom observations, the enumerators filmed the designated class sessions after seeking consent from the institutional heads and the individual teachers being observed. The classes to be observed were selected randomly, and only one subject was observed per school.

Supervision during Data Collection

Each of the 10 study sites had a field supervisor in charge of logistics, ensuring quality checks, and reporting back to the research team at APHRC. Furthermore, 5 of the project research team members at APHRC oversaw the overall data collection in 2 counties each. They provided technical support and overall oversight of data collection and backstopping while in the field. The team leads also held weekly briefing sessions with the APHRC research team to share the progress of data collection and any challenges from the field.

Data Quality Checks

To ensure high-quality data collection, the research team conducted weekly random spot checks from the second week of data collection. During the spot checks, the research team visited the schools where the data collection activities had been concluded. They re-administered the institutional questionnaires to the respondent who was interviewed by the researchers. They also re-administered the student questionnaire to at least three students who were interviewed in selected schools and feedback relayed to the data collection team during the check-in meetings. An analysis of the spot check revealed that the accuracy of the student questionnaire was 94%, indicating that the survey had good precision. The accuracy rate of the institutional questionnaire was 75%, which was moderately good, though below the study's expectation. This was brought about by having about 30% of different individuals interviewed during the main survey and the spot check surveys.

Study Tools

The development and review of the study tools was informed by existing literature and evidence-based gender mainstreaming toolkits that address gender responsive pedagogy for teachers and teacher educators. These include FAWE gender responsive pedagogy toolkit, Commonwealth of Learning, Gender Mainstreaming Toolkit for Teachers and Teacher Educators (FAWE, 2018; Frei & Leowinata, 2014).

Tool Validity

The validity of the study tools was ensured through review and input by gender experts from the APHRC Human Development theme, the Ministry of Education, and the Center for Global Development to ensure that the data collected aligned to the study research questions. Other validity measures conducted include reliability assessment explained more in the quantitative data analysis section. *Table 2* below shows study tools, target respondents and corresponding data collected.

Table 2: Study tools, target respondents, and type of data collected

Study tool	Target respondents	Data collected
Institutional questionnaire	School heads/ administrators in each of the school sampled	School background information, school facilities, enrolment for the current school year, school charges, staffing, and governance.
Student questionnaires	Grade 6 and Form 2 students in each of the sampled school	Student background information, social-economic status, homework, and homework support, choice of subjects, school environment, absenteeism, and extra tuition.
Classroom observation rubric	PP2, grade 6 and Form 2 teachers. Teacher trainers in teacher training colleges (TTCs).	Gender and inclusion equitable practices in the classroom: language use, lesson planning, teaching, and learning materials, asking questions, group work, demonstration or practical lessons, feedback to students, classroom set up and environment.
TTC teacher trainer knowledge skills and attitude survey	Teacher trainers in Diploma Teacher training colleges	Level of knowledge of gender mainstreaming practices by teacher trainers.
Teacher trainee knowledge skills and attitude survey	Teacher trainees in TTCs	Level of knowledge of gender mainstreaming practices by teacher trainees
Qualitative guides (Key Informant Interviews)	In-service Teachers Curriculum Support Officers Quality Assurance Officers Teacher trainers (TTCs and Universities) Ministry of Education - Director of teacher education, Kenya Institute of Curriculum Development	In-depth understanding of gender mainstreaming practices, policy implementation (successes, challenges, and opportunities)
Qualitative guides (Focus Group Discussions)	Teacher trainees in (TTCs and Universities) Students in primary school Students in secondary school	In-depth understanding of gender mainstreaming practices, policy implementation (successes, challenges, and opportunities)

Secondary Data Sources		
KCPE/KCSE mean scores for Mathematics, English and Science Subjects for years 2017-2021 (Secondary data sourced)	N/A	Mean scores per school, per year, per level and per target subject
Diploma in Teacher Training Colleges Curriculum	N/A	Content analysis of the early childhood development education, primary and secondary teacher education.

3.6 Description and Analysis of the Diploma in Teacher Training Colleges Curriculum

A content analysis was conducted on the curriculum designs of the Diploma in Primary Teacher Education (DPTE) and Diploma in Early Childhood Teacher Education (DECTE). The curriculum designs were published in 2021 by the Kenya Institute of Curriculum Development.

We also conducted a content analysis of curriculum guides/syllabi for the Diploma in Teacher Education that is used to train secondary school teachers. The syllabi were published in December 2007. We examined in depth the content analysis for the following subjects: Geography, History, Computer Studies, Mathematics, English, Kiswahili, Physical Education, Library and Information Studies, Christian Religious Studies, Business Studies, Biology, Home Economics and Agriculture.

3.7 Knowledge, Skills and Attitude Surveys and Classroom Observations

At the Teacher Training Colleges (TTCs) level, a knowledge assessment survey to gauge the knowledge levels of teacher trainers and teacher trainees on gender inclusive pedagogical practices and classroom observations was conducted in seven institutions. A total of 166 teacher trainees and 7 teacher trainers responded to knowledge assessment survey. In addition, 7 classroom observations in these institutions. At the primary and secondary school levels, 110 classroom observations were conducted as shown in Table 3.

Table 3: Gender desegregation of knowledge assessments and classroom observation

	Sample
Quantitative	n (#F, #M)
TTC teacher trainers	7 (4F,3M)
TTC teacher trainees	166 (87F,79M)
Classroom observation	
TTC	7 (4F,3M)
Basic education (Pre-primary, Primary & Secondary)	110 (30F,80M)

3.8 Quantitative Data Analysis

Data collected was cleaned to ensure consistency and was assessed for missingness and presence of outliers. The analysis tool used was the Stata, version 17.0. Analysis was both descriptive and inferential. Descriptive analysis (means, frequencies, percentages/proportions, indices and ratios) was useful in the exploration of the data as well as in responding to research questions that required descriptive analysis. Inferential analysis was done by use of statistical tests which included tests of proportions, tests on means, reliability and validity assessments, and regression analysis. Tests of reliability and validity to check for internal consistency were done by use of the Cronbach Alpha. Dimension reduction procedures were done by use of the Principal Component Analysis (PCA) which was used to inform the selection of the components/constructs that explained the highest proportion of variation or otherwise to assist in identifying the most important items for further analysis.

After doing the PCA, the variables/items which had the lowest factor loadings were dropped and the resultant components/constructs were utilized to predict scores. The type of inferential test applied was informed by the underlying statistical assumptions. For instance, for test on means of variables that did not meet the normality assumptions usually required carrying out a t-test, the non-parametric tests such as the Wilcoxon signed-rank tests were used. Similarly, the study utilized the following regression models in testing for association among variables: Generalized Estimating Equations (GEE), Generalized Linear Model (GLM) and binary logistic regression analysis. We used the Generalized Estimating Equations (GEE) model for primary school level and secondary school level, to assess the relationships between academic outcomes against gender mainstreaming compliance indices, school factors, learner attendance as well as classroom environment and pedagogical practices. To assess the relationship between the learner's school attendance and school and class factors, the researchers utilized the Generalized Linear Models with distribution family as binomial and logit link functions. Finally, the assessment of relationship between secondary school students expected optional subject choice in Form 3 and classroom pedagogical practices among other school and learner factors were assessed by use of the binary logistic regression. We assessed these relationships for each level (i.e. primary and secondary) separately because of their difference in dynamics. The analysis was based on the mixed gender schools only in which classroom observations were done.

3.9 Qualitative Data Analysis

All the qualitative data was tape-recorded and transcribed verbatim in English into MS Word. In addition, the study team double-checked the transcriptions against audio files to ensure the validity of the transcribed data. During coding, the study team mainly generated key themes of interest deductively guided by the questions in the qualitative guides and a few themes inductively from emerging issues that came up while analyzing the transcribed data (Azungah, 2018). The emergent codes were then organized and fed into NVivo software. The thematic analysis (Braun & Clarke, 2012) allowed the study team to collate similar views from various categories of respondents and thus deduce general perceptions of a phenomenon of interest. A coding report organizing the qualitative data into themes of interest was then generated and used to summarize key findings. Credibility and trustworthiness of the qualitative data was ensured through the triangulation of multiple data sets including document analysis, in-depth interviews, and key informant interviews.

3.10 Response Rates

The response rate of schools targeted for the study across ten counties was 100%, which was 250 schools. In addition, the study reached 26 ECD institutions attached to the targeted primary schools 4,662 learners were reached, representing a 93% response rate. *Table 4* highlights the school and learner response rates for the primary and secondary levels. Through oversampling in some of the counties, necessitated by contextual issues contributing to low response rates in some counties, we reached the anticipated number of schools for both primary and secondary school levels. These included general low enrollment in some schools in the ASAL regions, teacher absenteeism due to participation in election activities, student absenteeism due to lack of school fees and participation in campaigns, nomadic pastoralism, and insecurity.

Table 4: Primary and secondary school response rates

County	Number of schools	Response rate (schools)	Learners per county (n)	Response rate (learners)
Busia	26	104%	512	102%
Garissa	25	100%	444	89%
Mandera	25	100%	463	93%
Marsabit	25	100%	482	96%
Nairobi	25	100%	472	94%
Samburu	24	96%	463	93%
Tana River	25	100%	443	89%
Turkana	25	100%	452	90%
Wajir	24	96%	430	86%
West Pokot	26	104%	501	100%
Total	250	100%	4662	93%



Study Characteristics

4. Study Characteristics

This section represents the background characteristics of the respondents who participated in the study. This includes the age, academic and professional qualifications, and gender of the learners, head teachers, and school administrators. This section also highlights the background information of the counties and schools where the study was conducted, namely, the type of schools, whether single gender, mixed gender, boarding or day schools, public or private, and the school level, whether primary or secondary. Furthermore, this section highlights the year the school was established and its registration status with the Ministry of Education. The information captured here also highlights the background characteristics of the representatives of the various education offices, such as the Curriculum Support Officers (CSOs) and the Quality Assurance and Standards Officers (QASO).

4.1 School and Institution Characteristics

The total sample comprised 126 primary schools (102 public and 24 private) and 124 secondary schools (104 public and 20 private); 97.1% of public primary schools were mixed-gender, whereas all private primary schools were mixed-gender. Similarly, at the secondary level, data were collected from 20.2% of single-gender boys' schools, 24.0% of single-gender girl schools, and 55.8% of mixed-gender schools. All the public primary and secondary schools received capitation grants from the government and had been established longer than private schools. See *Table 5*.

Table 5: School characteristics

School level		Primary level		Secondary level	
School type		Public n (%)	Private n (%)	Public n (%)	Private n (%)
Sample		102	24	104	20
School gender	Boys only	0 (0.0%)	0 (0.0%)	21 (20.2%)	4 (20.0%)
	Girls only	3 (2.9%)	0 (0.0%)	25 (24.0%)	2 (10.0%)
	Mixed-gender	99 (97.1%)	24 (100.0%)	58 (55.8%)	14 (70.0%)
Capitation grant allocation	No	0 (0.0%)	24 (100.0%)	0 (0.0%)	20 (100.0%)
	Yes	102 (100.0%)	0 (0.0%)	104 (100.0%)	0 (0.0%)
Years since establishment	(mean (SD))	36 (19)	14 (8)	17 (14)	12 (13)

4.2 Respondent Characteristics

4.2.1. Institutional Heads

Most of the institutional heads (head teacher/deputy) in the schools were males as indicated in *Table 6*. At the primary level, 75.5% of public and 84.5% of private school heads were male; 84.6% of the institutional heads were male at secondary public schools, and 90.0% were in private schools. Majority of the institutional heads in primary public and private schools had a college diploma and a bachelor's

degree while most institutional heads in secondary schools had bachelor's degrees (70.2% public and 50% private schools). Majority of the public primary school institutional heads' highest professional level of training was either a college diploma or a bachelor's degree, whereas 4.2% from private schools were untrained. All the institutional heads for public secondary schools had some form of professional training, whereas 10% of the private secondary school heads were untrained. The highest level of professional training for public secondary schools was a bachelor's degree (75.0%), while 14.4% had a master's or doctoral degree.

Table 6: Institutional heads respondent's characteristics

School level		Primary level		Secondary level	
School type		Public	Private	Public	Private
Sample		102	24	104	20
		n (%)	n (%)	n (%)	n (%)
Respondent's age (mean (SD))		47 (8.4)	33 (5.8)	43 (9)	40 (13)
Sex	Female	25 (24.5%)	5 (20.8%)	16 (15.4%)	2 (10.0%)
	Male	77 (75.5%)	19 (79.2%)	88 (84.6%)	18 (90.0%)
Position	Head Teacher/ acting	70 (68.6%)	18 (75.0%)	47 (45.2%)	15 (75.0%)
	Deputy HT	28 (27.5%)	1 (4.2%)	38 (36.5%)	4 (20.0%)
	Senior Teacher/ acting	4 (3.9%)	1 (4.2%)	13 (12.5%)	0 (0.0%)
	Director/ Manager	0 (0.0%)	3 (12.5%)	5 (4.8%)	1 (5.0%)
	Administrator	0 (0.0%)	1 (4.2%)	1 (1.0%)	0 (0.0%)
Years of service in current school (mean (SD))		4.4 (3.5)	4.1 (4.4)	4.2 (3)	3 (2.8)
Highest level of education completed	College Certificate	12 (11.8%)	12 (50.0%)	0 (0.0%)	1 (5.0%)
	College Diploma	44 (43.1%)	11 (45.8%)	6 (5.8%)	6 (30.0%)
	Degree (Bachelors)	44 (43.1%)	1 (4.2%)	73 (70.2%)	10 (50.0%)
	Masters/PHD	2 (2.0%)	0 (0.0%)	25 (24.0%)	3 (15.0%)

Highest level of professional teacher training completed	Untrained teacher	0 (0.0%)	1 (4.2%)	0 (0.0%)	2 (10.0%)
	College Certificate	25 (24.5%)	14 (58.3%)	1 (1.0%)	1 (5.0%)
	College Diploma	38 (37.3%)	8 (33.3%)	7 (6.7%)	6 (30.0%)
	Degree (Bachelors)	36 (35.3%)	1 (4.2%)	78 (75.0%)	11 (55.0%)
	Post Graduate Diploma	1 (1.0%)	0 (0.0%)	3 (2.9%)	0 (0.0%)
	Masters/Ph.D.	2 (2.0%)	0 (0.0%)	15 (14.4%)	0 (0.0%)

4.2.2. Learner Characteristics

Table 7 highlights the distribution of student participants by gender, school type, school category, and age. Most students were drawn from public, mixed-gender day schools for both the primary and secondary schools, with an equal representation of both girls and boys. The average age of grade six students was 13 years, and form 2 students were 16 years. In private schools, there was a larger proportion of boys compared to girls at both the primary and secondary levels.

Table 7: Learner characteristics

School level		Primary (G.6)		Secondary (F.2)	
School type		Public n(%)	Private n(%)	Public n(%)	Private n(%)
Sample		1,859	444	1,991	361
Learner's sex	Boy	925 (49.8%)	237 (53.4%)	984 (49.4%)	214 (59.3%)
	Girl	934 (50.2%)	207 (46.6%)	1,007 (50.6%)	147 (40.7%)
Day scholar or a boarder	Day Scholar	1,743 (93.8%)	412 (92.8%)	1,101 (55.3%)	250 (69.3%)
	Boarder	116 (6.2%)	32 (7.2%)	890 (44.7%)	111 (30.7%)
Child's age		13.2 (1.5)	12.8 (1.6)	16.8 (1.4)	16.9 (1.5)

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Study Findings

5. Study Findings

In this section, the study findings are presented. A box with a summary of key findings from each research question has been provided preceding the main findings to provide a compilation of the key messages. The main findings have been presented using tables, graphs, and selected qualitative narratives.

5.1 The Teacher Training Curriculum and Gender Mainstreaming within Basic Education in Kenya.

The first research question sought to examine how the teacher-training curriculum prepares teacher trainees to respond to the basic education sector gender policy through gender mainstreaming in teaching and learning.

Key Findings

- The TTC teacher trainees had some level of understanding of gender-equitable teaching and learning practices; however, there were notable gaps in knowledge among them on several aspects of gender responsive teaching practices.
- There was inadequate content on gender mainstreaming in basic education in the TTC curriculum, especially in the diploma in primary and secondary teacher education. Gender mainstreaming is however covered in some of the learning areas in the diploma in early childhood teacher education.
- There was also a misalignment between the assessment and teaching of gender mainstreaming in the TTCs. The teacher trainers assessed gender inclusive teaching during the teaching practicum assessment, whereas teacher trainees were unaware that it is an assessment component, as it is not explicitly taught.
- The TTC teacher trainers practiced gender equity in their teaching practices in the TTC classrooms.

The teacher trainees were asked about their perceptions of gender responsive practices during teaching and learning. The knowledge, skills, and attitudes survey focused on the six areas critical to teaching and learning, including gender responsive language use and communication use, classroom setup and environment, lesson planning, gender equitable teaching practices and learning materials. The responses to the knowledge survey assessments were rated on a five-point Likert scale: 1 = strongly disagree, 2 = disagree, 3 = undecided, 4 = agree, and 5 = strongly agree.

a. Gender Responsive Language use and Communication

The Likert Scale responses indicated that the teacher trainees seemed to understand the importance of gender responsive language use during teaching and learning as illustrated in *Figure 4* below. There was 90% agreement that gender responsive language is demonstrated in practices such as allowing adequate wait time before calling on male and female learners to respond, avoiding the use of definite pronouns, therefore, recasting sentences in passive, maintaining eye contact with all students, and allowing male and female learners to speak without interruption, among others.

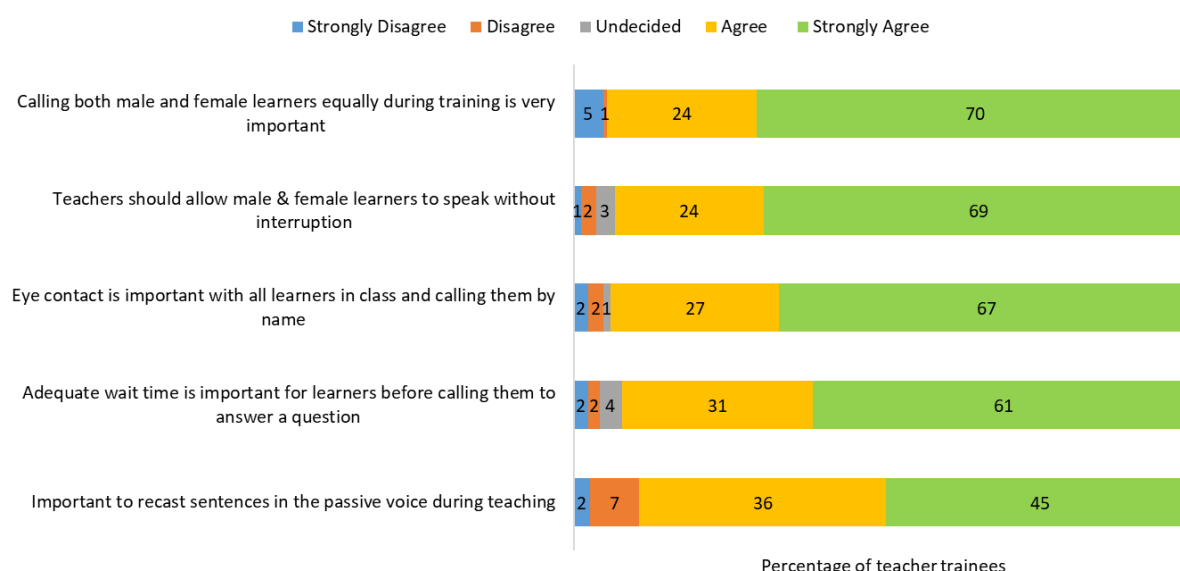


Figure 4: Teacher trainees' level of agreement on the gender responsive language use and communication

b. Gender Responsive Classroom Setup and Environment

The teacher trainees exhibited an adequate understanding of some indicators of a gender responsive classroom setup and environment (see *Figure 5*). For instance, there was general agreement that teachers should mix up male and female learners in the classroom; have clear class rules and routines, present themselves professionally, and enforce classroom safety. However, some trainees demonstrated a limited understanding of how sitting arrangement influences class participation. For instance, 27% did not agree that the sitting arrangement in class encourages quiet learners to overcome shyness and participate in learning. Further, 52% of the teacher trainees believed that the sitting arrangement does not influence a learner's classroom participation.

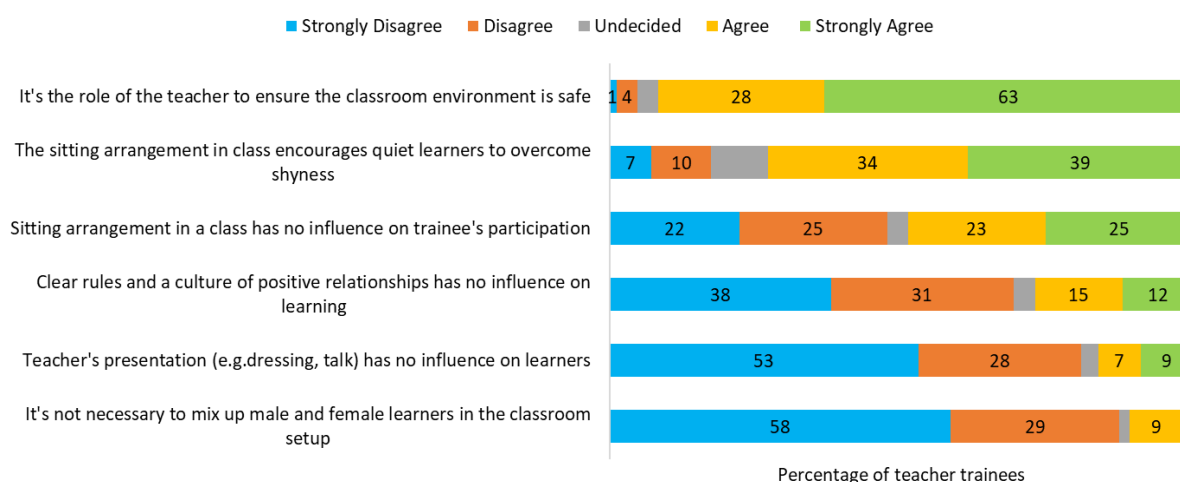


Figure 5: Teacher trainees' level of agreement on the gender responsive classroom setup and environment

c. Gender Responsive Lesson Planning

There was general agreement that instructional practices should cater for the needs of learners with special needs and ensure equal participation (see *Figure 6*). However, discrepancies were observed in

the aspect of teachers' consideration of the learning needs of male and female learners during lesson planning. Indeed, 31% of the teacher trainees agreed that teachers should disregard the differences in the learning needs of male and female learners during lesson planning.

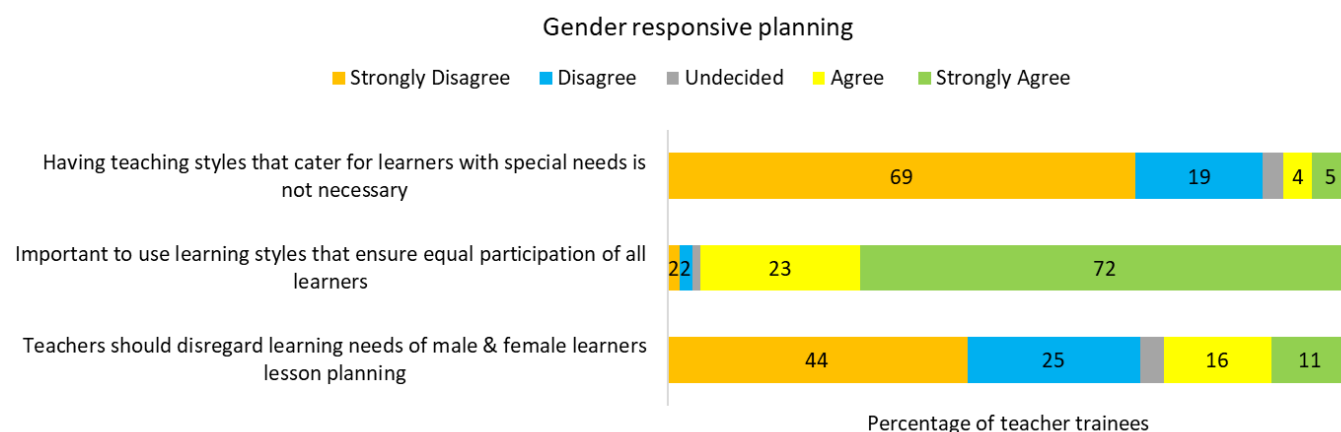


Figure 6: Teacher trainees' level of agreement on the gender responsive lesson planning

d. Gender Equitable Teaching Practices

As shown in *Figure 7*, the majority of the teacher trainees agreed that during instruction, allocation of leadership roles, constructive feedback, and positive reinforcement should be extended equally to both genders. During practical experiments, most teacher trainees agreed that neither gender should dominate the execution of the experiments, and that both male and female learners should be encouraged to answer questions. This notwithstanding, there were gaps in the gender equitable practices, seen in fifteen percent of the teacher trainees agreeing that female students are best placed to record notes during group discussions, while male students are best placed to present the findings from the presentations.

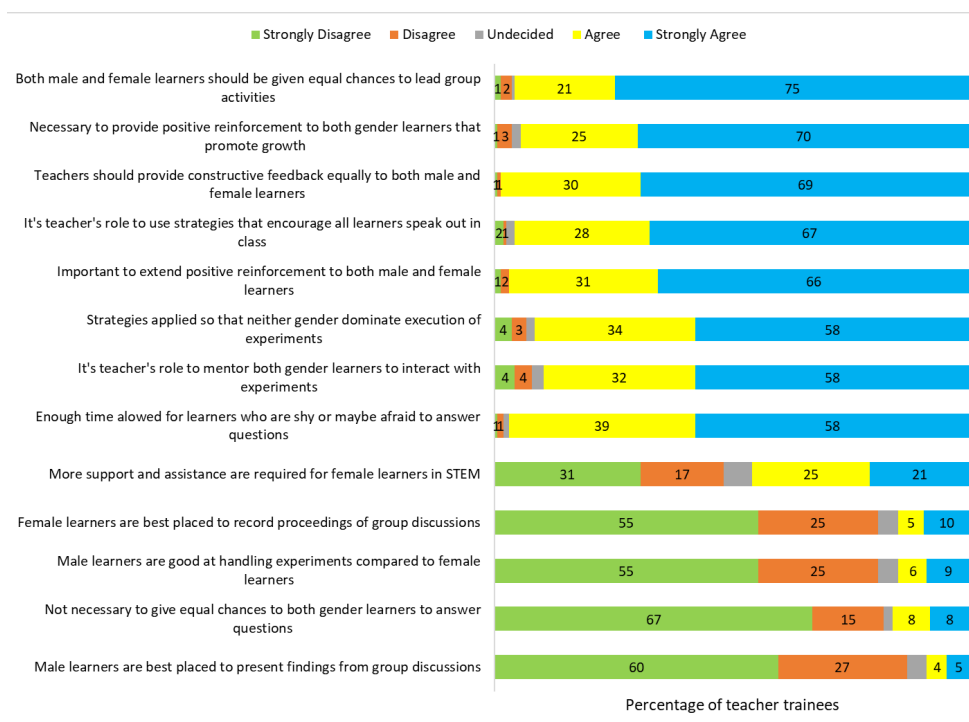


Figure 7: Teacher trainees' level of agreement on the gender-equitable teaching practices

5.1.1. Teacher Training Colleges Classroom Observations

The number of times male and female student teachers were engaged was summarized using the mean of tallies for all observation instances by considering all tally items per sub-theme, i.e., *gender responsive language use and participation* and *gender-equitable classroom interactions*. A test on whether the number of tallies were similar across student teachers' gender was done using Wilcoxon signed-rank test. There was no significant difference in the number of engagements for male compared to female students. See Table 8.

Table 8: A test on the mean of tallies of male versus female teacher trainees' engagement during instruction

	#observed instances	z statistic	Probability > z
Gender responsive language use and participation	69	-0.74	0.459
Gender equitable classroom interactions	69	-0.95	0.345

a. Gender Equitable Classroom Interactions

Teacher trainers in TTCs encouraged gender-equitable classroom interactions with teacher trainees, as indicated in Figure 8. They also encouraged interactions among male and female teacher trainees. 75% of the teacher trainers related the classroom work with everyday life scenarios using a gender lens. The teacher trainers encouraged the trainees to interact with the specimen, ensure that topics of discussion took a gender, and ensured the groups had equal representation of both male and female trainees where applicable. Ninety-six percent of the teacher trainers observed gave the teacher trainees ample time to respond to both oral and written questions.

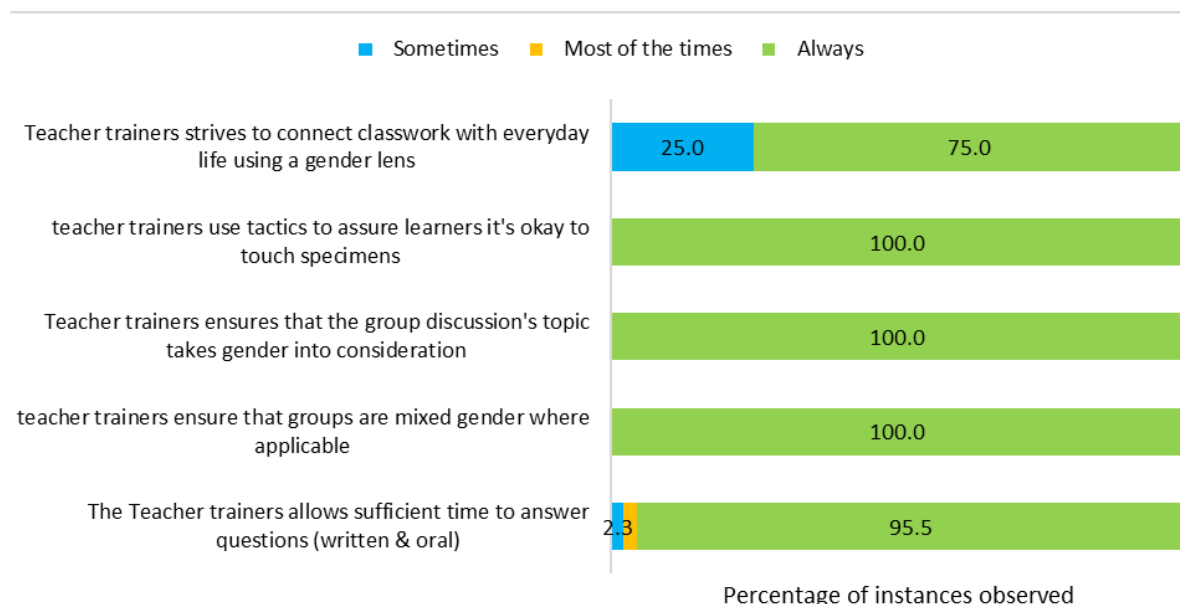


Figure 8: Teacher trainer's frequency of gender-equitable classroom interactions

b. Gender Responsive Classroom Setup and Environment

Results indicated that teacher trainers utilized a gender inclusive classroom setup and environment. For instance, all teacher trainers were observed to use fair corrective measures for both male and

female teacher trainees. However, 26% of teacher trainers rarely or sometimes presented themselves professionally during the observations. This is illustrated in Figure 9.

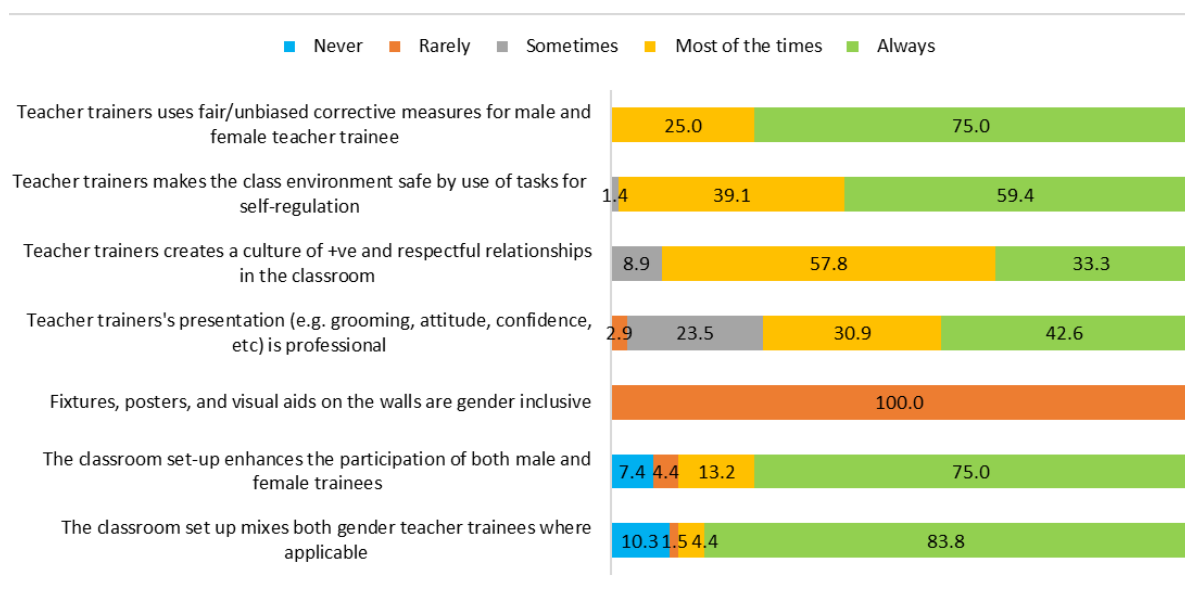


Figure 9: Frequency of teacher trainer's gender responsive classroom setup and environment

5.1.2. Gender Mainstreaming in the Diploma in Primary and Secondary Teacher Education Curriculum Designs

This section presents the findings of the content analysis of the teacher education curriculum designs. In the diploma teacher training curricula for primary and secondary levels, gender is neither taught as a stand-alone unit nor as a topic. There is no reference to "gender" or "gender responsive teaching practices" in the primary and secondary TTC curriculum designs.

The learning outcomes across the content and pedagogical content curricula, primary and secondary designs only relate to the subject matter. The curriculum designs outline the pedagogical content knowledge that the teacher trainees should acquire, along with instructional strategies, learning resources, suggested learning experiences, and strategies to create relevant learning experiences. The training guides do not provide strategies of how to support the different learning needs of male and female learners or the use of gender responsive pedagogy. A review of the formative assessment rubrics indicated that gender was not a focus area in the assessments. In addition, a review of the microteaching curriculum design found notable gaps as gender responsive practices/pedagogy were not explicitly captured. Furthermore, there are notable gaps in the classroom management sections of the curriculum as it does not focus on gender inclusive practices. For instance, the section on classroom management, emphasizes that teacher trainees should be able to '*Formulate effective class control measures to enhance learning and enhance positive discipline in the learning environment*' without mentioning how that can be implemented using a gender lens.

The curriculum guide highlights the identification, support services, and teaching intervention strategies, designing and implementing action plans geared towards enhancing learning among learners from diverse backgrounds, such as the gifted and talented learners, learners living under difficult circumstances, i.e., orphans, homeless, abandoned, street, refugees, working children, children affected by wars, natural disasters, HIV and AIDS, children from affluent families, learners with disabilities (visual, hearing, and physical impairment), learners with intellectual disability, learners with autism, deaf and blind, learners with cerebral palsy, learners with learning disabilities among others. The curriculum's focus

on equipping trainees with skill sets to support diverse and marginalized learners is an important step towards inclusive education. However, it is critical that the gender lens focuses on inclusive education so that trainees are sensitized to the needs, differences, and effective intervention strategies for diverse and marginalized male and female students.

The fact that gender inclusive teaching and learning practices are not included as a focus of the training particularly in syllabus design, teaching methods, lesson planning, setting up and conducting experiments, assessment, and evaluation of learners, is an indication that the teacher training institutions may not adequately prepare trainees to mainstream gender issues in teaching and learning.

The views by teacher trainers and teacher trainees confirmed the findings from the content analysis, highlighting that gender mainstreaming was not covered in the teacher training curriculum. However, one of the key informants highlighted the integration of gender issues into the new CBC curriculum. In particular, gender issues integrated into the new curriculum as one of the Pertinent and Contemporary Issues (PCI). The key informant also highlighted that teachers are trained on integrating gender issues when interpreting the curriculum designs, and when implementing various educational activities such as sports, and guidance, and counseling. An excerpt of their response during the KIs is shown below.

“
R...So, we have been identifying appropriate opportunities in the curriculum to integrate aspects of gender, gender issues, and that has continued even in the ongoing curriculum reform process...KII, KICD.
”

“
R...and we will tell the teachers how to interpret the design, how to use the learning materials, and when they are dealing with sports or learner support programs like guidance and counseling or mentorship, consider issues if you must be gender sensitive...KII, KICD.
”

Discussions with respondents from KICD and the Ministry of Education also highlighted that one of their key roles is to evaluate the teaching and learning materials to ensure that they are gender inclusive. This is what was highlighted by a respondent from KICD:

“
R...So, we make sure that we encourage publishers to make sure that PCIs are well integrated in the learners' books and in the teachers' guides so that the teacher will now have the design and materials that are aligned to the designs...KII, KICD.
”

5.1.3. Gender Mainstreaming in the Diploma in Early Childhood Teacher Education

A review of the DECTE curriculum indicated that gender issues were not taught as a stand-alone subject but rather there was a mention of gender in certain learning areas. Sample examples are captured below under the different subject areas.

- In Mathematics, under the basic statistics sub-strand, the teacher is expected to... *Collect group biographical data of teacher trainees in the class such as gender, age, etc. (Pg. 7)*. This learning experience seeks to give the teacher trainees the ability to practice, thereby illustrating types of data available in a school environment. The focus is not the use of the disaggregated data available in the school to enhance instructional practices or to attend to the different educational needs of boys and girls.
- Under the measurement strand, the sub-strand on length of objects one of the specific learning

outcomes is integrate gender issues in teaching and learning in length in real life situations), the suggested learning experience for this learning outcome was the *Use of gender-related examples to illustrate measurement in length (Pg.52).*

- In English, suggested learning experiences under language learning and development in children includes gender as one of the factors that affect language development in children (Pg. 32).
- Under child development and psychology, gender issues affecting child growth and development are included as an indicator in the assessment rubrics (Pg. 15).

5.1.4. Understanding of Gender Mainstreaming in Education

This section highlights the qualitative narratives from teacher trainees, in-service teachers, teacher trainers and education stakeholders on their understanding of gender mainstreaming in basic education. Teacher trainees understood gender mainstreaming to mean providing equal opportunities to both male and female learners to access education, participate in classroom and school activities, distribute leadership positions, and distribute learning resources. They also understood gender mainstreaming in teacher training to be that both male and female teacher trainees should have access to the same courses and teacher training opportunities.

“

R2: from the word mainstreaming and from the word gender; it is the provision of an equal opportunity, especially when it comes to education so that we can have male and female having equal opportunities in accessing this education and especially when dealing with teacher training and more so those people who have been given the opportunity to undergo DPTE (Diploma in Primary Teacher Education). FGD, Teacher trainees, TTC.

”

Some of the teacher trainees also viewed gender mainstreaming from a progressive lens, highlighting that it also meant getting rid of traditions such as payment of bride price, which stop girls from getting an education since parents view them as commodities to be exchanged for wealth, and thus parents do not invest in their education.

“

R2: As for me, I think it is to at least get away from the society's beliefs and customs that may hinder one gender from the other, like, for example, let's say the girls have been seeing they are just there as the property of the family. Like they are the ones going to be sold so that they can bring cows...education is not much wasted in them, not invested in them, unlike boys... FGD, Teacher trainees, TTC.

”

On the other hand, teacher trainers understood gender mainstreaming in education from a equality perspective. For instance, teacher trainers mentioned that gender mainstreaming refers to: equal enrollment of male and female teacher trainees; providing equal learning opportunities to both male and female teacher trainees; giving the same opportunities to acquire knowledge, skills, and attitudes, as well as ensuring that their own teaching practices are gender inclusive such as using gender-sensitive examples while teaching.

“

I think gender mainstreaming basically means taking care of both genders without partiality and showing equality to both genders because, basically, we get male and female students. And in gender mainstreaming, we are supposed to care for them equally without favoring one or the other...IDI, Teacher trainer, TTC.

Gender mainstreaming is having to balance the genders to give the same opportunities so that they end up acquiring the same knowledge, skills, and attitudes so that finally they are at par. Without any of the gender being disadvantaged...IDI, Teacher trainer, TTC.

”

Moreover, in-service teachers extrapolated seven ways of gender mainstreaming. These included: equal opportunities for boys and girls to access quality education; eradicating gender stereotypes that girls do not perform well in STEM subjects; equal representation for female and male students in leadership positions; use of gender inclusive teaching practices; equal opportunities in asking and answering questions; equal distribution of responsibilities and equal opportunities for both girls and boys as regards taking up leadership positions in school. In-service teachers also went further to touch on policies as well as support for special interest groups of students. For instance, they reiterated that gender mainstreaming was meant to provide equal support to students with special needs or those that have experienced early marriage and sexual harassment as well as integrating gender in the preparation and evaluation of policies to ensure gender equality.

“

R: *The education sector provides equal opportunities to both boys and girls in the education sector so that boys and girls get equal opportunity access to quality education so that neither girl child nor boy is segregated or sidelined in terms of education, and that's why we say gender mainstreaming ... people sometimes look down upon a girl, they are not performing, they are not able to do certain subjects for example sciences, mathematics but in normal cases, like now you find that girls are performing, even more, better than the boy child, so that how we talk of stereotypes are not there as at now, though in minimal cases...* **IDI, In-service teacher, Busia.**

According to me, when you talk of gender mainstreaming, you are referring to the issue of inculcating or integrating or involving gender perspectives in the preparation and in evaluation of policies so that you uphold gender equality, and you try to subvert or combat gender discrimination... **IDI, In-service teacher, Garissa.**

”

Key informants from the Ministry of Education and the Kenya Institute of Curriculum Development revealed that they had an adequate understanding of gender mainstreaming. They noted that gender mainstreaming encompasses giving equal opportunities to both boys and girls to interact with the learning process and providing a curriculum that is responsive to the needs of both genders.

“

R: *We look at gender mainstreaming in education as an aspect of wanting to create awareness about boy-female, boy-girl, and the unique issues that affect each of these two genders and with a view to be gender-sensitive, to creating a gender-sensitive environment where the boys, and girls will feel comfortable and not feel discriminated or treated unfairly because of their gender...* **KII, KICD.**

”

5.1.5. Source of Gender Mainstreaming Knowledge

When asked where they had gained the knowledge on gender mainstreaming, teacher trainees, teacher trainers, and in-service teachers explained that although the concept was not taught as a standalone unit, gender mainstreaming was covered in units such as the child development and psychology and inclusive education. Through these units, teacher trainees were gained knowledge on how to be sensitive to the needs of both male and female students.

“

R: *I think we are being prepared for gender mainstreaming in this curriculum. The reason I say that is because some units enable us to understand how to handle both genders while teaching in school. Like there are lessons done in the psychology of education that deals with the growth and development of humans. In that unit, we learn about both males and females, so I think from that, we are prepared for gender mainstreaming...* **FGD, Teacher trainees, TTC.**

”

“
To my understanding... in the university curriculum, the issues of gender have not been captured in the courses and units directly as he has said, but it has been captured under the topic of psychology, developmental psychology of students. I think that is the only area I would say gender has been covered...IDI, In-service teacher, Marsabit.
 ”

Some teacher trainees reiterated that they had been taught how to be gender inclusive in their teaching. Some of the gender inclusive strategies they mentioned implementing in their classrooms were group discussions, answering questions, and presentations.

“
R: *Yes, because in inclusive education, we are taught that we are supposed to treat all learners equally, either male or female, and in in group discussions and presentations. You are not supposed to be biased against one gender over the other....FGD, Teacher trainees, TTC.*
 ”

R: *Yes, because in inclusive, we are being prepared to bring the learners from different diversities, that is, boys, girls, those who have intellectual problems, those who can't talk, together and come out with strategies as a teacher on how to make these learners understand through group discussion...FGD, Teacher trainees, TTC.*
 ”

The teacher trainees also pointed out that they gained knowledge on gender inclusion from sensitization by external institutions such as Non-Governmental Organizations (NGOs). Although the knowledge gained was not necessarily on teaching practices, they were able to apply some of the aspects as teachers.

“
R: *Some of these activities are conducted by education partners, especially the Non-Governmental Organizations and other education partners. We've had several trainings from these organizations here, but you see it is just a sensitization...KII, QASO, Tana River.*
 ”

5.1.6. Assessment of Gender Mainstreaming during Teaching Practice

Teacher trainers revealed that teacher trainees were assessed on gender mainstreaming aspects during their teaching practice or practicum, usually at the end of the third year. Some of the aspects that were assessed included gender inclusivity in asking questions and in providing feedback to the students. The evaluation of gender mainstreaming was also done at the classroom level, where the teacher trainees were required to practice among themselves during micro-teaching. In addition, the training institutions also tried to ensure a gender balance of teacher trainees when distributing them to various schools during their practicum.

“
R: *...we have within the tool (assessment) that we use to assess them during the practicum. There is one aspect of gender because we look at whether the student was gender biased as they were asking questions. Were they asking only females, or they were asking both, and even as they were teaching, were they maybe appreciating only females or appreciating both [emphasis added]? So, we have it within our tool that we use to assess them as they go for practicum...IDI, Teacher trainer, TTC.*
 ”

R: *Yes, they are being taught because before they go out for the practicum, we have what we call micro-teaching. So, this micro-teaching is where they teach each other within the class. So, when you come to a class micro-teaching, you find that one of the students will be preparing a lesson, writing a lesson plan, preparing the schemes of work, and then teaching their fellow*
 ”

“students. So, within that also, we always gear them at seeing that they are not gender biased in a way they have to treat all students the same. So, we also look at that aspect, and they are also trained on doing that...**IDI, Teacher trainer, TTC.**”

It also came out that most teacher trainees – from all the seven institutions – were not aware that they were assessed on gender mainstreaming. According to them, the assessments were more focused on content delivery and not gender inclusive teaching practices. There were, however, some aspects of inclusivity that were assessed in the ‘Inclusive Education’ course, such as how to handle students with a disability or those that have undergone challenges such as female genital mutilation (FGM), and not how to handle male and female students in a classroom.

“**R6:** Inclusive education aims at you as a teacher creating a conducive environment for all the learners irrespective of their difficulties or disabilities. So, we have learners who come from poor backgrounds and have run away from their homes because of FGM. So, you must create an environment for them so that they feel comfortable whenever they are in class. So, you are not supposed to discriminate against them, like the society. You need to bring them on board so that they can learn easily, just like any other student...**FGD, Teacher trainees, TTC.**”

According to the teacher trainers, one of the key reasons why gender mainstreaming was not being assessed is because it is not a learning area. As such, teacher trainees are assessed on the delivery of the content for the mainstreamed learning areas.

“**R:** Yeah, we don’t have a learning area like gender, but we have these other learning areas like English, Kiswahili...professional learning areas where some components of gender balance could be captured, but we don’t have a main learning area like gender...**IDI, Teacher trainer, TTC.**”

R: No, we don’t have any evaluation now on gender. Our evaluation is on the content, the course content but not on gender issues...**IDI, Teacher trainer, TTC.**”

5.1.7. Self-Efficacy in Gender Mainstreaming by Teacher Trainees

As a result of the gender mainstreaming gaps in teacher training, some of the teacher trainees reported a low level of confidence in their ability to teach in mixed gender schools. For instance, one of the teacher trainers highlighted how some of the teacher trainees found it difficult and intimidating to teach and settle in schools of learners from the opposite gender during their teaching practice. As a result, some teacher trainees requested to be posted in same-gender schools, which was against the stipulated guidelines.

“**R1:** Some teacher trainees can fit in so well while others are not so comfortable. You find that they feel intimidated, or they are fearful (of teaching in opposite gender schools). Even when teacher trainees are being posted, some insist that they want to go to a boys’ school, or a girls’ school only...**IDI, Teacher trainer, TTC.**”

5.1.8. Gender Inclusivity in Teaching Practices among Teacher Trainers

Some teacher trainees reported that teacher trainers modeled gender inclusive teaching practices in their classrooms. Some of the practices reported by teacher trainees included providing equal opportunities for them to answer questions, participating in practicals, marking examinations, working in groups, extra-

curricular activities, assigning leadership positions in the class, and use of gender inclusive teaching aids in the classroom. Other gender inclusive practices touched on classroom management such as sitting arrangement and equally following up on their class participation such as following up on absenteeism cases for both male and female teacher trainees. This was important for the teacher trainees who felt that they would emulate these gender inclusive practices in their own teaching after training. Providing equal opportunities in the participation of physical education activities was underscored as an important indication of gender mainstreaming practices in the institutions alluding to the milestones made in eliminating the gender stereotype threat regarding female participation in sports.

R2: *Like the institution does, we are not isolated we are mixed together even in the activities that we do for example, when there is a practical to be done; we are allowed to share our views irrespective of gender so when we carry out an activity we do it together. For example, if we go for field activities like PE (physical education), we are allowed to do it together. ...FGD, Teacher trainee, TTC.*

The teacher trainees noted that there is a gender balance in the distribution of leadership roles in at TTC institutions as well as equal opportunities to participate during academic and extra-curricular activities.

R2: *In this school, gender balance is well placed for example when you go to administration we have ladies who are lectures and men who share the staffroom then when we come to the classroom we have leaders who are men they have senior counselors who are ladies and others are men, then when you come to class we have class secretaries who are ladies and those who are men also, when you are in groups there are those group leaders who are ladies and those who are men so gender balance in this school is there at all levels...FGD, Teacher trainee, TTC.*

R1: *Our teacher trainers are gender inclusive in their teaching methods. Because when you are in class, we are all given the same opportunities in everything. For example, in math class, if there is a question, they will not say that this one is for males or for females, they will be like anyone. And for physical education, when we all go outside to the field, we are given the same opportunity to do everything together. So, I think our lecturers are gender inclusive in their practices...FGD, Teacher trainee, TTC.*

Teacher trainers also echoed the teacher trainees' views that they took deliberate steps to ensure that they were gender inclusive in their practices. One of the ways teacher trainers demonstrated gender mainstreaming was in proportionately grouping male and female teacher trainees in-class activities, even in cases where one of the genders was more in number, like in the ECD classes where there were more female teacher trainees.

R: *we have 26 ladies (ECD teacher trainees), we use that as the baseline to do the groups. If we divide by 5 we have 5 groups of 5 ladies per group, then we are left with one lady, then we have the seven men who have not been grouped so you distribute them across the 5 groups and you explain to them why you are doing it. Because you don't want to have a group that is primarily men or primarily women, so such an activity brings to the fore the learners such that when they get out there with the learners to teach they need to remember even in college we used to do such kind of things...IDI, Teacher trainer, TTC.*

In cases where gender inclusivity in forming the groups was not possible, for instance, during indigenous language classes, the teacher trainers combined the indigenous groupings where both male and female trainees were represented to have initial discussions before undertaking the assigned activities.

“

R: For example, in a class, you see the modern methods of teaching, we involve the students fully, and we involve everybody regardless of whether it is a gentleman or a lady, we involve them equally. And especially in my class, when I see it is only one gender that tends to volunteer, to participate, I always ask even the others who are not offering to participate also to take part in the lesson. So, we are inclusive... **IDI, Teacher trainer, TTC.**

R: ...yes because when you are in class and you are shooting questions of course you spread the questions but now when they are answering questions of course these students you know men are more active they will answer questions then you say this time round I want a lady to answer this question because men volunteer themselves...All the time their hands are up answering the questions you are asking and you find the females are shy so you have to say “two male students have given us the answers so can we have two females” also answering the questions because we don’t want just to get the answers from only the female we also want to hear from the men.... **IDI, Teacher trainer, TTC.**

”

However, the implementation of effective gender mainstreaming practices was said to be hampered by the number of teacher trainees in the classroom. For instance, in cases where the male trainees were few, female trainees would tend to dominate class participation. This was echoed by both teacher trainers and trainees.

“

R: Yeah, we engage all of them but you find when you are teaching process because the females are the majority the males try to shy away, so it depends on an individual so there are teachers who will engage them by giving them thought-provoking questions...But you know there are others who will only go with these students who are active and in most cases, you will find that it is the female students who are active because of the numbers the men try to shy off and keep off... **IDI, Teacher trainer, TTC.**

”

Even in cases where the male teacher trainees were fewer and would tend to shy from class participation, some teacher trainers held the opinion that from their evaluation, the male teacher trainees tended to undertake more rigorous research and were consequently better presenters. To them, the female trainees depended on what their male counterparts had researched on. There were also teacher trainers who perceived male teacher trainees to be smarter than female trainees.

“

R: They are few (male teacher trainees), but you will find in most cases they are the best presenters. You give them an area they research online, so by the end of the day, you will find the best presenters are the male students they do thorough research... **IDI, Teacher trainer, TTC.**

R: But in normal circumstances, you find the females shy off and males they are always very smart, but you must make sure you are getting the answers from the two genders because you find you surprise the other one... **IDI, Teacher trainer, TTC.**

”

5.2 Gender Responsive Teaching Practices in Primary and Secondary and Associations with School Attendance, Choice of Subjects and Academic Outcomes

The second research question examined whether teaching practices in basic education enhance gender mainstreaming and whether the observed practices were related to students' school attendance, choice of subjects, and academic performance.

Key findings:

- There were no significant differences in the use of gender equitable teaching practices among pre-primary and primary teachers in Math, English, and Science classes. However, at the secondary level, there were significant differences in the use of gender equitable practices in Mathematics, English, and Science classes in favor of boys. For example, teachers engaged boys more than girls in class activities; and boys were called more than girls.
- At the primary level the main reasons for absenteeism of boys were sickness, domestic responsibilities and lack of food/famine/hunger whereas for girls the reasons were domestic responsibilities, sickness, and lack of food. At the secondary level, the main reason for absenteeism for girls were school fees, sickness and challenges of pregnant and parenting students. On the other hand, the challenges for boys were school fees, sickness, and paid work outside home.
- At the primary level, 23%, 12% and 14% of grade 6 learners reported that their teachers had missed English, Mathematics, and Science lessons respectively in the last five days preceding the study. In addition, 22%, 20%, and 16% of learners at secondary school level reported teacher absenteeism in Physics, Chemistry, and Biology respectively.
- Most boys and girls in secondary school opted to select humanities with a small proportion of students opted to select Physics as an optional STEM subject. More boys than girls opted to select physics.
- Findings on the associations indicated that:
 - At primary level:
 - On average, the performance in English increased by 5% with a unit increase in gender equitable classroom interactions favoring both boys and girls (p-value=0.036).
 - A unit increase in gender mainstreaming compliance in the school resulted in a doubling the English performance (p-value<0.001).
 - The odds of school attendance were 4.3 times better with a unit increase in gender mainstreaming compliance (p-value=0.026)
 - The odds of school attendance are increased by 87% if a primary school provided school feeding than if the primary school did not provide school feeding (p-value=0.010).
 - The odds of primary school attendance increased by 3.1 times if the teacher utilized a gender responsive classroom environment (p-value=0.034).
 - A unit increase in gender equitable teaching practices led to an increase of 13 and 14 percentage points in Mathematics and English respectively.

Key findings:

At secondary level:

- Performance in Biology, English, Mathematics and Physics is increased by 74%, 30%, 75% and 91% upon increase in the number of times boys and girls are equitably engaged by the teachers in the classroom (p-value<0.001). Therefore, a unit increase in gender-equitable classroom interactions led to an increase in academic performance in English & STEM subjects.
- Performance in Biology, Chemistry, English and Mathematics was better among schools that had school feeding program than in schools that did not have the feeding program by 36%, 44%, 62% and 62% respectively.
- The odds of secondary school attendance are increased by 3.9 times if gender equitable interactions are enhanced in teaching (p-value<0.001).
- The odds of choosing Chemistry was increased 7 times if the subject teacher was very easy to approach than if the subject teacher was not easy to approach.
- The odds of selecting Physics was increased 3.5 times if the subject was considered to be applicable to the intended future career (p-value<0.001).

5.2.1. Descriptive Statistics

Classroom observations were conducted in 13 pre-primary schools, 103 mixed-gender primary and secondary schools and 7 teacher training colleges (TTCs). At pre-primary, primary, and secondary schools, we made observations in 116 lessons. In primary classrooms, observations were conducted in Math, English, and Science, whereas in secondary classes, observations were done in English, Mathematics, Physics, Chemistry, and Biology. The classroom observation rubric had four main categories; gender responsive language use/communication and participation, gender responsive teaching and learning materials, gender-equitable classroom interactions, and gender responsive classroom setup and environment. The indicators in each of the dimensions were either tally or Likert scale items.

The data from the classroom observations was collected through video recorded clips which were reviewed post data collection and entered into a pre-programmed tool in SurveyCTO for each five-minute instance until the recorded video lapsed. Only one classroom observation was done for a lesson in either Mathematics, English, or a Science in each school. The data compiling tool was based on tallies of the teacher engagement with each sex during the lesson, and Likert scale of frequency of observation indicating 1=Never, 2= Rarely, 3=Sometimes, 4=Most of the times, 5=Always, 6=Not observed, and 9=N/A. Assessment of reliability was done for each of the classroom observation categories and a global mean was computed for each school/level. The analysis was only done for mixed gender schools to capture the gender differences in teaching practices.

a. Gender Responsive Language Use, Communication and Participation

For the Gender responsive language use, communication, and participation, we had six tally items. These items were tallied in 5 minutes intervals. These included 1) Teacher calls on boys and girls equally, 2) The teacher ensures that girls and boys are actively engaged in-class projects and structured activities, 3) Teacher calls/refers to all students by name, 4) Teacher allows girls and boys to speak without interruption, 5) Teacher assigns girls and boys equally to all classroom “tasks” (tasks not assigned based on gender roles), and 6) Teacher provides a concept in different ways to cater for students with disabilities (representation).

The Cronbach alpha score for the six tally items assessing gender responsive communication and participation was 0.81 for boys and 0.82 for girls' indicating that the items had a high level of internal consistency. A mean of the tallies for the six items was computed for each gender separately, generating two variables of the mean tallies, i.e. a mean tally of boys' and a mean tally of girls' items. A test of normality was conducted on the two variables using Shapiro Wilk and revealed that the two variables were not normally distributed.

A paired test to compare the mean tallies of boys and those of girls was conducted using Wilcoxon signed-rank test. The results indicated that there was no significant difference in the mean number of engagements between boys and girls in pre-primary (PP2) and Primary grade 6 levels. However, in secondary school form 2 classes, the Wilcoxon-signed rank test revealed that the mean number of times boys were engaged was significantly higher than girls ($p\text{-value} < 0.001$), see *Table 9*. This is an indication that teachers called boys more than girls, engaged boys more during the structured learning activities, allowed boys to speak without interruption, and teachers did not assign classroom tasks equally.

A further test was conducted to find out whether there were any differences by teacher's gender. This was carried out from the overall mean of tallies per class for the gender responsive communication tally items. The results indicated no significant differences by teacher's sex in PP2 and Grade 6. In form 2, however, there was a significant difference among male teachers ($p\text{-value} < 0.001$) while among the female teachers there were no significant differences ($p\text{-value} = 0.478$), meaning that male teachers at this level were more likely not to be gender responsive in their teaching practices.

Table 9: Average number of times teacher calls boys and girls during the literacy and STEM lessons

Level	Number of observed instances	z statistic	Prob > z
Pre-primary (PP2)	87	0.86	0.389
Primary (G6)	295	0.31	0.755
Secondary (F2)	170	4.57	<0.001

The gender inclusive classroom practices were assessed using the ordinal scale (Likert scale) on several aspects throughout the recorded videos. The Likert scale was based on the frequency of observed practice and the codes assigned were as follows: 1=Never, 2= Rarely, 3=Sometimes, 4=Most of the times, 5=Always, 6=Not observed, and 9=Not applicable (N/A). For purposes of the analysis, we excluded Not Observed and Not Applicable (N/A). The results are presented in Figure 10. The results showed that the observed teachers at pre-primary, primary, and secondary school levels scored relatively high in the inclusive classroom practices. For instance, teachers at the three levels were able to recast sentences in the passive voice.

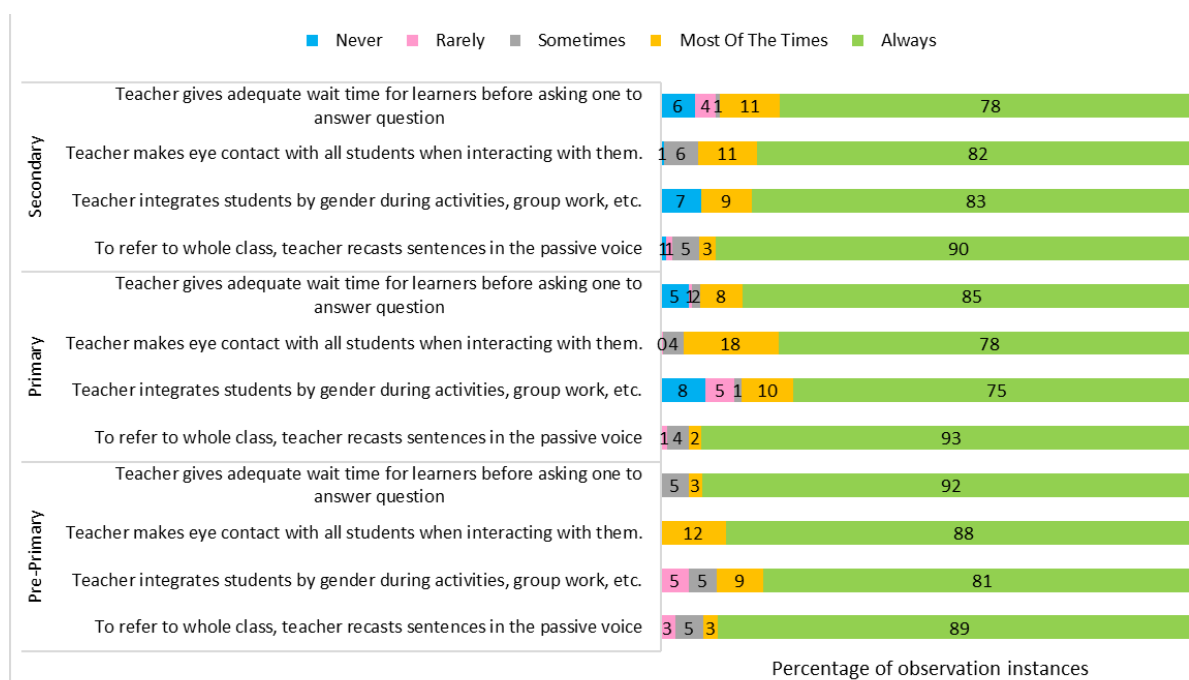


Figure 10: Frequency of gender responsive communication and classroom participation in pre-primary (pre-primary 2), primary (grade 6) and secondary (form 2)

b. Gender responsive Teaching and Learning Materials

Assessment of teaching and learning materials during class instruction was done by use of one question determining if illustrations and examples such as charts and textbooks used in the lessons reflected both genders positively. The question had a five-point Likert scale response on the frequency of observed practices during the lesson (1=Never 2= Rarely 3=Sometimes 4=Most of the times 5=Always 6=Not observed 9=N/A). Figure 11 portrays the results disaggregated by school level. Results indicated that illustrations that reflect both genders positively were used more frequently in the pre-primary level (PP2) which recorded 93% (for always or most of the time), followed by primary school Grade 6 level which recorded 80% of the instances observed, and finally secondary school level which recorded the lowest, at 76%.

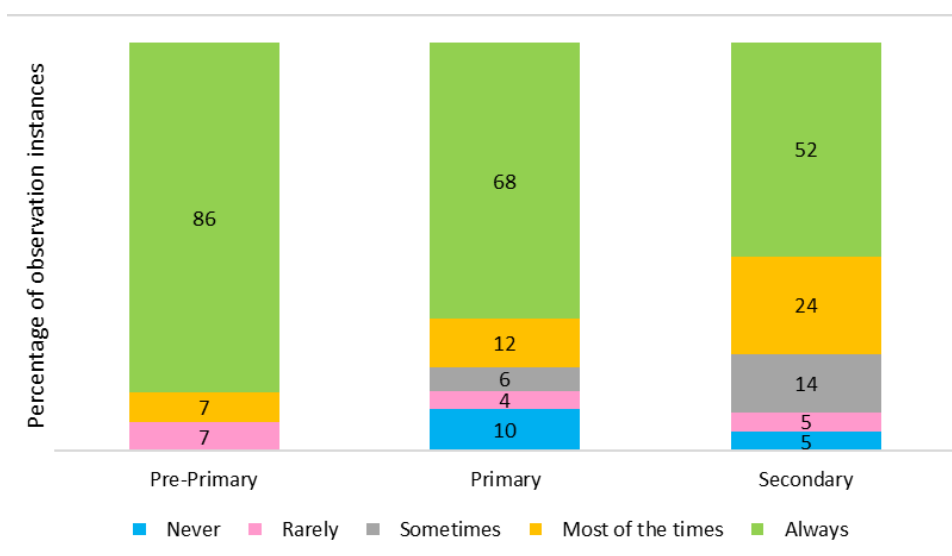


Figure 11: Frequency of gender responsiveness of the teaching learning materials used by teachers in pre-primary (pre-primary 2), primary (grade 6) and secondary (form 2)

c. Gender Equitable Classroom Interactions

Evaluation of the gender equitable classroom interactions was done using 16 Likert scale items and 7 tally items. These items focused on gender equitable teaching practices during question and answer, group discussion, demonstration, or practical lessons, and when providing students feedback. The tally item entries were recorded in five minutes observation intervals. The items for each gender indicated a high level of internal consistency with a Cronbach Alpha score of 0.77 and 0.79 for boys' and girls' items respectively.

A composite mean was generated for the number of times gender equitable classroom interactions were used when engaging boys and girls during the Mathematics, English, and Science classes. The Shapiro-Wilk test was utilized to check for data normality. The findings showed that the mean tally items on gender equitable interactions were not normally distributed and therefore Wilcoxon signed-rank test was conducted on the mean tallies of boys versus those of girls. The results are disaggregated by schooling levels (PP2, grade 6, and form 2). Findings revealed that there were no significant differences in the instances of gender equitable classroom interactions by gender at pre-primary and primary school levels.

At the secondary level, there were significant differences in the number of gender equitable classroom interactions in favor of boys ($p < 0.001$). A further analysis using the Wilcoxon signed rank test was conducted to find out whether there were any differences by teacher's gender/sex. This was carried out from the overall mean of tallies per class for the gender equitable classroom interaction tally items. The results indicated no significant differences by teacher's gender in PP2. In Grade 6, there were no significant differences for both male ($p\text{-value}=0.723$) and female teachers ($p\text{-value}=0.424$). In Form 2, there was a significant difference among male teachers ($p\text{-value}=0.005$) while among the female teachers there no significant differences ($p\text{-value}=0.833$). See *Table 10*.

Table 10: Test on the mean number of times boys and girls are engaged on items regarding gender-equitable classroom interactions

Level	#obs instances	z statistic	Prob > z
Pre-primary (PP2)	87	0.76	0.449
Primary (G6)	295	0.48	0.630
Secondary (F2)	170	4.16	<0.001

An evaluation of gender equitable classroom interactions revealed various patterns. Generally, 100% pre-primary and secondary school teachers connected classwork with everyday life using a gender lens, compared to 90% of primary teachers. At the primary and secondary levels, there was a notable positive observation in practical activities/demonstrations where teachers used tactics to encourage learners to engage with the specimens/apparatus.

It was also observed that pre-primary teachers always ensured that group discussions took gender issues into consideration. At the primary level, 60% of teachers either most of the time or always ensured that group discussions took gender issues into consideration, compared to 50% at the secondary level. In addition, most teachers across the three levels ensured that the students' groups were mixed. Further, most of the teachers across the different levels phrased questions to reflect gender representation. Another positive observation was that teachers across the levels generally allowed sufficient time for all students (boys and girls) to answer questions. See Figure 12 for more details.

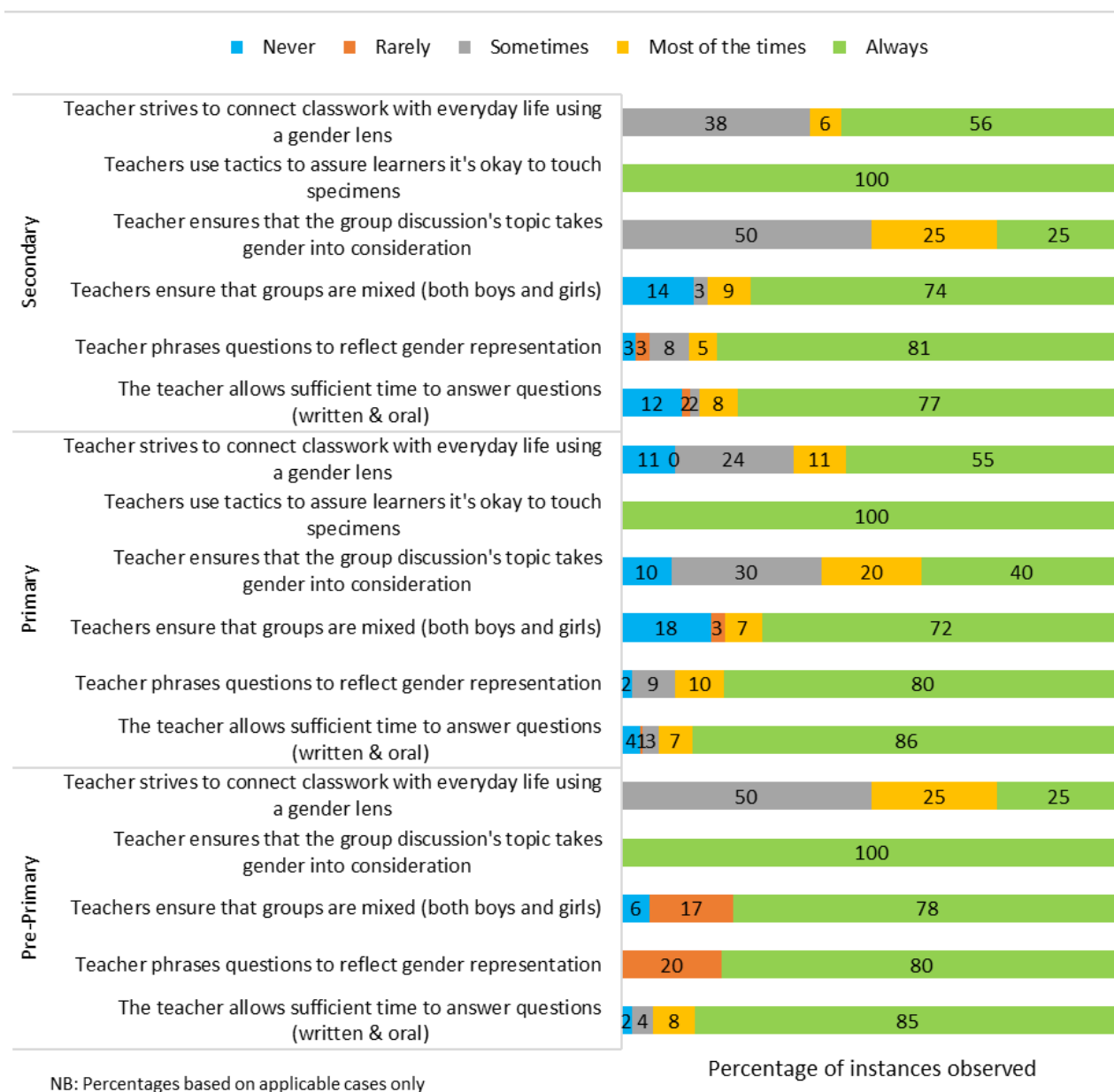


Figure 12: Frequency of gender equitable classroom interactions in pre-primary (pre-primary 2), primary (grade 6) and secondary (form 2)

d. Gender Responsive Classroom Set-up and Environment

The teachers generally made the classroom environments safe as indicated in *Figure 13*. For instance, 72% of teachers in secondary school either most of the time or always used fair/unbiased corrective measures for both boys and girls, with 94% and 77% of teachers in primary and pre-primary also applying the same respectively. Also, 99% of teachers in secondary school made use of varied tasks for self-regulation compared to 97% and 95% in primary and pre-primary schoolteachers respectively. A majority of the teachers (97-98%) in all the three levels also created a culture of positive and respectful relationships. Another positive observation was that teacher grooming across the different levels was professional, which is critical for conducive learning with minimal disruption. Most teachers utilized classroom setup practices that enhanced the participation of boys and girls in all the three levels.

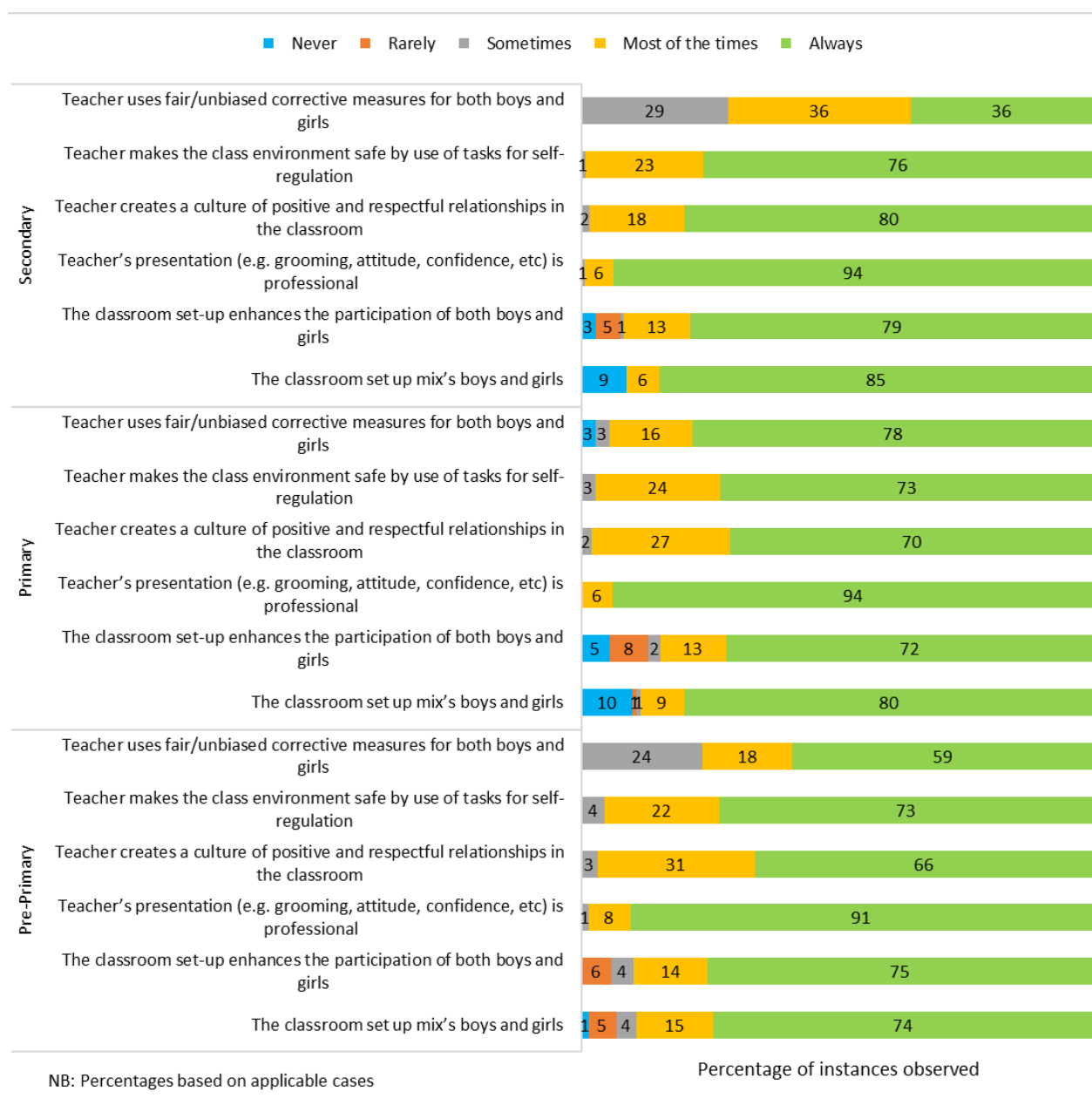


Figure 13: Gender responsive classroom setup and environment

5.2.2. Gender Differences in Classroom Engagement Practices

The study sought to investigate teacher engagement with learners. The findings are illustrated on *Table 11*. The absolute differences in the mean overall tallies of teacher's engagement with boys and girls were computed and divided into three categories as follows:

- Small difference refers to the absolute differences in the mean number of engagements with boys and girls in classrooms that were approximately the same (the differences were close or equal to zero).
- Medium difference refers to the absolute differences in the mean number of engagements with boys and girls that were moderate (not small and not large).
- Large differences refer to the absolute differences in the mean number of classroom engagements with boys and girls that are large or far from zero.

The results portrayed in *Table 11* shows the distribution of different categories of absolute differences of the mean overall tallies of teachers' engagement with male and female learners. Overall, 35% of

learners in primary school and 27% in secondary school were exposed to large differences in teacher engagements with learners. The findings also indicated regional disparities within the counties, with large differences at secondary level reported in Garissa (100%), Marsabit (66.7%) and Busia (50%). Similarly, large differences were reported at primary school level in Tana River (60%), Busia (50%) and Garissa (50%).

Table 11: Absolute differences in the mean number of teacher engagements by school level

	Primary School level -Grade 6 (%)			Secondary School level - Form 2 (%)		
County (p=#/S=#)	Small diff	Medium diff	Large diff	Small diff	Medium diff	Large diff
Busia (P=8/S=6)	25.0	25.0	50.0	0.0	50.0	50.0
Garissa (P=2/S=1)	0.0	50.0	50.0	0.0	0.0	100.0
Mandera (P=4/S=2)	75.0	0.0	25.0	100.0	0.0	0.0
Marsabit (P=5/S=3)	20.0	60.0	20.0	0.0	33.3	66.7
Wajir (P=5/S=1)	20.0	40.0	40.0	100.0	0.0	0.0
West Pokot (P=7/S=1)	42.9	42.9	14.3	100.0	0.0	0.0
Tana River (P=5/S=2)	40.0	0.0	60.0	0.0	100.0	0.0
Turkana (P=4/S=2)	25.0	50.0	25.0	100.0	0.0	0.0
Samburu (P=2/S=4)	50.0	50.0	0.0	50.0	50.0	0.0
Nairobi (P=6/S=4)	16.7	33.3	50.0	50.0	25.0	25.0
Overall (P=48/S=26) (exposed)	31.3	33.3	35.4 (851)	38.5	34.6	26.9 (480)

Notes: P is the number of classes observed in primary, S is the number of classes observed in secondary, and diff is a shortened form of the word difference.

5.2.3. Gender Parity Indices

Gender parity index (GPI) relates to the ratio of female to male school enrolments. A GPI between 0.97 and 1.03 indicates parity between the genders whereas if it below 0.97, it indicates a disparity in favor of male learners. On the other hand, if the GPI is above 1.03, it indicates a disparity in favor of female learners (Republic of Kenya, 2020).

We used the data reported in the Education Statistical Abstract of 2020 to derive the gender parity indices for each of the ten counties and the overall for the country. *Table 12* indicates that there was a slight disparity in the overall GPI for primary school which was in favor of boys. On the other hand, there was parity in the overall GPI at secondary school level. Looking at the indices for primary school level by counties, only half of the counties (5/10) indicate parity.

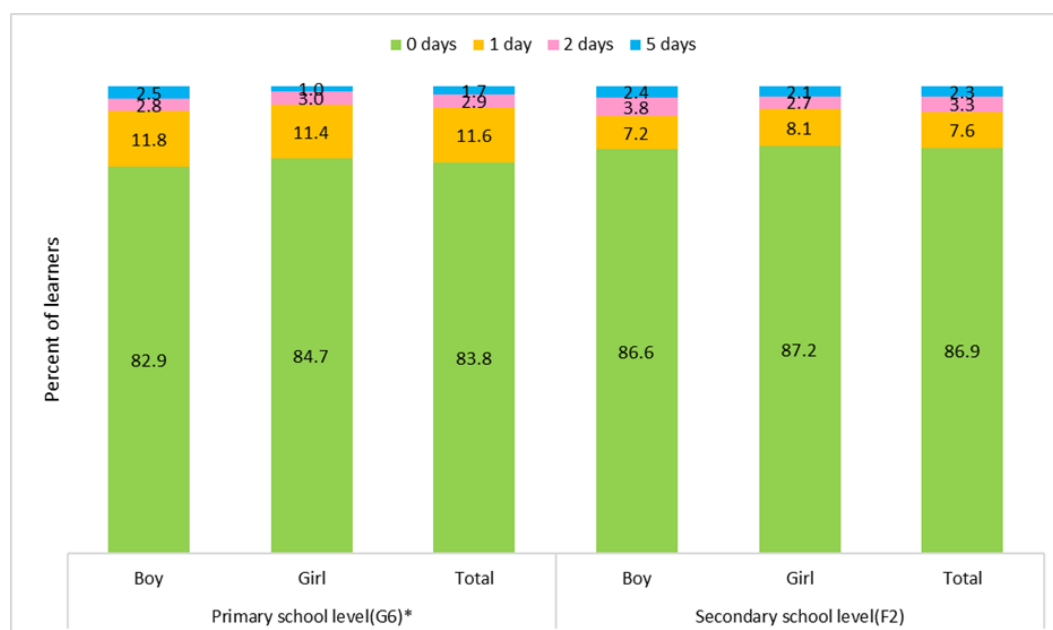
These counties include; Busia, Marsabit, West Pokot, Tana River and Nairobi counties. The rest of the counties reported disparities in favor of boys, including; Garissa, Mandera, Wajir, Turkana and Samburu counties. At the secondary school level, all counties showed disparity, two of which were in favor of girls (i.e. Busia and Nairobi), whereas the rest were in favor of boys.

Table 12: Gender parity index based on the 2020 Education Statistical Abstract

County	School Level	
	Primary	Secondary
Busia	0.99	1.09
Garissa	0.73	0.68
Mandera	0.60	0.54
Marsabit	0.97	0.96
Wajir	0.77	0.58
West Pokot	0.98	0.90
Tana River	0.97	0.83
Turkana	0.90	0.62
Samburu	0.90	0.74
Nairobi	1.01	1.04
Total	0.96	1.01

5.2.4. School Attendance

School attendance for majority of the students was regular with 84 percent of grade 6 learners being present for five consecutive schooling days preceding the survey. Slightly more girls (85%) compared to boys (83%) were present in school during this period. At the secondary school level, 87 percent of the learners attended school for five consecutive days preceding the survey. See *Figure 14*.

**Figure 14: Number of days absent in the past five schooling days prior to the survey**

5.2.5. Reasons for Absenteeism among learners

Generally, the key reasons absenteeism provided by the learners and by the institutional heads were similar. For instance, the two main reasons for absenteeism at primary school level were sickness, and domestic work for both boys and girls. Similarly, at the secondary school level, the two main reasons were sickness and school fees problems.

Main reasons for Absenteeism Reported by Learners

At the primary school level, learners attributed absenteeism to three main reasons among girls and boys including, sickness, domestic responsibilities, and school fees problems. More boys (67%) than girls (59%) reported sickness as the main reason for absenteeism. On the contrary, slightly more girls (10%) than boys (8%) reported school fees as the third reason for absenteeism (See Figure 15).

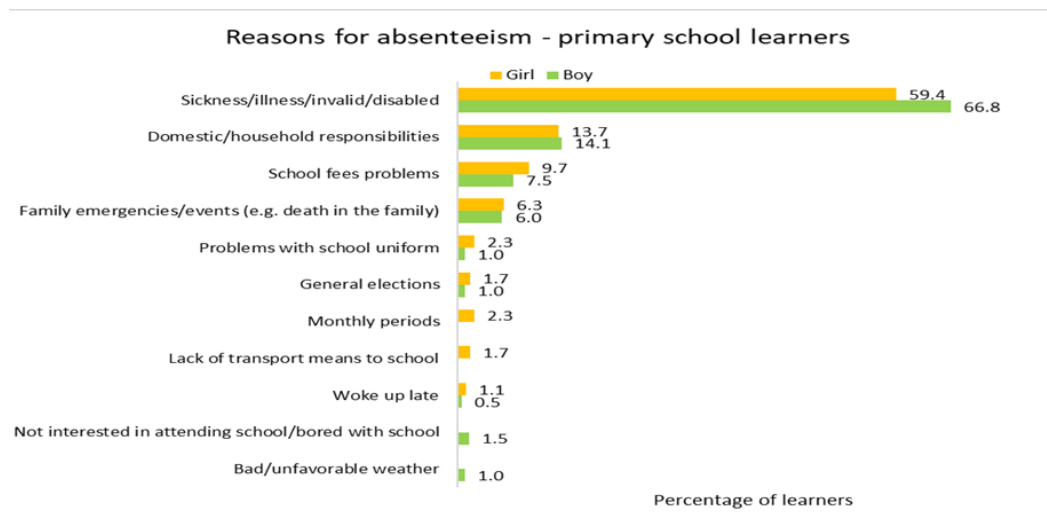


Figure 15: Reasons for learner's absenteeism in primary school level as reported by learners

Among secondary school, learners the main causes of absenteeism were lack of school fees and sickness (see Figure 16). Disaggregated by gender, sickness accounted for 45% and 43% of boys and girls being absent from school respectively. Moreover, school fees accounted for 42% and 35% of boys and girls being absent from school respectively. For girls, the third most common reason for missing school was monthly periods, while for boys it was lack of school uniforms.

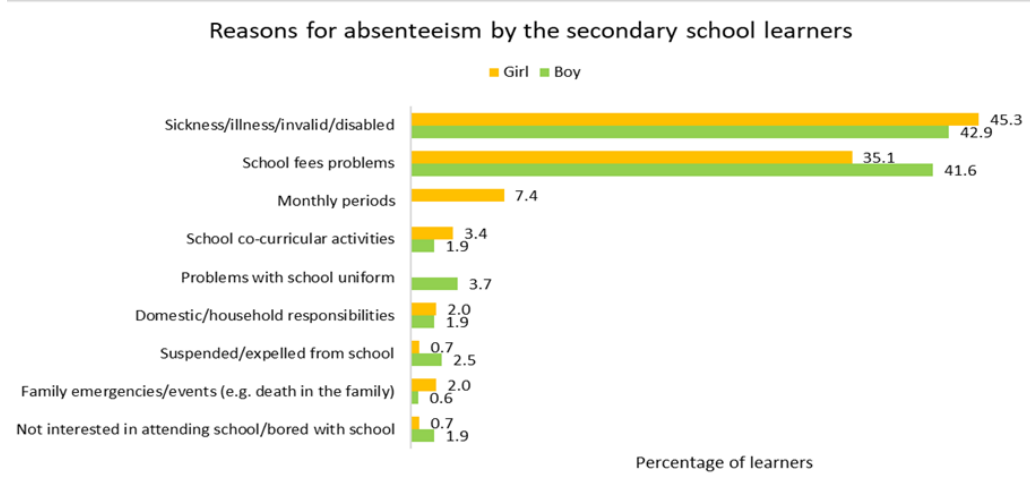


Figure 16: Reasons for learner's absenteeism in secondary school as reported by learners

Main Reasons for Absenteeism Reported by Institutional Heads

Institutional heads reported that the three most common reasons for absenteeism at the primary school level for both boys and girls were sickness, domestic chores, and lack of food. More girls (29%) engaged in domestic chores compared to boys (21%). The fourth reason reported for absenteeism was paid work outside the home and, monthly periods for boys and girls respectively. See Figure 17.

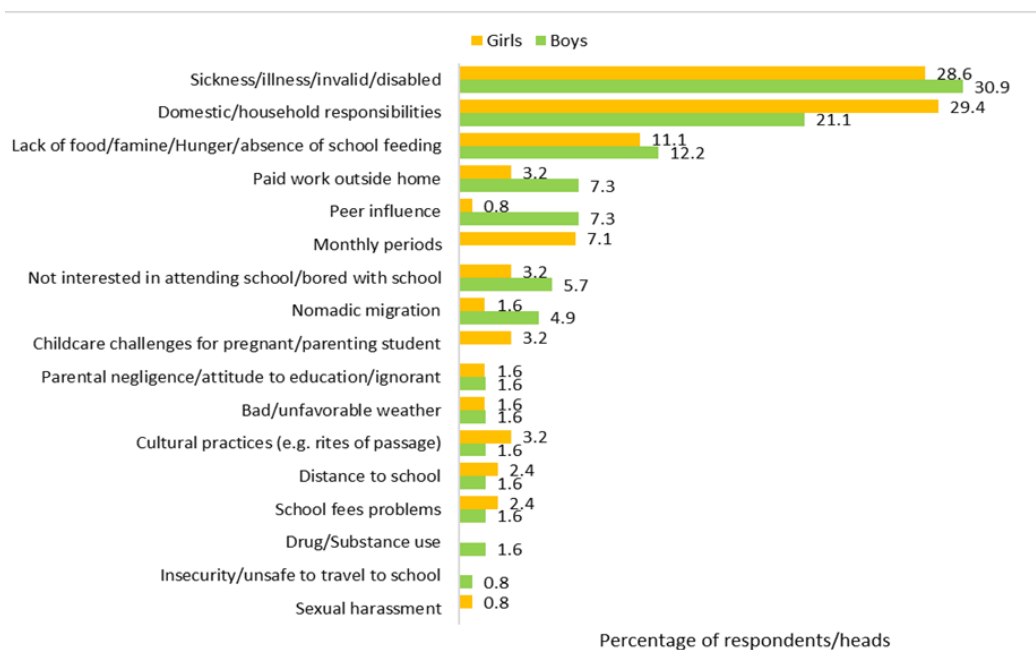


Figure 17: Main reasons for absenteeism among Grade 6 learners as provided by the institutional heads

At the Secondary level, the main reasons reported by institutional heads for student absenteeism among both boys and girls were lack of school fees and sickness. The third reason reported for girls was childcare challenges for pregnant and parenting girls at 21%, while paid work outside the home was the third reason at 8.3 % for boys. See *Figure 18*.

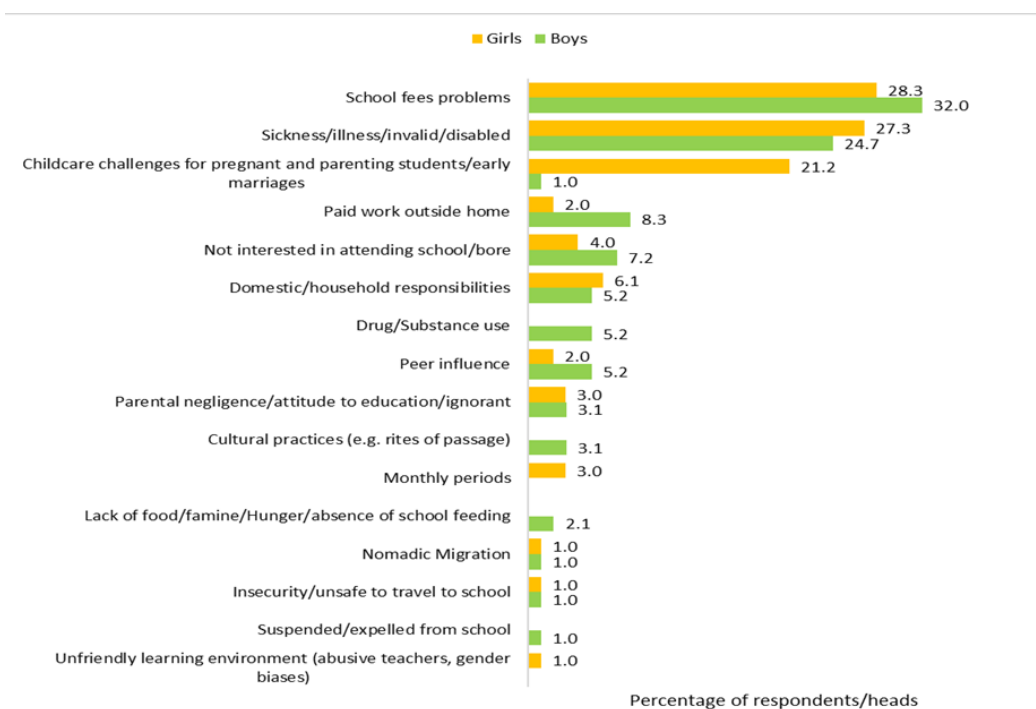


Figure 18: Main reasons for absenteeism among form 2 students as provided by the institutional heads

5.2.6. Learner Reports of Teachers Missing Lessons

Learners were asked whether their teachers of Mathematics, English, and Science subjects had missed at least one or more lessons for the past five schooling days prior to the survey. The findings shown in *Figure 19*, indicated that reports of teachers missing lessons differed by school level. At the primary level, 23% of learners in grade six reported that their teachers had missed English lessons, 12% reported that their teachers had missed Mathematics, and 14% reported that their teachers had missed Science lessons. At the Secondary level, 22% of learners reported that their teachers had missed Physics lessons, 20% reported that their teachers had missed Chemistry lessons, and 16% of learners reported that their teachers had missed Biology lessons.

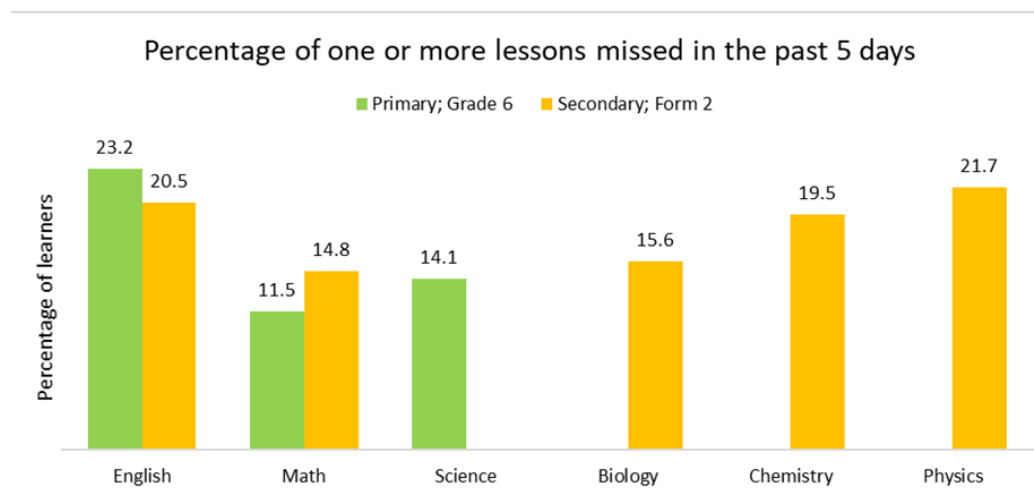


Figure 19: Percentage of one or more lessons missed by teachers

5.2.7. Student's Preferred Choice of Subjects when Transitioning to Form 3

The findings on preferred subject choices by Form two students indicated that generally, there was a low preference for selecting Physics as an optional subject by both male and female learners, as highlighted in *Figure 20*. However, a chi-square test of proportions indicated that a significantly higher proportion of boys than girls preferred to choose Physics as an optional subject in Form 3, at 33 percent compared to girls at 20 percent ($p\text{-value} < 0.001$).

A significantly higher proportion of girls preferred to take Biology at 88% as compared to boys at 82% ($p\text{-value} < 0.001$). In addition, there was a significantly higher proportion of boys at 31% intending to select Geography compared to 25% of girls ($p\text{-value} < 0.001$). On the other hand, 85% of girls had the intention to select CRE/IRE in Form 3 compared to 78% of boys ($p\text{-value} < 0.001$). A scrutiny of the other optional subjects showed that there was no significant difference in the selection of History, Agriculture, and Business studies.

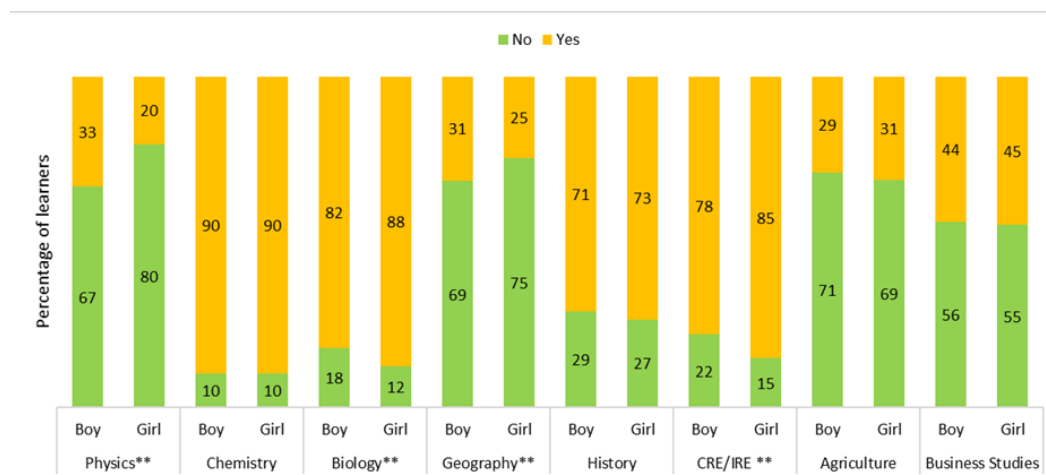


Figure 20: Proportion of preferred student's choice of optional subjects during the transition to Form 3

Learners' Motivation for Preferred Optional Subjects

A multiple response question was posed to the form 2 learners inquiring their reasons for the preferred choice of subjects. *Figure 21* indicates that the main motivation for both boys' and girls' selection of optional subjects was good performance, perceived interest in the subjects, the applicability of the subjects to their future career aspirations, and the perceived quality of teaching.

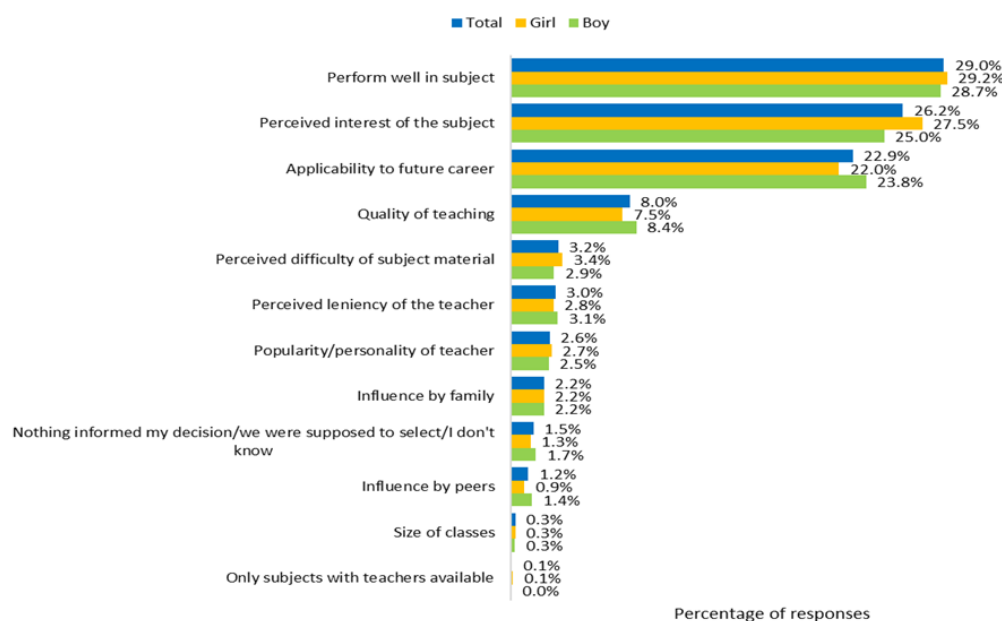


Figure 21: Reasons for preferred choice of optional subjects by form 2 learners

5.2.8. Gender Mainstreaming Compliance Index (GMCI)

We mapped out items from the institutional questionnaire that fall within the six objectives of the Education and Training Sector Gender policy. The GMCI was computed for mixed-gender schools only to allow for comparison between the male and female categories (See appendix 1). Dichotomous variables were generated by allocating a score of 1 if true and 0 otherwise for each variable. The items identified in our survey tools were as follows; gender parity index (GPI), mixed gender library set-up allocation, availability boys and girls toilets within the school compounds, separate toilet doors/stances for boys

and girls, functional bins for disposing sanitary towels for the students and teachers, equal utilization of the playground by boys and girls, head teacher gender parity, gender balanced student leadership, balanced BoM gender composition, balanced parents association gender composition, BoM trained on gender issues, PA trained on gender issues, BoM discussed gender issues during meeting, gender balance among heads of departments, QASO addressed gender issues during inspection, availability of guidelines on sexual harassment of students, gender balance in the proportion of teachers and non-teaching staff, and PHO addressed gender issues.

We applied psychometric analysis and dimension reduction procedures to identify the items that were most important in addressing the gender mainstreaming compliance in primary and secondary schools respectively. We specifically conducted a reliability test on the twenty items to pinpoint any items that compromised internal consistency, primarily due to their low item-rest and/or low item-test correlations. We further utilized the principal component analysis (PCA) to identify the constructs that explained the highest proportion of variation. Items that had low-factor loadings were dropped. The primary school level resulted into 3 components explaining 71% of the total variation and for the secondary school level, we obtained two components explaining 50% of the total variation. The identified items were summed together to obtain a GMCI for primary and secondary school levels respectively.

We summed the items that were identified for inclusion in the gender mainstreaming compliance index at the primary and secondary school levels. The overall score at the primary school level was 61.1% which was higher than that of the secondary school level which was 46.2%. In the primary school level, the county that demonstrated the highest gender mainstreaming compliance was Tana River, and the lowest was Samburu. At the secondary school level, the county that attained the highest gender compliance score was Wajir County while the lowest score was recorded in Garissa County. *Figure 22* shows the results.

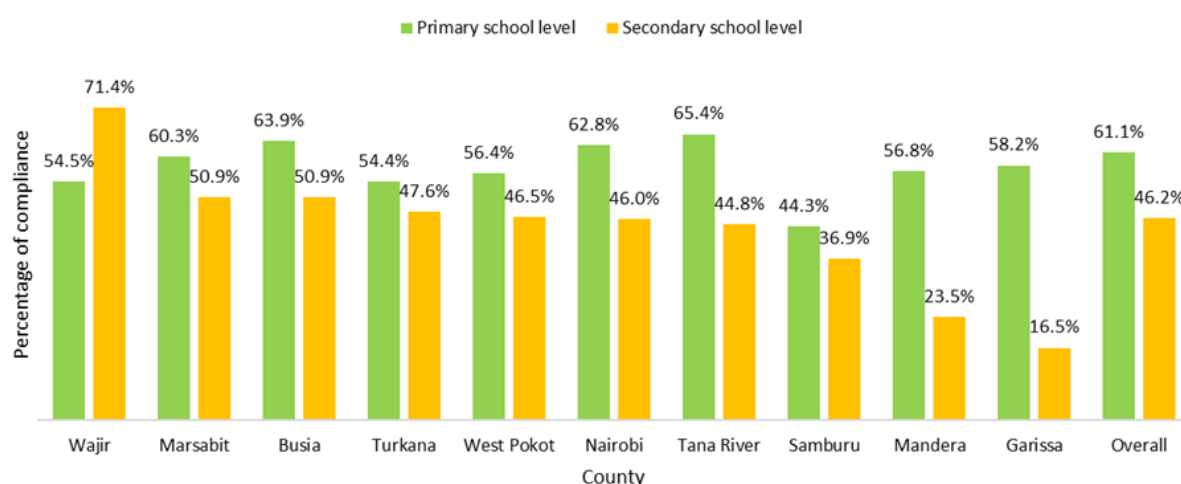


Figure 22: Primary and secondary school GMCI by counties

5.2.9. Regression Analysis to Assess the Relationship between Academic Achievement, School Attendance, and Subject Choice against Classroom Pedagogical Practices

a. Gender Responsive Teaching and Academic Achievement at Primary School

At the primary school level, we used the Generalized Estimating Equations (GEE) models as it is suitable for longitudinal/clustered/panel data (Wang, 2014). We had five-year national examination results for each school (where applicable) from year 2017 to 2021. The mean scores for each subject for the

Kenya Certificate of Primary Education for the years 2017 to 2021 were gathered and used as a proxy for learning outcomes. The GEE is an appropriate model when inference is done at an individual level. In determining the explanatory variables to be included in the model, the quasi-likelihood under the independence model criterion (QIC) and QICu were used. Moreover, the QIC and QICu facilitated the choice of the distribution family to be utilized in the model. The inverse Gaussian distribution family with log link function emerged as the best for all models regarding performance in each of the three subjects against the explanatory variables at the primary school level. The correlation structures namely exchangeable, autoregressive (lag 1) (AR1), and independent were assessed by running pairs of naïve and robust models with each correlation structure and comparing the difference in the standard error values, the correlation structure that produced the smallest differences in the standard errors between the naïve and robust model was selected. The correlation structure (exchangeable) emerged the best for the three primary school level models on performance. The explanatory variables that gave rise to models with the smallest values of the QIC and QICu were considered for inclusion.

Holding other factors constant, the results showed, that the English mean score in private schools was 20% higher than in public schools (p -value <0.001). After adjusting for other factors, a school with a library facility (designated reading area) on average performed better in Mathematics, English, and Science by 29%, 23%, and 20%, respectively (each p -value <0.001) than a school that did not have library facility. On average, holding other factors constant, a unit increase in gender responsive teaching (p -value $=0.036$) resulted in a 5% increase in performance in English. Finally, a percentage increase in student class attendance resulted in an 82 percent in Mathematics scores.

b. Gender Responsive Teaching and Academic Achievement at Secondary

At the secondary school level, we also utilized the GEE model. The QIC and QICu criteria were used in determining the explanatory variables to be included, as well as the distribution family to be considered in the regression model. The inverse Gaussian regression family was the log link function and was the best family for all the five regression models involving the relationship to the performance in the five subjects, namely Mathematics, English, Biology, Chemistry, and Physics. The ideal correlation structure was determined by comparing the naïve and robust models under different correlation structures. The model involving performance in mathematics, AR1, was the most ideal, and all the other four exchangeable models were the most ideal.

Results indicated that holding other factors constant, a unit increase in gender mainstreaming compliance in the school resulted in a 2.3 units improvement in English performance ($p < 0.001$) and a decrease in Chemistry performance ($p < 0.001$). Performance in English was better in private schools than in public schools by 78%, and in Biology and Chemistry, it was better in public schools than in private schools by 38% and 78%, respectively. Performance in Biology, Chemistry, English, and Mathematics was better among schools that had a school feeding program than schools that did not have the program by 36%, 44%, 62%, and 62%, respectively. Performance in all the subjects was better in the schools that had library facilities than in schools that did not have library facilities. A slight decrease in performance was observed across all the subjects following an interaction effect with the gender responsive language use score. Performance in Biology, English, Mathematics, and Physics increased by 74%, 30%, 75%, and 91% upon an increase in the number of times boys and girls were equally engaged by the teachers in the classroom ($p < 0.001$). Performance in Biology, Chemistry, and Mathematics increased by 21%, 33%, and 20% respectively upon the increase in the number of physical classroom facilities that enable a better learning environment. A percentage increase in school attendance resulted in an improvement in performance in Chemistry, English, and Mathematics 20, 2.1, and 3.5 times respectively.

c. Gender Mainstreaming Compliance and School Attendance

We assessed the associations between the proportion of Grade 6 and Form 2 students' school attendance using the generalized linear models with the binomial as the distribution family and logit as the link function. Akaike Information Criterion (AIC) and Bayesian Information Criterion (BIC) were used in determining the variables included in the model for each level of education. The results indicated that at primary school level, the odds of attending school was 4.3 times better if the school's gender mainstreaming compliance index increased by a unit (p -value=0.026). Moreover, at primary level, the odds of school attendance were reduced by 1% if the pupil teacher ratio (PTR) was increased by a unit (p -value=0.005).

However, at secondary school level, the odds of school attendance were increased by 7% if the PTR increased by a unit (p -value=0.001). Additionally, the odds of school attendance were increased by 87% if a school had a school feeding program (p -value=0.010). The odds of primary school attendance were increased by 4.2 times if the instances of gender responsive language use increased by a unit (p -value=0.030). The odds of primary school attendance increased by 3.1 times if the teacher utilized a gender responsive classroom environment (p -value=0.034). The odds of secondary school attendance increased by 3.9 times if gender equitable interactions were enhanced in teaching (p -value<0.001), after adjusting for the other factors. In addition, the odds of secondary school attendance were increased by 21% if teaching and learning materials/resources were increased by a unit (p =0.018).

d. Secondary School Optional Subject Choice

The relationship between gender responsive pedagogy and the intended choices of optional subjects in Form 3 was assessed by use of binary logistics regression models. The optional subjects assessed were sciences (Biology, Chemistry, and Physics) and humanities (Geography). AIC and BIC criteria were used in the choice of the explanatory variables. Student weights were used to correct the sample imbalances and improve the estimation of parameters. Holding other factors constant, the odds of selecting Biology subject was 2.3 times more among girls than boys (p -value<0.001). The odds of selecting chemistry decreased by 96% if the subject was taught by a female teacher than a male teacher (p -value<0.001).

The odds of selecting Geography subject were increased by 13.7 times if the compliance to the school's gender mainstreaming index increased by a one unit. The odds of selecting Geography as an optional subject were decreased by 18% if the PTR increased by a unit. The odds of choosing the Geography were increased by 2.4 times if there were gender equitable interactions in the classroom (p -value=0.004). The odds of choosing Chemistry were increased by 7 times if the subject teacher was 'very easy' to approach than if the subject teacher was not easy' to approach. The odds of selecting Physics were increased by 3.5 times if the subject was perceived by learners as being applicable to their intended future careers (p -value<0.001). The odds of choosing Physics as well as Geography were increased by 3 times if the teacher was popular or had a likable personality (p -values= 0.031 and <0.001 respectively).

5.3 Institutional Policies, Practices and Guidelines to Mainstream Gender Issues in Basic Education

The third research question explored the availability of institutional policies, practices, and guidelines that have been put in place to mainstream gender issues and the extent to which they influence gender mainstreaming in education.

Key Findings

- More than 40% of public and private primary and secondary schools did not have guidelines on sexual harassment and gender-based violence for students and teachers.
- Majority of the schools that indicated they had the guidelines could not avail them to the research team.
- More than 98% of the schools had separate toilet stances for boys and girls however, most of the schools did not have separate toilets for learners with special needs.
- At the pre-primary level, the teaching staff was predominantly female, whereas, at the primary and secondary levels, the proportion of male teachers was more than females.
- An examination of teaching staff in the subjects of interest at the primary and secondary level indicated that more male teachers were allocated to teach STEM subjects.
- Quality Assurance and Standards Officers addressed issues of gender mainstreaming in 60% of primary and 46.9% of secondary schools. The focus on gender issues by the Public Health Officers was low in both primary (36.6%) and secondary (22.1%) schools.
- The composition of the Boards of Management and the Parent Associations in both primary and secondary schools was predominantly male.

5.3.1. Availability and Awareness of Policies on Sexual Harassment and Gender Based Violence in Schools

We examined the availability and awareness of institutional policies and guidelines on sexual harassment and gender-based violence. *Table 13* shows that almost half of the public and private schools did not have guidelines on gender-based violence and sexual harassment for teachers in schools. Less than 20 percent of the institutions were able to avail the guidelines to the study team at the primary level with public schools at 16% and private 13%, while 26 percent availed the same in public secondary schools. Only 5 percent of private secondary schools availed the guidelines to the study team. In addition, only 13 percent of public and 17 percent of private primary schools, compared to 26 percent of public and 5 percent of private secondary schools, were able to avail students' guidelines to the study team.

Table 13: Availability of guidelines on sexual harassment and gender-based violence

	Primary school level		Secondary school level	
	Public (%)	Private (%)	Public (%)	Private (%)
for teachers in the school?				
Yes, Available;	15.7	12.5	26.0	5.0
Yes, Not Available;	40.2	37.5	26.0	50.0
No	44.1	50.0	48.1	45.0
for students in the school?				
Yes, Available;	12.7	16.7	21.2	15.0
Yes, Not Available	44.1	37.5	26.9	45.0
No	43.1	45.8	51.9	40.0
for non-teaching staff in the school?				
Yes, Available	7.8	12.5	11.5	5.0
Yes, Not Available	35.3	45.8	26.9	45.0
No	56.9	41.7	61.5	50.0

5.3.2. Sensitization on Sexual Harassment and Gender-Based Violence to the School Community

Among the schools that reported having guidelines on sexual harassment and gender-based violence, over 95 percent of both public and private primary schools reported that they sensitized teachers and students on the contents and requirements of the guidelines. At the secondary level, over 92 percent of schools reported sensitizing both teachers and students while 79 percent reported sensitizing non-teaching staff on the guidelines. See *Table 14*.

Table 14: Percentage of schools that sensitize the sexual harassment and gender-based violence policies among students, teachers, and non-teaching staff

	Primary school level		Secondary school level	
Does the school sensitize guidelines among...	Public (%)	Private (%)	Public (%)	Private (%)
Teachers				
No	3.5	0.0	5.6	0.0
Yes	96.5	100.0	94.4	100.0
Students				
No	4.8	0.0	8.3	7.7
Yes	95.2	100.0	91.7	92.3
Non-teaching staff				
No	19.0	0.0	21.1	16.7
Yes	81.0	100.0	78.9	83.3

5.3.3. Qualitative Findings on the Availability and Awareness of Policies on the Prevention of Sexual Harassment in Teacher Training Institutions, Schools, and Education Offices

Perceptions by TTC Trainers and Teacher Trainees

Majority of the teacher trainees and their trainers reported being aware of guidelines promoting gender equality in their institutions. The guidelines were mostly on discipline including engaging in sexual harassment, gender-based violence, and movement restrictions into male and female hostels. In addition, the teacher trainees also pointed out that they were rarely sensitized on the guidelines, which were seen as rules that they had to simply abide by. Both teacher trainees and their trainers indicated that a common disciplinary action for breaking these rules was suspension or expulsion from the institution. Narratives from the teacher trainees and teacher trainers also indicated that the guidance and counseling department was the body mandated to handle gender issues. The other guidelines alluded to by the respondents were those touching on equal gender representation in leadership positions and more so in the student council. Below are some of the sentiments from teacher trainees.

“

R1: *If you walk around the canteen, it is written somewhere we don't condone gender-based violence or something like that...R2: So, some posts have been put just talking of gender-based violence and gender balance everywhere. There are guidelines that tend to prevent sexual harassment and any other intimidation for example, if you are found engaging in sexual harassment ...that is direct expulsion, not suspension. FGD, Teacher trainees, TTC.*

”

“

R2: *The policies are there, and it's just that the post that was written was painted, but as you walk around our college, it was written there is no sexual harassment in our college, and there is a board that even said both genders are equal and should be treated equally. So I think the policies are there, and they are also being implemented in terms of leadership as we had said earlier that the leaders are both girls and boys. If a governor is a man and there is a deputy governor who is a lady...FGD, Teacher trainees, TTC.*

”

The TTC trainers also shared similar sentiments with teacher trainees, and this is what they said about the availability and awareness of institutional policies on gender-based violence and sexual harassment.

“

R: *There are college rules and regulations if you don't abide by them normally we suspend our students. Normally they are not supposed to engage in love affairs when they are here...the male hostels are out of bounds for female students, the female hostels are out of bounds for male students ...IDI, Teacher trainer, TTC.*

R: *Well, okay, it is there because, for example, I am also in the guidance and counseling department at this college. So, we always make sure that anything to do with sexual harassment is very minimal, if any. In fact, we even have some time to address our students on sexual harassment. IDI, Teacher trainer, TTC.*

”

There were reports of the availability of gender committees in some of the teacher training institutions that are tasked with developing and reviewing institutional gender mainstreaming policies and guidelines. However, since the committee was not trained on gender issues, they did not feel well-equipped to carry out their tasks or implement the policies. For instance, the committee did not have mechanisms and

information that could be relayed to the teacher trainees meaning that the set policies did not trickle down to the teacher trainees.

“

R: ...we (gender committee) have been there just maybe by name, but we have not been equipped. We are only two on the committee, but we have never been trained in handling gender issues. But we have been requesting to have such training because we now have the mandate, we can also pass the information to the teacher trainees. But we cannot reach them without the training and the necessary information. So, it has not been mainstreamed so well; although we came to the office, we took over from another committee, there was already a policy, a gender mainstreaming policy for the college, which we also reviewed because the time for review was up, and we did it. But now we lack training. We don't have the right information that we can pass on to the teacher trainees...**IDI, Teacher trainer, TTC.**

”

Perceptions by In-Service Teachers

Just like teacher trainees, in-service teachers highlighted that they were unaware of institutional policies on sexual harassment and gender-based violence. However, they reiterated that the issues were covered in school rules and regulations and that, as teachers, they were obligated to ensure that such practices did not take place in their institutions. According to the teachers, the knowledge about sexual harassment and gender-based violence was mainly emphasized during employment in the professional code of conduct and ethics. Narratives from the teachers also suggested that the guidelines or school rules on sexual harassment and gender-based violence were mostly directed to students with punitive measures for the same outlined.

“

R: Okay, I have not seen any policy, but in case of any harassment or conflict or anything, there is a way we handle it in terms of guidance and counseling. When maybe the issue is serious, we take it to the police...No, we don't have any policy...**IDI, In-service teacher.**

R: You know the policy will come in if at all there are frequent cases of sexual harassment, but I want to say we don't have such cases in our school of sexual harassment...We don't have a policy we just try to inculcate ethics through rules and regulations that are imposed on the students, and we usually encourage what we call respect for each other...**IDI, In-service teacher.**

R: Yes, I think through the school rules and regulations, we are able to tackle that. The school rules and regulations state clearly that you are not supposed to harass your fellow student in any way of course sexual harassment inclusive. Students who do that are punished by the school. We have different modes of punishment, so that helps us to stop these cases...**IDI, In-service teacher.**

”

On the other hand, there were teachers who reported that the institutional policies on sexual harassment and gender-based violence were available and that they were also aware of them. Some schools also reported that they induct teachers on these policies. In addition to the guidelines and policies, some of the schools reported putting up reporting mechanisms to make reporting GBV and sexual harassment easier, such as assigning the guidance and counseling team to handle these cases and assigning male and female teachers in the team to handle respective male and female learners. Some teachers also reported getting support from non-governmental organizations where teachers and learners are regularly imparted with knowledge and skills on the rights of children and life skills to help them evade child abuse.

“

R: We have the guiding and counseling team that deals with those issues. With girls who have a problem, she can report to the teachers concerned because all of us are not allowed; children might be shy, so we just chose a guiding and counseling team, and they deal with those we have a madam teacher (for girls), and then boys, we have a male teacher in guiding and counseling. So, in case of any gender violence or any sexual harassment, we told them they could report there... **IDI, In-service teacher.**

R: We usually have training given to teachers almost fortnightly by the World Vision, and we have a teacher who is in charge of the child rights in school...I am the one in charge of the child rights, and I usually have a meeting with the children once a week to educate them on their rights, and we also have a program in the school that helps to induct all children about their social life, and we train them on life skills, I am a teacher on life skills, and I train them on the skills on how to evade cases of girl child rape, or girl child abuse... **IDI, In-service teacher.**

”

Schools that did not have guidelines or policies, the TSC teacher professional code of conduct was alluded to as a useful guideline to addressing issues on gender-based violence and sexual harassment by teachers. According to them, the punitive measures stipulated in the code, such as deregistering teachers, were a key deterrent for not engaging in such acts.

“

R: There is no policy, but as a trained teacher, the TSC act guides you, that is, the rules and regulations that the TSC has given about engaging with the girl child, and even the boys, because boys also face some challenges. So as a teacher, as you have been trained, you know your area, and you know where to reach and where not to reach as you teach these girls... **IDI, In-service teacher.**

”

Although teachers highlighted that there were very few or no cases of gender-based violence and sexual abuse in their respective schools, they all agreed that they needed training on the same. They were especially concerned that they were not aware of the procedures to undertake in case of such incidences. They also pointed out that in the recent past, GBV and sexual harassment in schools had emerged as key issue and, thus, the need for capacity building.

“

R: We need to be aware of gender violence. For some time, we only see it on television, and when it happens, especially with the procedures to be taken when it is in school and maybe outside the school, maybe in games, what should we do? Because sometimes it may get us off guard, this thing has happened, and we don't know the steps that should be taken. Is it to take straight ahead to the police, or there is another procedure we are supposed to take?... The issue of stigma, suppose it arises; how will that girl or the school or the family help the girl to deal with that stigma? ... **IDI, In-service teacher.**

R: We know harassment may not happen in school, but it can also happen outside. So how are we going to be involved in such a case? Is there a policy that governs that? Because at times you will get maybe a child has been impregnated outside there, what steps can you take to get involved? Because sometimes you get involved, parents have talked amongst themselves, so you lack what to do. So, if proper training or awareness will make us push for the same, it could be better... **IDI, In-service teacher.**

”

Perceptions by Primary and Secondary School Students

Further, most of the students in both primary and secondary schools also echoed that they were unaware of written institutional policies and guidelines for gender-based violence and sexual harassment. To them, gender-based violence and sexual harassment meant avoiding relationships with the opposite gender. They also pointed out that issues of gender-based violence and sexual harassment were not prevalent in the respective schools.

“

R: *There is nothing like that (institutional policies and guidelines for gender-based violence and sexual harassment), but we are told that doing that is bad.*

R: *But if we do that when the teacher sees us, he punishes us badly.*

R: *Yes, R1 has said the truth if we do that, we will be punished greatly by being removed from school...FGD, Boys, Primary.*

R: *When the teacher sees a boy and girl being friends... like there was one who was here and was sent home to bring the parent...I see how we are here in school you will find a boy in another class writing you a letter and bringing it to you and if you throw away the letter and when they find it the teacher asks you to bring your parents...FGD, Girls, Primary*

”

Perceptions by Quality Assurance and Standards Officer and Curriculum Support Officers

Both the QASOs and CSOs also reiterated that there were no written institutional policies on gender-based violence and sexual harassment in their respective institutions and were rather guided by the TSC code of conduct and civil servants' code of conduct. They also agreed with the sentiments raised by teachers that the TSC code of conduct was what was mainly used as a guideline on gender-based violence and sexual harassment at the school level.

“

R: *It is not straight away written somewhere that I can refer you to it somewhere in the noticeboard or somewhere in the file. But we know it is there. So, they are those things, you know, I know there is this policy, so I cannot do that, you should not do that. But now reference, the evidence is the issue now. I don't have the evidence to tell you that it is documented here; this meeting was held to discuss the same. That is what is lacking...IDI, QASO.*

R: *There is none (policy on sexual harassment and GBV), I think there is none that has been written down, but so far, we have never had any harassment from our colleagues or our workers. I have never heard of, here we have male and female colleagues working together, brought together by that code of working together, and we have never had any of them. We normally take tea together, we normally go to the field together, we have never heard any harassment...KII, QASO*

”

According to the QASOs and CSOs, despite there not being a written policy, schools and especially those with boarding schools, had put up strategies to minimize cases of gender-based violence and sexual harassment. Some of these strategies included separating male and female toilets and dormitory facilities, assigning matrons to supervise students' in dormitories, and having a teacher on duty in the evenings.

“

R: ...I believe now every school has those policies, for example in boarding schools, you find that girls' dormitories are far away from the boys' dormitories, and the girls' dormitories have a matron who take care of the girls and even the watchman... then for school activities that are done in the evening the teacher on duty has to be there to make sure that they safeguard both boys and girls.....**KII, CSO.**

”

Just like teachers, the QASOs and CSOs agreed that training on gender-based violence and sexual harassment was needed to not only build their own capacity to handle the cases if they arise but also support and build the capacity of teachers, students, and colleagues in their respective Counties. According to them, this was especially important considering that not all teachers were employed by the TSC, meaning they were unaware of the code of conduct.

“

R: It is needed like yesterday. Because we need those skills, to be equipped with those skills so that we can cascade them. We need to know exactly the scope of our operation on those issues. We need to be sensitized on the gender policy itself, and we get it so that we can also read it and see the details about it. And then once we get it, we also need to be supported to train others, our clients in terms of the schools...**KII, QASO.**

R: ...they need training and support because the teacher needs capacity building on sexual harassment because there are some who are not even aware or they don't read the TSC code of conduct, and they don't know the offenses that they will encounter when they do such an act...**KII, CSO, Wajir.**

”

5.3.4. Gender Inclusive School Facilities

We examined the availability of various school facilities and the extent to which the facilities were gender inclusive.

a. Toilet Facilities

All the public primary schools in the sample indicated that they had toilet facilities except one in Wajir County. *Figure 23* highlights the different types of toilets that were available in the schools included in the study. Most primary schools had improved pit latrine toilet facilities, with public schools at 47 and private schools at 42 percent. Similarly, 49 percent of public schools and 29 percent of private schools had traditional pit latrines. Only 5 percent of public primary schools had flush toilets compared to 29 percent of private schools. At the secondary level, most public schools (55 percent) had improved pit latrines as compared to 20 percent of private schools. In addition, 36 percent of public and 25 percent of private secondary schools had traditional pit latrines. Fifty-five percent of private schools, that is 55 percent, had flush toilets as compared to 7 percent of public schools. In addition, nearly all the schools reported having toilet facilities for both boys and girls within the school compound.

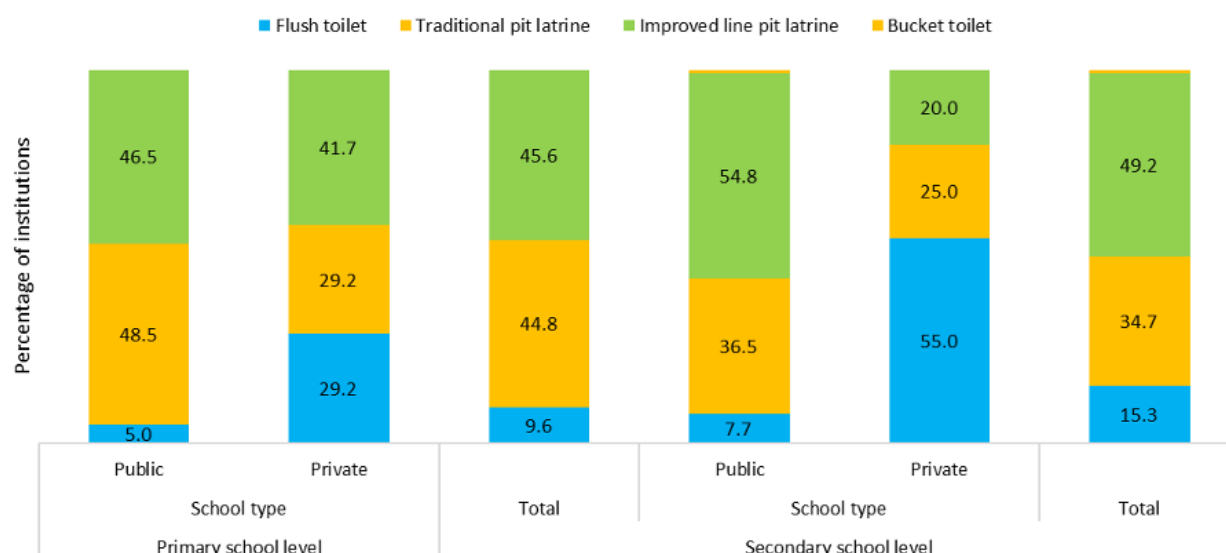


Figure 23: The type of toilets used in primary and secondary schools

Further, over 98 percent of the schools had separate toilets for male and female students. All the secondary schools had separate toilet doors for male and female students. See *Figure 24*.

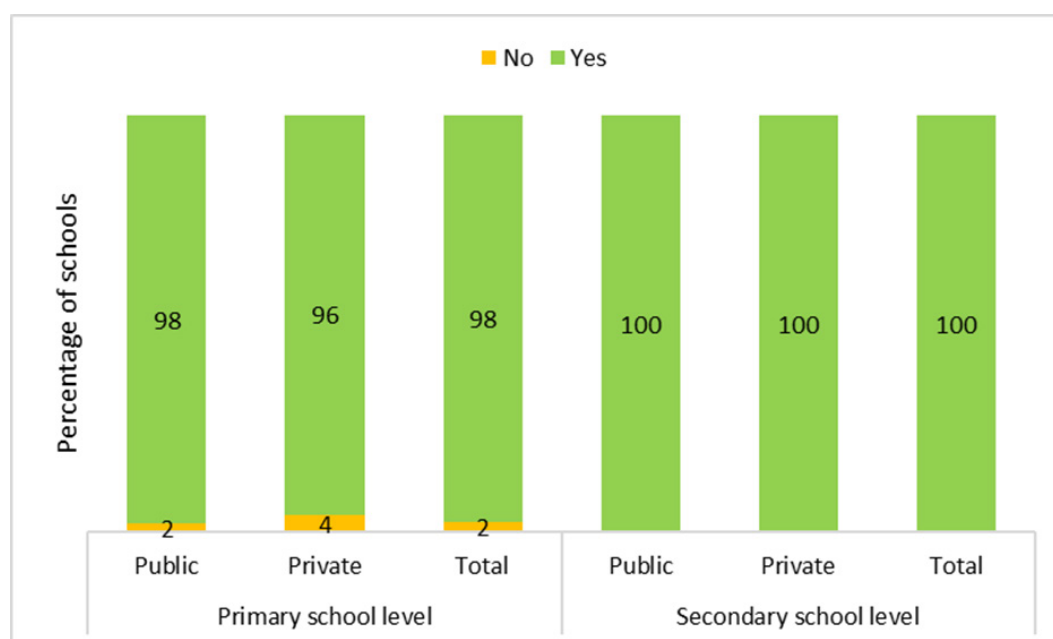


Figure 24: Percentage of schools with toilets with separate doors/stances

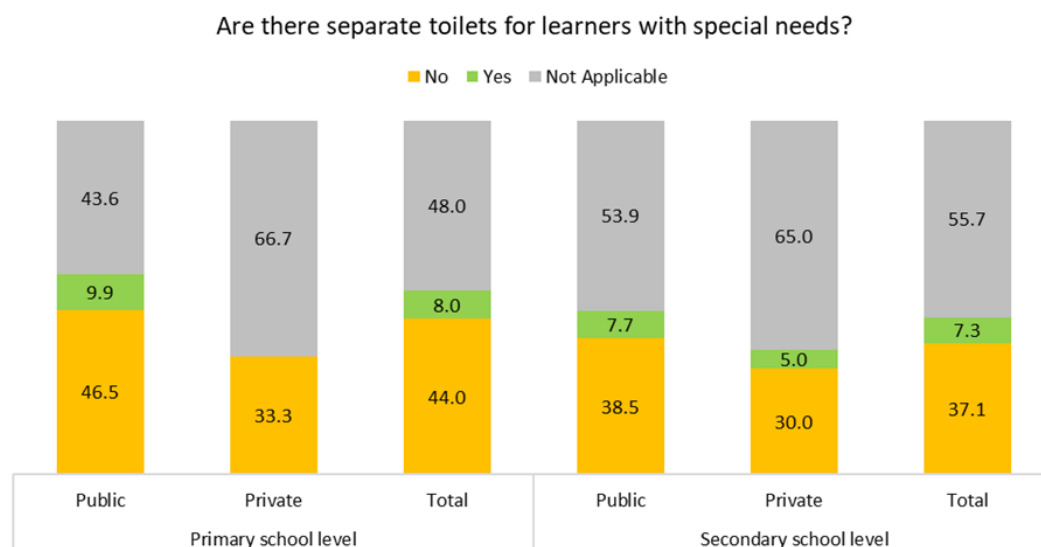
As shown in Table 15, despite most of the primary schools reporting that they had separate toilets for teachers and learners, the number was higher in public schools as compared to private schools at 95 percent and 88 percent, respectively. A smaller percentage, 3 percent of public schools, also reported that they did not have toilets for teachers or that the toilets were located outside the school compound. At the Secondary school level, 99 percent of public schools and 95 percent of private schools reported having separate toilets for teachers and students.

Table 15: Nature of use of toilet facilities by teachers in primary and secondary school levels

	Primary school level			Secondary school level	
	Public	Private	Total	Private	Total
Yes	95.1	87.5	93.6	95.0	98.4
Shared with learners	2.0	12.5	4.0	5.0	1.6
No toilets for teachers/ located outside school compound	3.0	0.0	2.4		

Figure 25 highlights the number of schools both at the primary and secondary levels that reported having separate toilet doors for learners with special needs. About 46 percent of primary public schools did not have separate toilets for learners with special needs, with nearly half (44%) of the schools indicating that they did not have learners with special needs and hence they did not have separate toilets for them. In addition, 67 percent of private schools reported not having learners with special needs while 33 percent reported not having separate toilets for students with special needs.

At the Secondary school level, 54 percent of public schools indicated that they did not have learners with special needs, and 39 percent indicated that they did not have separate toilets. The majority of private schools either did not have students with special needs or did not have separate toilets for them at 65 and 30 percent, respectively.

**Figure 25: Percentage of schools that reported separate toilets for learners with special needs**

b. Pupil-Toilet Ratio

In Kenya, the minimum standard of latrine to pupils' ratio is 1 latrine door to 25 girls with a closet and 1 latrine door to 30 boys and a provision for a urinal (Republic of Kenya, 2022). We asked the institutional heads to provide information about the number of toilets available for boys and for girls in their respective schools. We utilized this information against the student enrolment to compute the pupil-toilet ratios.

Firstly, considering all schools, the results indicated that the pupil-toilet ratio for boys in primary school was 1:46 and 1:54 in secondary school, whereas, for girls it was 1:40 at the primary school level, and 1:48 in secondary school. Secondly, considering the mixed gender schools only, the pupil-toilet ratio for boys in primary schools was 1:46 and 1:29 for secondary schools. On the other hand, the pupil-toilet ratio for girls at the primary school level was 1:37 and 1:23 at the secondary school level. The results were indicative that the pupil-toilet ratio for boys and girls was within the recommended Ministry of Education ratio for mixed-gender secondary schools.

c. Handwashing Points

The study sought to find out how many handwashing points/taps are available for male and female students. The analysis in *Table 16* provides the percentages for mixed-gender schools. The percentages were computed as a proportion of the total number of handwashing points. The findings indicated that the majority (69.2%) of mixed-gender public and private schools provided handwashing points that had not been separated by gender or SNE.

Table 16: The percentage of handwashing points for mixed gender schools out of the total number of handwashing points

	Male	Female students	Male students with SNE	Female students with SNE	For all students	For all students SNE
Public	13.7%	13.1%	0.1%	0.1%	69.7%	3.3%
Private	16.6%	14.1%	0.0%	0.0%	67.4%	1.9%
Total	14.4%	13.3%	0.1%	0.1%	69.2%	3.0%

d. Playground Facilities

A majority of the mixed-gender primary and secondary schools reported having playgrounds. At the primary school level, a higher proportion of public schools reported having playgrounds compared to the private schools, at 90% and 75% respectively. A similar observation was made for public secondary schools at 86% and 65% for private schools. We further examined the nature of field occupancy within the schools. Generally, it was reported that boys in both private and public schools took up more space in the playground in the mixed gender schools at 58 and 66 percent at both primary and secondary schools respectively. See *Figure 26* and *Figure 27*.

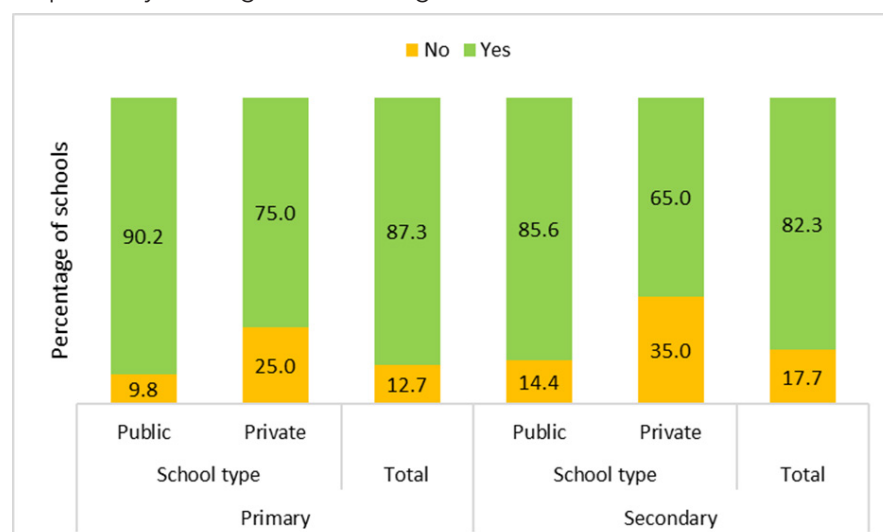


Figure 26: Availability of a playing ground exclusive for learners in the school

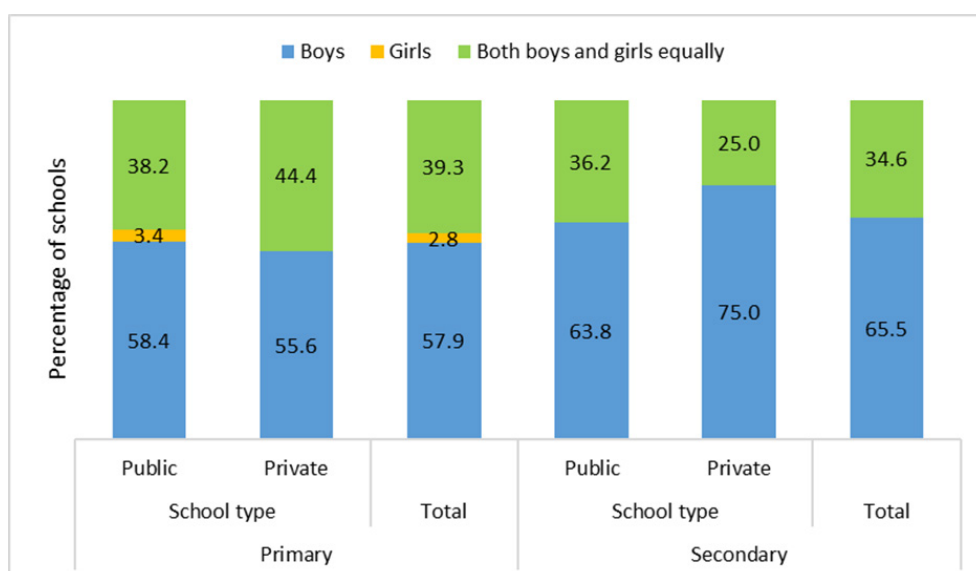


Figure 27: Percentage of playground space used by boys and girls in mixed gender schools

5.3.5. Staffing by Gender

We examined the proportions of teaching staff by gender. *Figure 28* shows that the teaching staff at the pre-primary level was predominantly female at 82 percent. However, there were more male teachers at the primary and secondary levels, 54 and 75 percent, respectively.

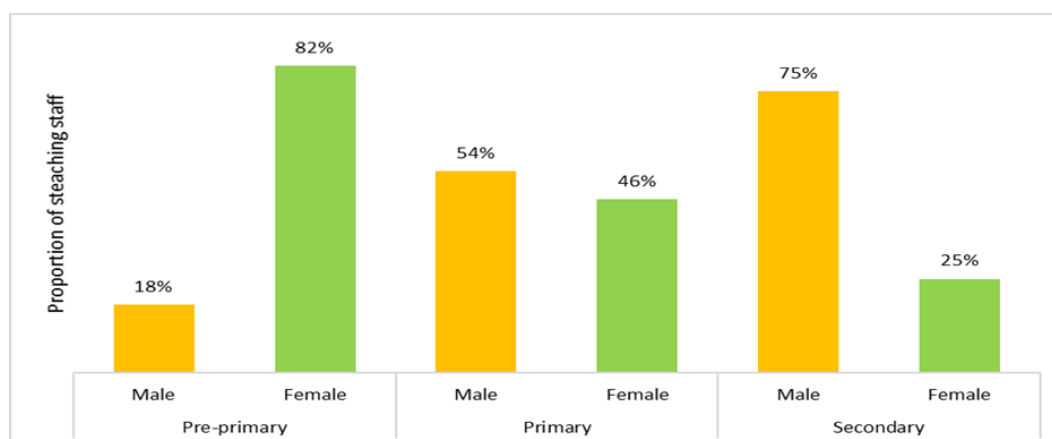


Figure 28: Proportion of male and female teaching staff by levels

5.3.6. Teachers' Qualification by School Levels

We further examined the teacher qualifications at indicated in *Figure 29*. The results indicated that most pre-primary and primary school teachers had certificate level of teacher training with an equal representation of male and female teachers at the pre-primary level at 63 percent. At the primary school level, the number of female teachers with certificate qualification was slightly higher at 61 percent as compared to their male counterparts at 58 percent. At the Secondary school level, the majority of the teachers, both male and female had bachelor's degrees at 80 and 85 percent respectively. Comparatively, there were more untrained male teachers than female across all the levels.

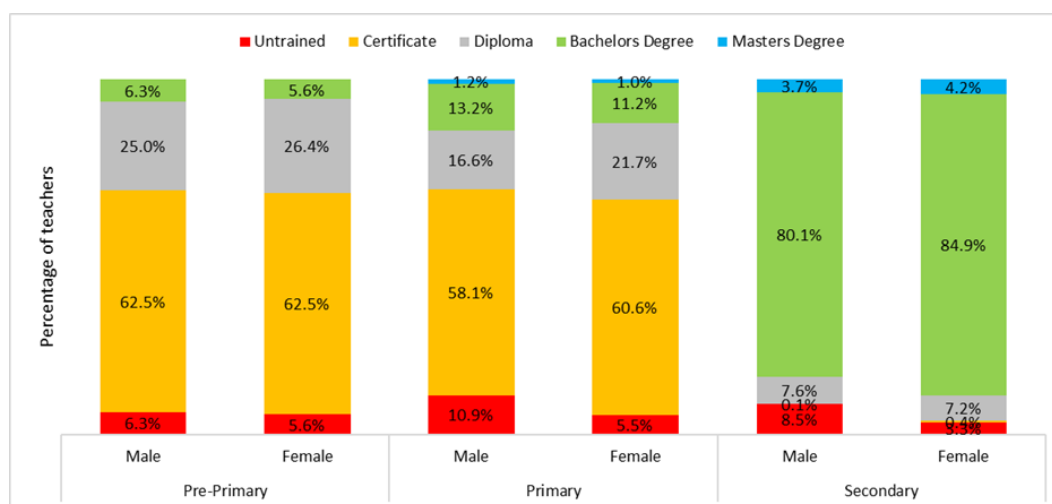


Figure 29: Teacher professional training by education level

5.3.7. Gender Inclusive School Management

In total, about 91 percent of schools at the primary level had a duly appointed BOM, with private schools scoring lower at 62 percent as compared to public schools at 97 percent. At the Secondary level, all public schools had duly appointed BOMs, while only 45 percent of private schools had duly elected BOMs. On the other hand, about 74 percent of the primary schools had duly elected Parent Associations (PA), with public schools scoring higher at 78 percent compared to 54 percent in private schools. About 82 percent of secondary schools had parent associations with public schools reporting 90 percent compared to 35 percent for private schools.

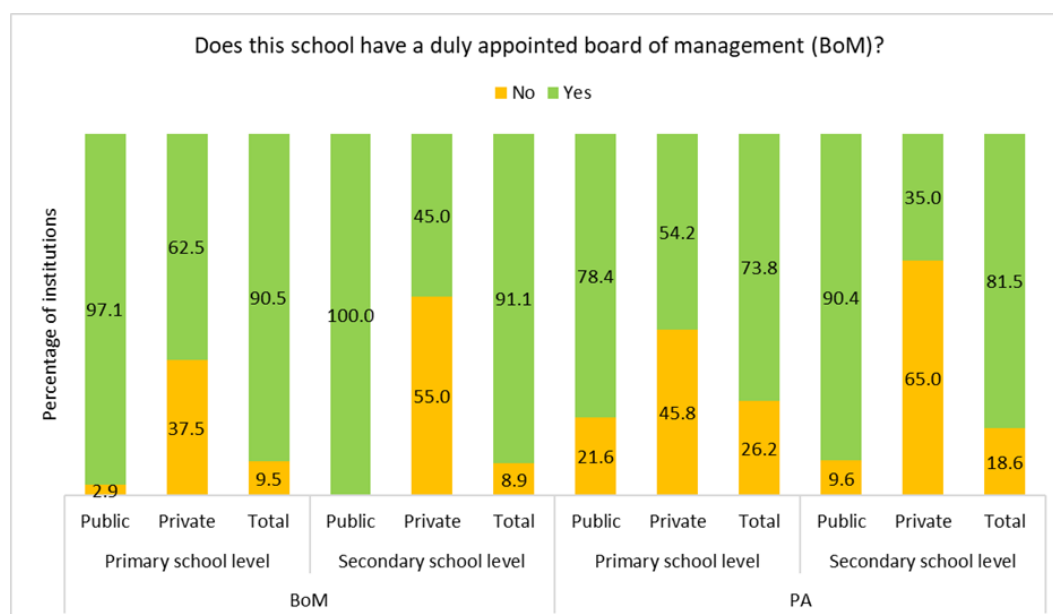


Figure 30: Percentage of schools with duly appointed Boards of Management (BOMs) and Parent Associations

In terms of gender representation, the results showed that the two-third gender rule was met in favor of male membership. There were more male members of the school Boards of Management as compared to female members at the primary and secondary levels in public and private schools. At the primary school level, the representation of men was 64 percent, while at the secondary level, the percentage of men was 68 percent. *Figure 31* also shows that there was a higher representation of male members in the Parent Associations as compared to their female counterparts for both public and private schools. At the primary

school level, the percentage of men was higher at 60 percent, while at the secondary level, 61 percent of the members were male.

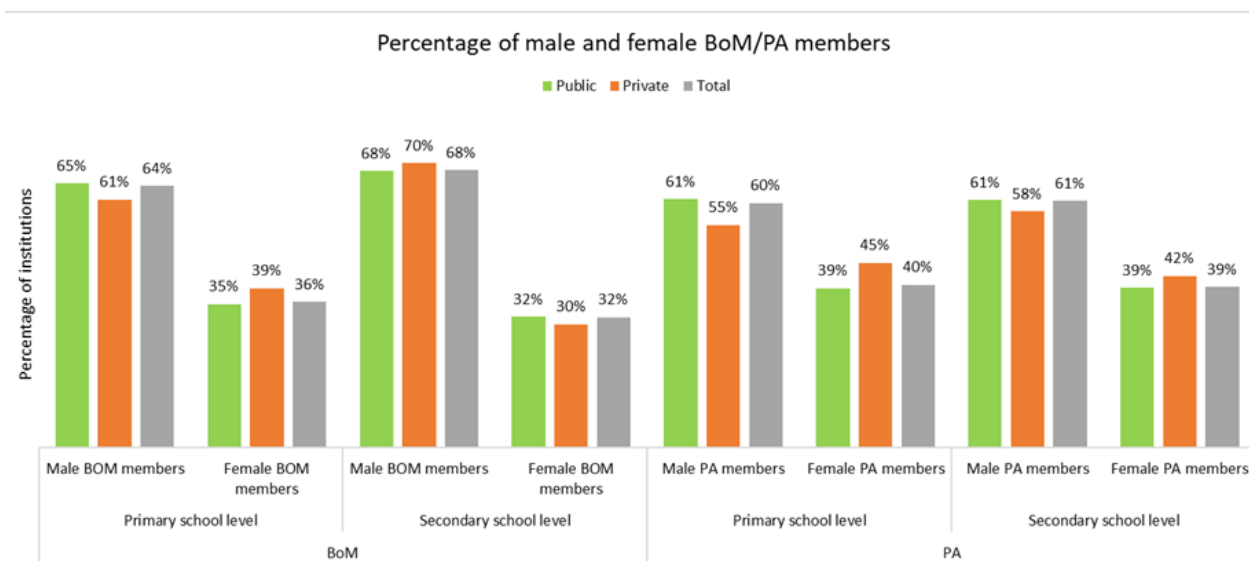


Figure 31: Percentage of male and female BOM/PA members at primary and secondary school levels

Additionally, about 58 percent of the public primary schools did not train their BOMs on how to mainstream gender issues, with the percentage reported being slightly higher in private schools at 60 percent. The proportion was higher in secondary schools at about 73 percent, with private schools scoring higher at 78 percent as compared to 72 percent in public schools. As for the parent associations, about 73 percent of public primary schools and 69 percent of private schools reported that their members were not trained on mainstreaming gender issues. At the secondary school level, about 79 percent of public schools and 86 percent of private schools reported not having trained the PAs as highlighted in Figure 32.

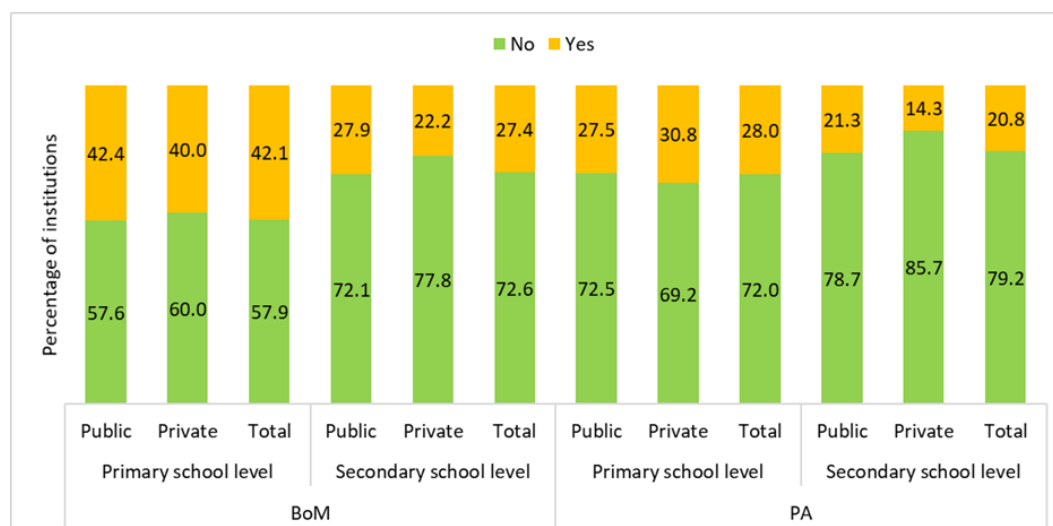


Figure 32: Percentage of BOMs/PAs trained on gender issues

Figure 33 shows that 70 percent and 73 percent of the BOMs in public and private primary schools respectively discussed gender issues that affect students and teachers. On the other hand, less than 50 percent of PAs at the primary level discussed gender issues in both public and private schools. At the secondary school level, 63 percent of public schools reported discussing gender issues in their BoM meetings compared to 44 percent of private schools. On the other hand, half of the PAs in public secondary schools and 30 percent in private schools discussed gender issues.

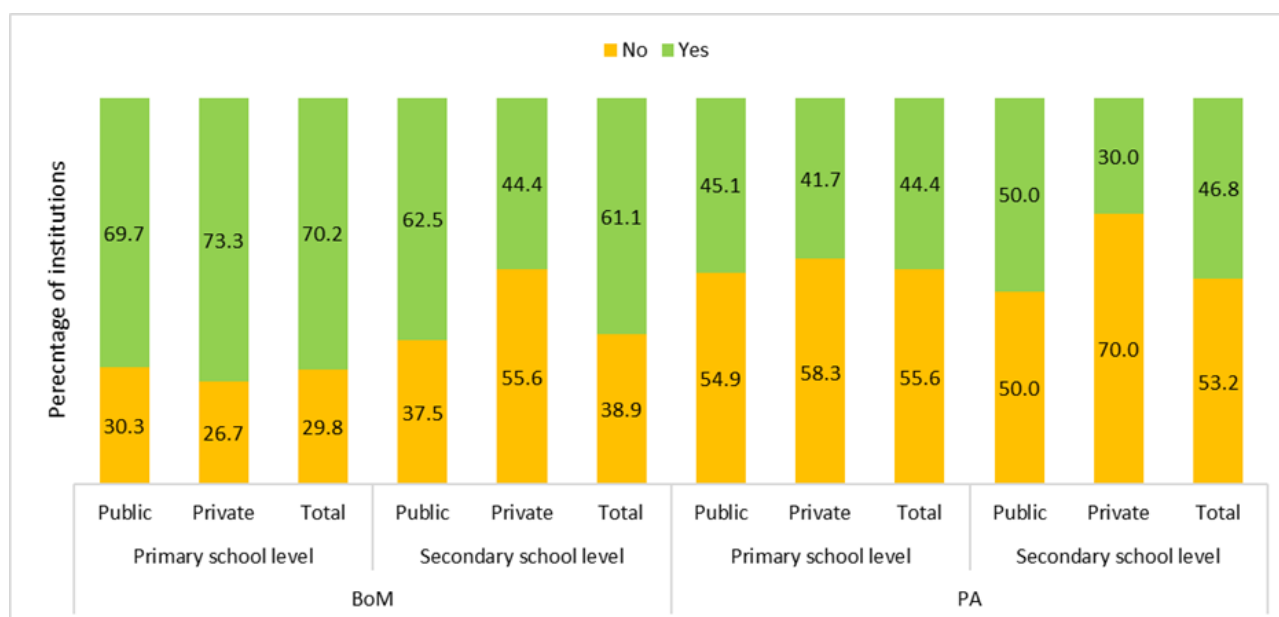


Figure 33: Percentage of schools where BOMs/PAs discussion gender issues

5.3.8. Gender Inclusive School Leadership

In terms of school leadership, there were more male head teachers in primary schools than their female counterparts in both private and public schools at 80 and 85 percent, respectively, as indicated in *Figure 34*. There were also more male Heads of Department (HoD) in Maths at 80 percent in both public and private schools. However, there were more female HODs in languages in public schools at 56 percent, while in private schools, there were more male HODs in languages than females at 55 percent. Furthermore, about 59 and 56 percent of the HODs in humanities were male in private and public schools, respectively. The trend was the same for sciences, with 67 percent of male HODs in public schools and 80 percent in private schools.

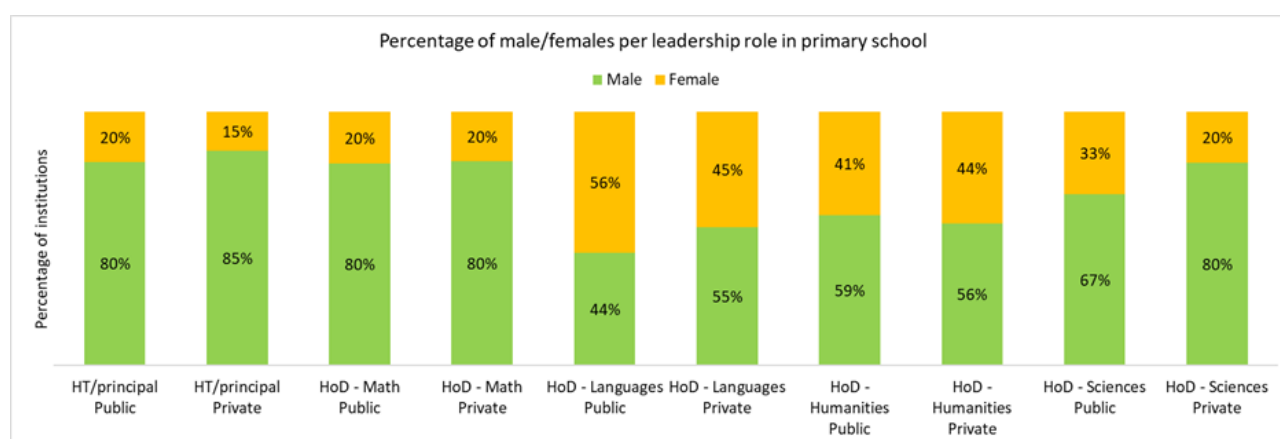


Figure 34: Male and Female Representatives in Leadership Roles at the Primary Level

At the secondary school level, there were more male than female principals in private and public secondary schools at 78 percent and 95 percent respectively. Additionally, more male teachers were HODs in Maths than their female counterparts at 66 percent in public schools and 85 percent in private schools. The trend was the same for languages, humanities, and sciences, where the majority of the HODs were male as shown in *Figure 35*.

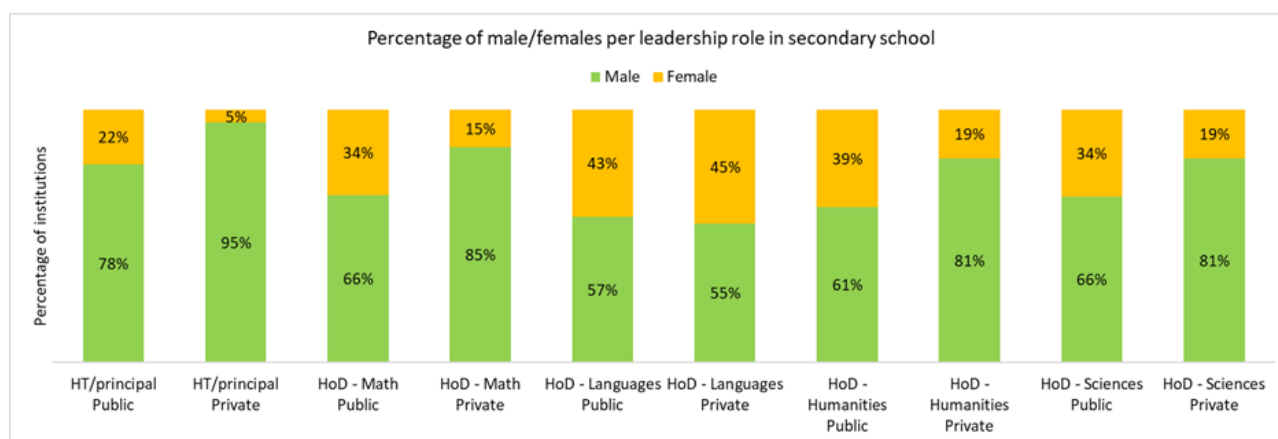


Figure 35: Male and female representatives in leadership roles at the Secondary level

As highlighted in *Figure 36*, there were more boys than girls in leadership roles in both primary and secondary mixed-gender schools. At the primary level, the percentage of girls was slightly lower at 49 percent as compared to 51 percent for boys while at the Secondary level, the percentage was reported to be 48 percent for girls as compared to 52 percent for boys.

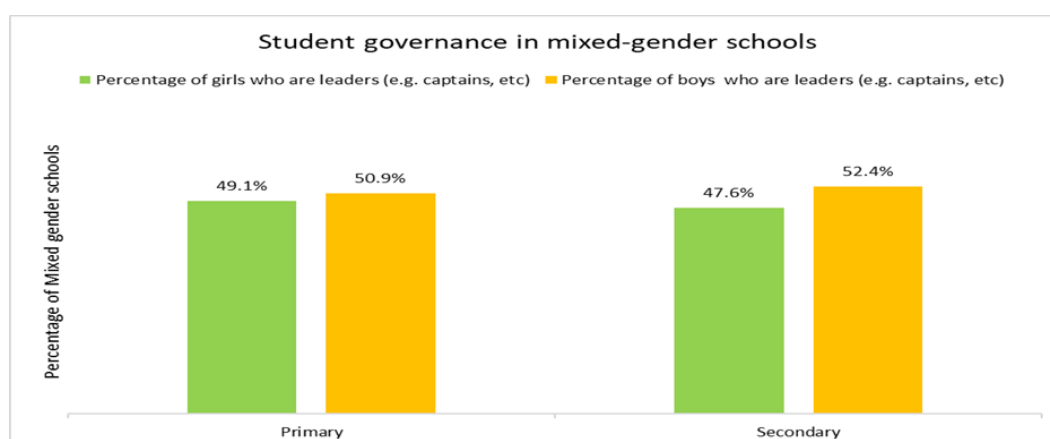


Figure 36: Student leadership in mixed schools in primary and secondary schools

5.3.9. Gender Inclusive School Supervisory Mechanisms

We further examined the practices of quality assurance and standards officers (QASO) at the school level and how often the schools were inspected. From *Figure 37*, about 92% and 93% of primary and secondary schools reported being visited by a QASO at varying frequencies.

Only 17% of private primary and 20% of private secondary schools compared to public primary (6%) and secondary (7%) schools reported never being visited by QASOs. On the other hand, 80% and 77% of primary and secondary schools, respectively, reported visits from public health officers (PHO). Further, more public primary (24%) compared to private (4%) schools reported not being visited by a public health officer (PHO) with a relatively similar percentage of public (23%) and private (25%) secondary schools reporting the same.

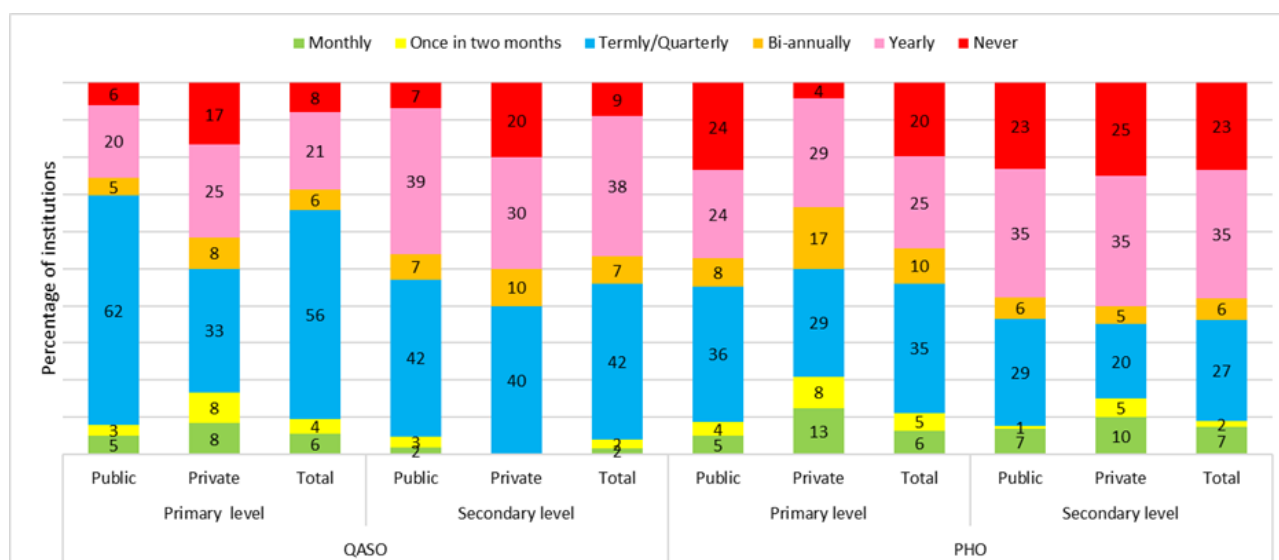


Figure 37: Frequency of visits by QASO/PHO since the beginning of 2021

A further examination revealed that 60% and 47% of primary and secondary schools respectively reported that QASOs addressed gender-mainstreaming issues during school visits. On the other hand, fewer schools reported that PHOs addressed issues of gender mainstreaming, at 37% and 22% for primary and secondary schools respectively as shown in *Figure 38*.

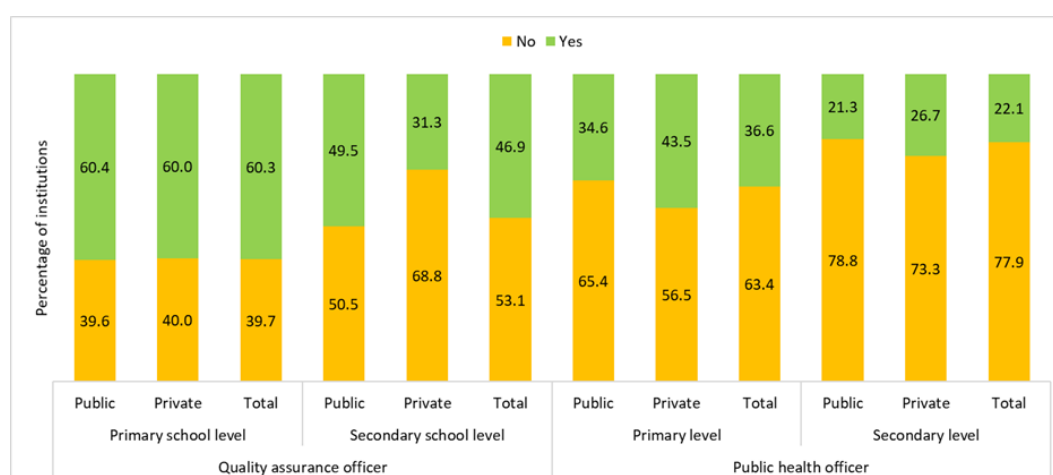


Figure 38: Gender mainstreaming aspects during QASO and PHO inspections

5.3.10. Gender Inclusive School Development Plans

On average, about 34 percent of primary schools reported having and were able to show the school development plans during data collection, with only 4 percent of private primary schools reporting availability and showing their development plans. About 43 percent of the primary schools reported having but could not show the plans to the research team. When categorized by type of school, most private primary schools did not have a development plan at 42 percent compared to 19 percent of public schools. On the other hand, 50 percent of private secondary schools did not have development plans compared to 23 percent of public schools. See *Figure 39*.

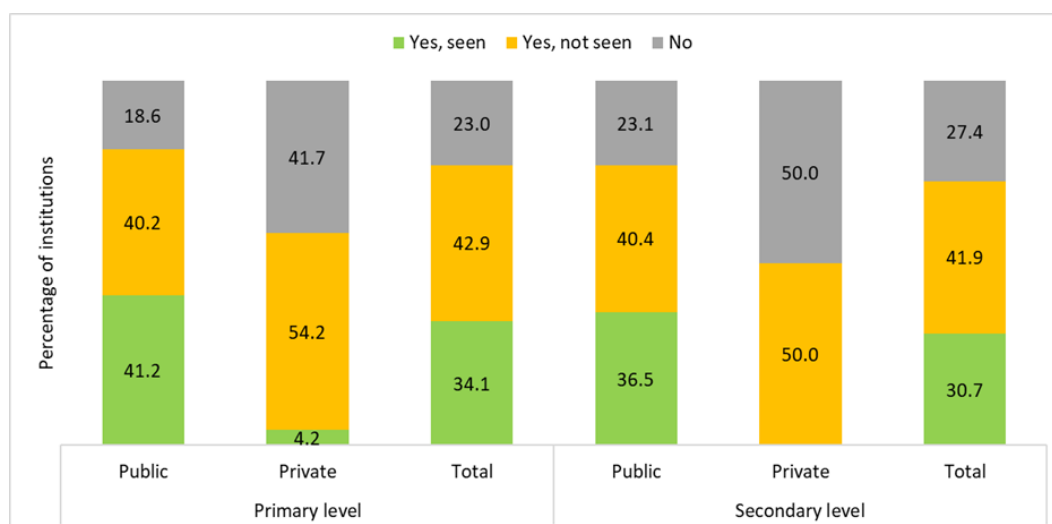


Figure 39: Availability of school development plans in primary and secondary school levels

Of the institutions that had the development plans readily available, as shown in *Figure 40*, most public primary schools (81%) reported that the plans addressed gender issues. On the other hand, all private primary schools reported that their plans did not address gender issues. At the secondary level, 66 percent of public schools reported that the plans addressed gender issues.

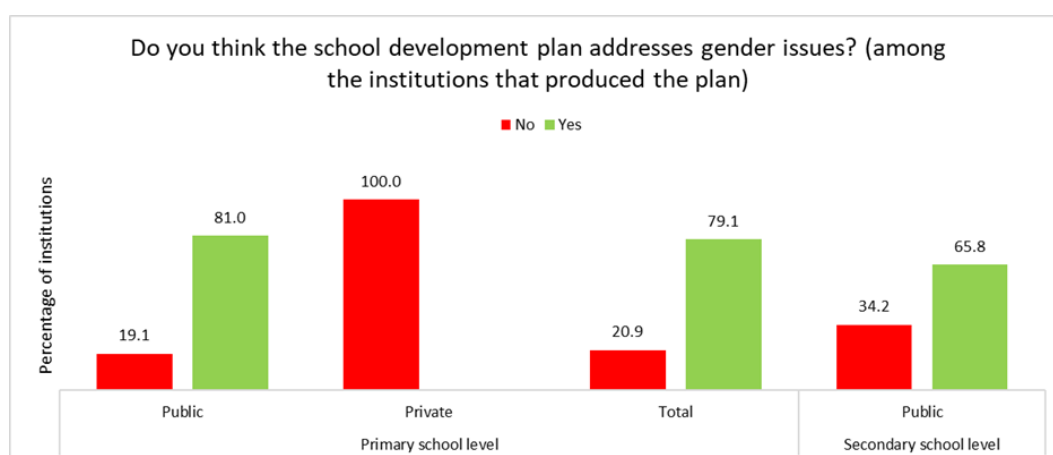


Figure 40: Percentage of the school development plans that address gender issues

5.3.11. Special Needs Education

a. Enrollment of SNE Learners

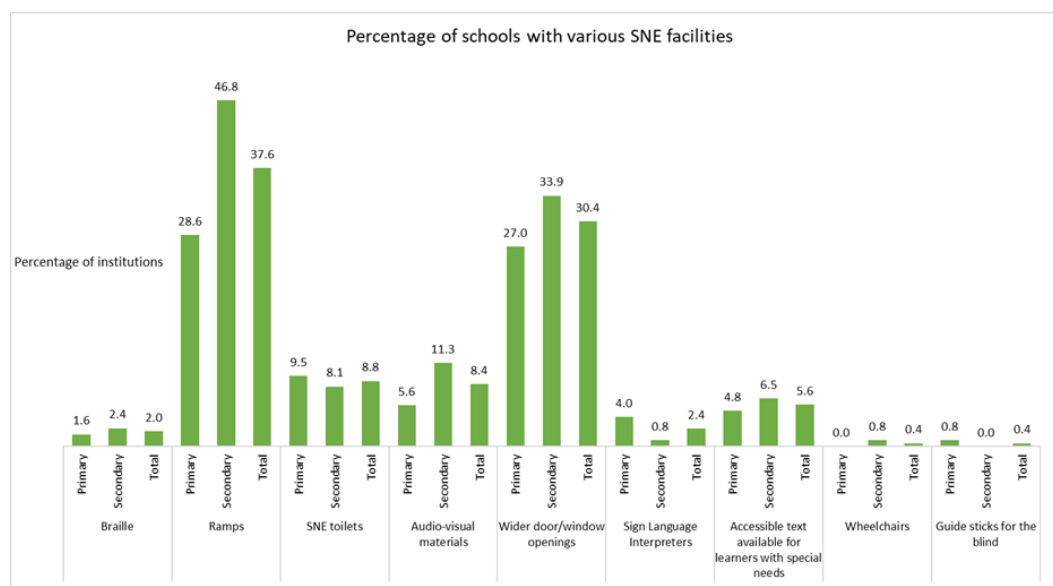
The study sought to find out the number of SNE learners in pre-primary, primary, and secondary schools from institutional heads. The results indicated that only 7 of the 126 primary schools reported enrolling students with SNE. Only 21 students (8 boys and 13 girls) with special needs were enrolled in primary school. There were no SNE students at pre-primary and secondary school levels, as shown in *Table 17*.

Table 17: Number of SNE students enrolled in the study schools

	#Classes	Frequency	#SNE boys	#SNE girls
Pre-Primary	1	1		
Primary	1	2	8	13
	6	1		
Secondary	1	1	0	0

b. Availability of SNE Facilities

The study also examined facilities put in place in the study schools to support learners with special needs, see *Figure 41*. For instance, the proportion of secondary schools with ramps was higher at 47 percent than the primary schools at 29 percent. In addition, 34 percent of secondary and 27 percent of primary schools reported wide doors and window openings. Furthermore, about 9 percent of schools reported having designated toilets for learners with special needs.



c. Gender Differences in how SNE Learners are Accommodated in Schools

Most of the primary and secondary schools that reported having female learners with special needs, indicated that they had mechanisms in place to accommodate them. The key strategies included mainstreaming of students within the regular school setup availability of ramps for learners with physical disabilities, and having trained SNE teachers. Proportionately more primary compared to secondary schools reported these three strategies as shown in *Figure 42*.

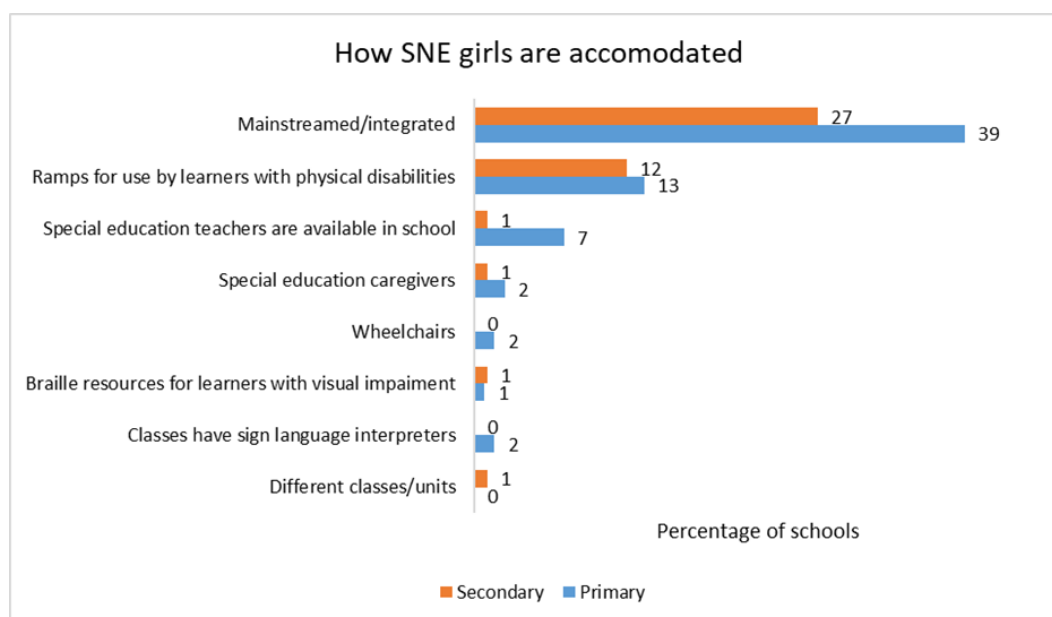


Figure 42: How SNE female learners are accommodated in primary and secondary school level

On the other hand, most primary and secondary schools reported having mechanisms in place to accommodate male learners with special needs. Of these strategies, mainstreaming of these learners into the regular school setup scored highest at 40 percent at primary and 30 percent at secondary school levels. The availability of ramps to accommodate learners with physical disabilities scored second at 15 percent at the secondary school level compared to 13 percent at the primary school level. At the primary school level, having special education teachers was ranked third. *Figure 43.*

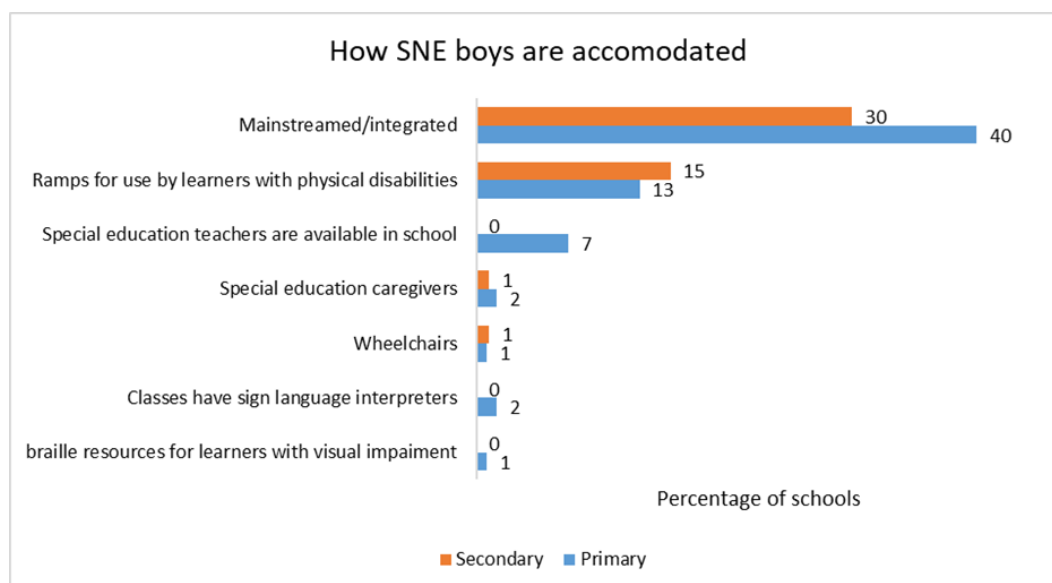


Figure 43: How SNE male learners are accommodated in primary and secondary level

d. Awareness and Accessibility of Educational Assessment Resource Centers

As shown on *Figure 44*, on average, about 68 percent of primary school head teachers reported being aware of Educational Assessment Resource Centers (EARCs) for identifying learners with special needs compared to 47 percent of secondary school principals. Furthermore, private secondary schools scored slightly higher at 50 percent as compared to public secondary schools at 46 percent.

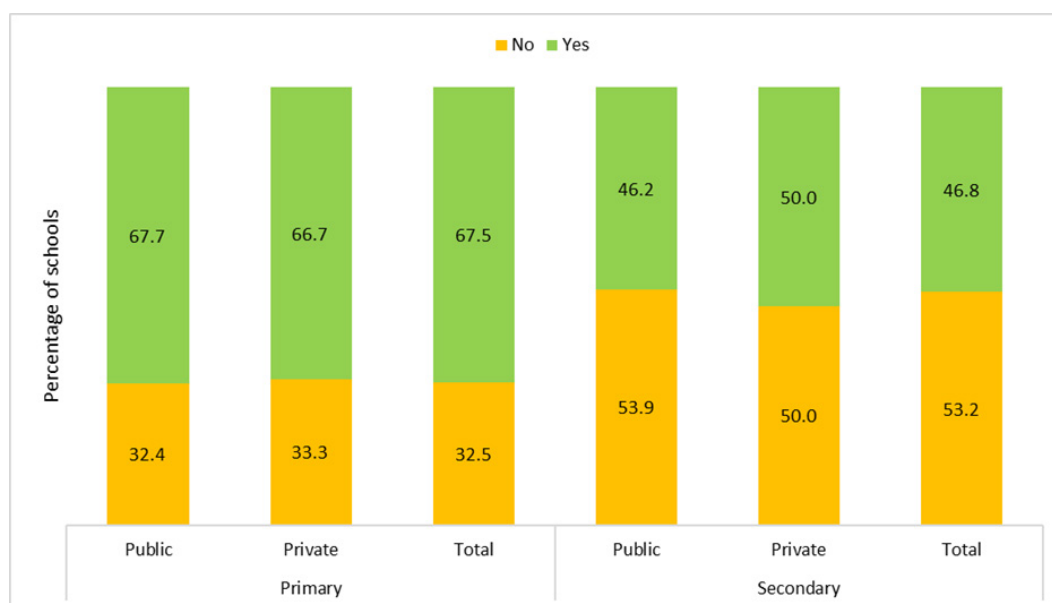


Figure 44: Awareness of resource centers for identifying learners with special needs

Concerning accessibility of the EARC centers, on average, only 26 percent of primary schools reported that the centers either were very near or near as compared to 33 percent of secondary schools. See *Figure 45*.

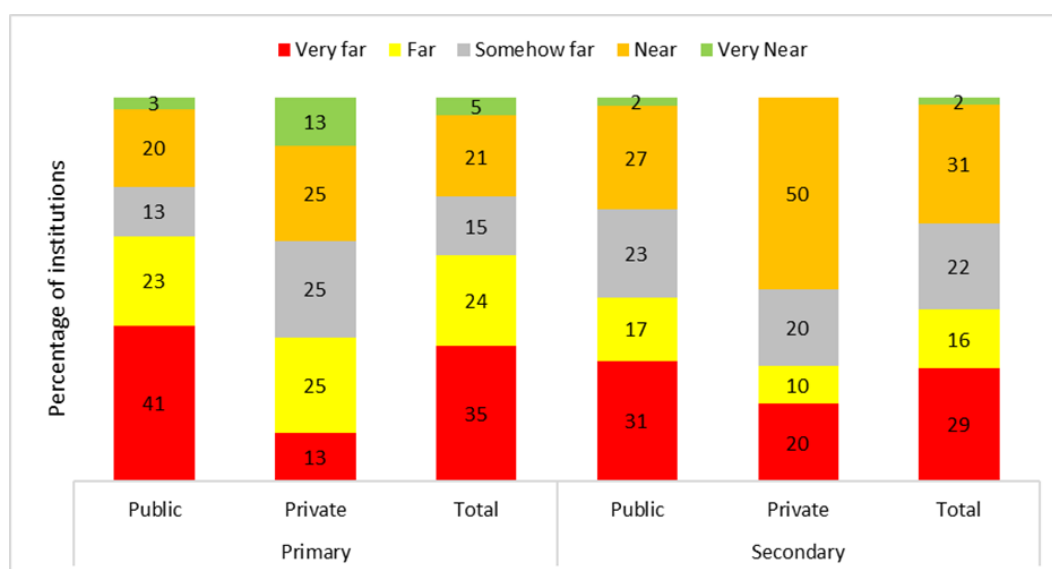


Figure 45: Distance from school to the resource center for identifying learners with SNE

e. Availability of Teachers Trained on Special Needs Education

In terms of staffing, about 32% of primary schools had teachers trained on SNE, with the majority coming from public schools (37%). On the other hand, only about 10% of secondary schools had teachers trained in SNE. The majority of these SNE teachers at the primary level had a diploma teacher training qualification, while the secondary school SNE teachers had a bachelor's degree.

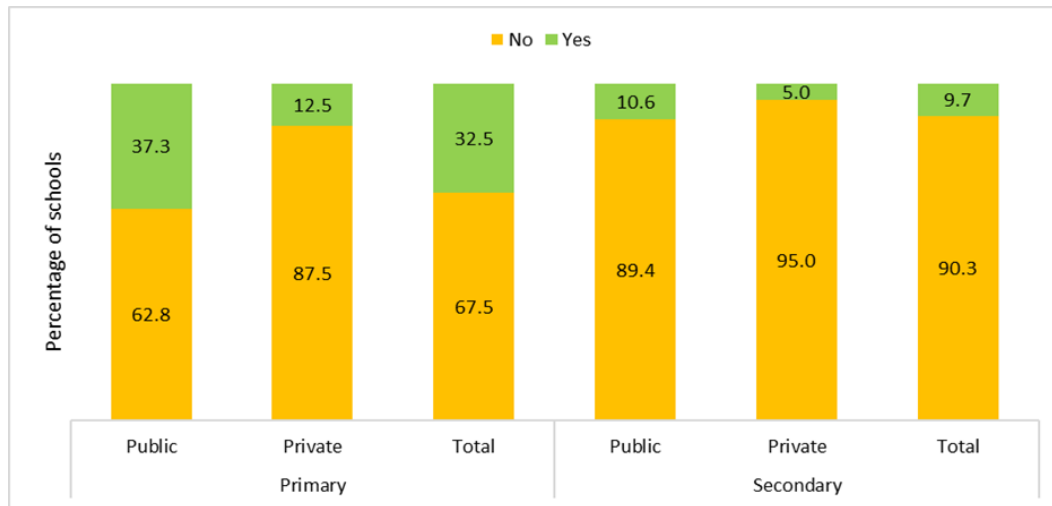


Figure 46: Percentage of schools with teachers trained in SNE



Discussion

6. Discussion

Effective implementation of gender-mainstreaming policy guidelines in education systems is one of the key drivers to attaining SDGs 4 and 5, the African Union agenda 63 and as well as the national goals of education. This research project highlights evidence on how the teacher training curriculum in Kenya prepares teacher trainees to implement gender mainstreaming strategies in basic education. The study also examined how gender mainstreaming is practiced inside classrooms during the teaching and learning process and how the observed practices are associated with students' school attendance, choice of subjects, and academic performance. Lastly, we examined the strategies (policies, guidelines and practices) that have been put in place at institutional level to mainstream gender issues and to what extent do they promote gender mainstreaming in basic education.

Gender Mainstreaming in the Teacher Training Curriculum

Gender equality in teaching and learning across all levels significantly influences boys' and girls' academic achievement, access, retention, and transition between levels for boys and girls (Chapin et al., 2020; FAWA, 2018). Quality teacher preparation programs must impart the trainees with knowledge and skill sets to mainstream gender issues in basic education (Bramberger, 2015).

The findings from the knowledge, skills, and attitudes survey on the extent of teacher trainees' preparedness to mainstream gender issues demonstrated that, generally, the trainees had positive perceptions of gender inclusive practices in teaching and learning. However, there were notable discrepancies in effective practices in areas such as gender responsive lesson planning, the influence of sitting arrangement on learning, female learners requiring more assistance in STEM, and limited knowledge of effective classroom management practices. The trainees' scope of knowledge of the term gender mainstreaming is limited to the perspective of equal participation of boys and girls in learning, equity for both genders in distributing learning resources, eliminating biased cultural practices, and equal representation in leadership. These positive aspects are an indication that the trainees understand the importance of gender mainstreaming in teaching and learning, albeit limited in scope.

The narrow view of understanding of gender mainstreaming exhibited by the teacher trainees and teacher trainers could be attributed to limitations in the TTC curriculum, which does not explicitly address gender mainstreaming. A content review of the diploma primary and secondary teacher education curriculum showed that teacher trainees are not adequately equipped with relevant pedagogical content knowledge to implement gender responsive teaching and learning practices. The findings showed that gender responsive pedagogy is not built into the teacher training curriculum (the integrated content and pedagogical learning areas, and the professional learning areas) and it is not taught as a stand-alone unit, as a topic and is not assessed in the internal and external examinations. However, the review highlighted that the diploma in early childhood teacher education curriculum guides have built-in some indicators of gender inclusivity in teaching and learning, even though they need to be expanded to be more comprehensive.

The general knowledge and understanding of gender demonstrated by the teacher trainees was mainly acquired from general courses such as Child Development and Psychology, and Inclusive Education. The Child Development and Psychology course focuses on human development where teacher trainees learn about the developmental differences between boys and girls. On the other hand, the Inclusive Education course focuses on imparting a general understanding of inclusive education, knowledge, skills, values, and attitudes among the trainees to support diverse learners in an inclusive learning environment.

The present findings corroborate previous research, which noted gaps in the teacher training curriculum where training in gender tended to focus on factual knowledge of gender differences and not on gender inclusive teaching and learning practices (Farah et al., 2009). Consequently, the teacher trainees enter the teaching field without concrete understanding of the theoretical frameworks and pedagogical content knowledge on gender mainstreaming in teaching and learning.

It is critical for education stakeholders to examine holistically gender equality in teacher education to be reflected in the institutional culture, pedagogy, policies, monitoring and evaluation, and teaching materials (UNESCO, 2015). Teacher training programs that are intentional and strategic can change the mindset and trainees' existing knowledge and beliefs about pedagogy from their own experiences and school pupils (Lewin & Stuart, 2003). Individual perspectives and biases on gender equality always remain unchallenged and are difficult to change; therefore, quality training should enable teacher trainees to assess and challenge their own gender biases and diversify their teaching and assessment styles (FAWE, 2018). Without quality training and practicum experience, trainees are not able to navigate and overcome personal unconscious gender-biases beliefs and behaviors; hence they continue to apply teaching methods that do not meet the learning needs of boys and girls and draw upon gender-insensitive materials, thus reinforcing gender stereotypes (Frei & Leowinata, 2014). Moreover, research evidence highlights in teacher training colleges where the FAWE's GRP was implemented; there was positive behavior change as some teacher trainers stopped using discriminatory, abusive, the use of gender equitable practices, and threatening language (FAWE, 2018,2020; Mollaw et al., 2023; Akhigbe et al., 2020). Teachers trained to use gender responsive practices have exhibited improvements in classroom planning, management, and use of gender responsive practices, created safe and secure learning environments, had increased capacity to analyze teaching materials for gender bias and counter negative stereotypes for girls and boys (Bever, 2014; FAWE, 2009; Chaplin et al., 2020; Spear & da Costa, 2018). In addition, in Ethiopia and Malawi, the adoption of the FAWE Gender Responsive Toolkit by the Ministries of Education led to the establishment of gender committees in TTCs, gender-balanced student councils, the development of a gender policy at the TTC level, and the development of a gender responsive orientation manual for TTC lectures

Therefore, Kenya could borrow from successful frameworks implemented in other countries, Burkina Faso, Mali, Senegal, Burundi, Eritrea, and Uganda that have mainstreamed gender in the teacher training curriculum in efforts to raise gender awareness among teacher training and in-service training (Global Partnerships for Education, 2017; FAWE, 2020).

Gender Mainstreaming Pedagogical Practices

The second research question examined the extent to which gender responsive pedagogy is practiced within teaching and/or lesson delivery in basic education. Generally, at pre-primary and primary levels, teachers used gender-equitable practices in teaching and learning. However, disparities were noted at the secondary level in which teachers called boys more than girls to participate in the literacy and STEM activities. There was a lack of consistency in the following instructional aspects: connecting classroom content with daily life applications, taking gender into account in the group discussion topics, phrasing questions to reflect gender representations, and use of fair or unbiased corrective measures. Some of the areas where teachers were gender responsive included; allowing sufficient time for students to answer questions, the culture of positive and respectful relationships, professionalism in teacher presentation, and mixing boys and girls in the classroom.

In alignment with previous research, the present findings suggest that the teaching practices in mixed secondary schools reflect gender biases, stereotypes, and insensitivity (Kiptoo-Tarus, 2016; Skelton et al., 2007; Ngware et al., 2012). These findings could be attributed to a lack of professional development training, coaching, mentorship, and support on gender responsive teaching, personal or implicit biases informed by cultural influences, and stereotypes. Teachers need to be aware that their language modeling is a powerful tool to define and promote gender relations and can be utilized positively to enhance gender inclusion and awareness in teaching and learning (Fisher, Frey & Rothenberg, 2008). Training for teachers should also encompass gender responsive language use practices (Uworwabayeho et al., 2018). Furthermore, evidence from secondary schools also indicated that lesson planning was negatively correlated with learning outcomes. This finding deviates from the extant literature because lesson planning that considers the learning needs of male and female learners improves the quality of their learning experiences.

Associations of Gender Responsive Pedagogy and Gender Parity, School Attendance, and Absenteeism

Even though Kenya seems to have achieved gender parity in enrollment in education at primary and secondary levels, this study's findings indicated regional disparities in enrollment that vary in the various counties (Ministry of Education, 2019). Overall, the enrollment of boys and girls in the target counties was low, particularly those in ASAL counties. Another prevalent challenge noted within the target study was irregular school attendance, which impacted boys and girls differently. The low enrollment rates in the study sites could be attributed to high levels of poverty among households, nomadic lifestyle, poor infrastructural development, and ethnic and cultural practices (female genital mutilation, initiation and rites of passage, cattle rustling, insecurity, distance to school, lack of school safety) which disproportionately affect women and girls (Mogoshi et al., 2012). On the other hand, high rates of school absenteeism can result in poor outcomes in academic achievement, grade tardiness, grade repetition and school dropout (Morrisey et al., 2014; Gershenson et al., 2015).

The study findings highlighted gender differences in the main reasons for school absenteeism at the secondary level, with issues of engagement in economic activities, and pregnancy and parenting reported for boys and girls respectively. Research evidence shows that adolescent pregnancy remains a major challenge affecting girls aged 15-19 and especially those in marginalized settings in East Africa (Worku et al., 2021). In addition, the one of the key reasons highlighted in literature for school absenteeism among adolescent boys is the economics status of their households, where they are forced in child labor to reduce the economic burdens (Henzan et al., 2022). These findings on gender disparities therefore call for targeted interventions to enhance school attendance for boys and girls, and also considering the level of education.

The study findings also found an association between the use of gender responsive pedagogy (gender responsive classroom environment, gender-equitable classroom interactions, and gender responsive teaching and learning materials) and school attendance. This finding mirrors research evidence showing that the use of effective gender responsive pedagogical approaches in basic education settings positively influence school attendance, participation of students during the learning process, learning outcomes, and high teacher self-efficacy (FAWE, 2018; Jahangir & Mankani, 2016).

If the challenges that inhibit regular school attendance are compounded over time without strategic interventions, they will not only result in poor schooling outcomes, but also to low socio-economic development. Some of the strategic interventions implemented by education stakeholders, including the

Ministry of Education, to improve the rates of school enrollment, attendance, retention, and transition in ASAL regions include: financing the schooling costs of secondary school, EduAfy medical scheme for secondary public schools, school feeding programs, introduction of low-cost boarding schools, providing menstrual hygiene facilities, the school re-entry policy, and 100% transition policy (Ministry of Education, 2020; Muigai 2020). In addition to these strategic interventions, other potential strategies to enhance school attendance could include expansion of the EduAfy medical scheme to cover primary schools, further reduction of education costs, strengthening the existing school feeding programs, and provision of sanitary pads.

Teacher absenteeism was also a notable problem across the study sites. It is imperative that teacher absenteeism issues are addressed with since they have the potential to also trigger student absenteeism, and missed learning opportunities leading to poor student outcomes (Gershenson et al., 2015). Education stakeholders should strengthen and explore mechanisms that can encourage optimal teacher attendance beyond the current ones being implemented by the Ministry of Education.

Associations between Gender Responsive Pedagogy and Choice of Subjects

Subject selection is an important aspect in shaping the learner's future career aspirations; therefore, the general low preference to pursue STEM subjects, such as physics, and especially by girls, as indicated in the report findings, means that they are also unlikely to pursue STEM-related career trajectories. STEM training is important for the realization of Kenya's Vision 2030 and the national goal of becoming an industrialized nation by 2030. According to the students, the main factors for specific subject selection were good performance in the subject, interest in subjects, future career aspirations, and quality of teaching. These reasons are echoed by Njiru & Karuku (2015), who showed that some factors that contribute to low performance in physics are time management, performance in mathematics, low self-efficacy, low quality of teaching, availability of learning resources such as labs, and lack of quality guidance and mentoring structures. Other factors that influence the choice of subjects in secondary school highlighted in literature, include school type, gender, parents' occupation, school location, information about the subject objectives, and link to career (Werunga et al., 2013). Strategic mentorship programs should focus on increasing the number of female students selecting STEM subjects and pursuing STEM careers, demystifying perceptions that STEM subjects and careers are male dominated, and enhancing students' efficacy.

Teaching quality is correlated with student performance and this plays a key role in motivating students to select subjects and pursue certain careers. In secondary schools in the target counties, there were notable discrepancies and a lack of gender inclusive practices where class interactions and engagement favored boys over girls. This could explain the low preference by girls to pursue physics in upper secondary. Therefore, there is a need for deliberate efforts for capacity building for teachers on how to use gender inclusive teaching strategies to motivate and mentor all learners, and especially girls to pursue stem subject and subjects and careers.

Associations between Gender Responsive Pedagogy and Academic Outcomes

Using the KCPE and KCSE longitudinal data sets as a proxy measure of the learning outcomes for the targeted schools, the findings revealed that gender responsive teaching approaches positively influenced

learning outcomes in English and Mathematics in primary schools. At the secondary school level, gender equitable interactions between boys and girls resulted in improvement in performance in Biology, English, Mathematics, and Physics. The other factors that contributed to good performance in schools include the availability of a school feeding program, school facilities such as a library, laboratories, and physical classrooms, and improved school attendance.

Though the academic outcomes measures used in the present study are a proxy measure, the findings underscore the importance of gender responsive pedagogy in influencing student learning outcomes in language and STEM subject areas. According to FAWE (2018), strategic gender responsive pedagogical interventions influence student participation during the learning process and enhance learning outcomes. Several studies report that gender responsive teaching and learning strategies result in improved learning outcomes (Akhigbe et al., 2020; Chaplin et al., 2020; Spear & da Costa, 2018). Furthermore, gender responsive pedagogical practices exhibited through language use, classroom interactions, classroom setup, and lesson planning that consider the learning needs of boys and girls create optimal learning conditions for all learners to thrive (Mollaw et al., 2023).

Availability and Awareness of Institutional Policies and Guidelines on SGBV

Findings from the study also highlighted that almost half of all primary and secondary schools in the study did not have institutional policies and guidelines on sexual and gender-based violence (SGBV). Most institutional heads who reported having the policies and guidelines could not avail them to the research team. This is a major gap, considering that GBV is a global and national concern as it undermines the achievement of quality, inclusive, and equitable education for all children. Clear policies and guidelines that are accessible to the school communities are one of the important measures to make the school environments safe, secure, and free from sexual and gender-based violence. The lack of easily accessible policies and guidelines indicates that the school systems are not effectively implementing measures to safeguard students, teaching, and non-teaching staff against GBV. Institutions should also put in place effective reporting and support mechanisms, considering that evidence indicates that only a third of those who experience these incidences know where to seek help (Republic of Kenya, 2019).

Gender Inclusive Teacher Staffing

In terms of teacher staffing, findings from the study indicated that teaching in the target regions remained a male-dominated occupation at the secondary school level, with a relatively equal proportion of male and female teachers at the primary school level and significantly more female teachers at the pre-primary level. Regarding teacher qualifications, most pre-primary and primary school teachers held a certificate in teacher education. At the secondary school level, over 80 percent of the teachers held a bachelor's degree in teacher education. In alignment with pre-existing evidence, gender imbalance of male teachers in early childhood education is a global concern and not unique to the Kenyan context (Anliak & Beyazkurk, 2008; Peeters et al., 2015; Xu et al., 2022; Xu & Waniganayake, 2018).

These results highlight that the objective of ensuring a gender balance in the deployment of teachers in the Gender and Training Sector Gender Policy is not being achieved. The other possible reason for the relatively unequal number of male and female teachers in the present study aligns with extant literature of male teachers' preference for secondary school teaching positions, as the positions are better paying (Bozkurt, 2021). In addition, evidence indicates that schools that offer higher wages tend to attract more

male teachers (Carroll et al., 2021). The strongly held perception that men are the family's main wage earners, coupled with the low wages for primary school teachers and the higher opportunity cost of getting into the teaching profession due to disproportionately better-paying jobs compared to women, are also key reasons why there are more male teachers at secondary school (Johnson, 2008). There were also proportionately more male teachers in all subject areas especially in mathematics and sciences. The plausible reasons for the low participation of female teachers in mathematics and other STEM subjects could also be attributed to the gender stereotype that science and mathematics subjects are male domains (Makarova et al., 2019). These stereotypes are also experienced in higher education, where significantly fewer women pursue STEM courses (Verdugo-Castro et al., 2022).

The finding on the imbalanced gender distribution of teachers across all the levels of education, is an indication that the learners are disadvantaged and, therefore, do not benefit from teachers as role models and mentors, particularly from the same gender. Increasing the number of female teachers has a strong positive effect on the enrollment of girls and a limited or mixed effect on achievement (Haugen et al., 2014). Dulce-Salcedo et al. (2022) found that exposing female students to a higher proportion of female STEM teachers at the secondary school level increased the probability of enrolling in STEM courses at the tertiary level. In some contexts, enrollment in schools is determined by parents' preference for a school having female teachers (Herz et al., 4; Rihani, 2006). This decision is motivated by the female teachers being pivotal role models in the participation of girls in STEM subjects and future careers (Dulce-Salcedo et al., 2022).

Gender Inclusive Practices in School Leadership

Gender differences were also persistent in school leadership positions, with proportionately more male teachers as heads of departments for various subjects in the school and as school heads. This finding could be attributed to common stereotypical beliefs that women are not good in leadership skills, unlike men. These findings could be explained by the negative socio-cultural factors, that perceives women as subordinate to men, the inherent challenges of integrating family obligations with work responsibilities (Oyeniran, 2020).

Gender Inclusive Practices in School Management

The Board of Management (BoM) and the Parents Association (PA) are duly constituted bodies within Kenya's Basic Education Act, 2013 (Republic of Kenya, 2013), and their key mandate is to supervise and assist the school management in decision-making for the effective running of schools. The study findings showed that, the boards of management at both primary (70%) and secondary (61%) school levels discussed school matters using a gender lens, despite not being trained on gender mainstreaming. On the other hand, the membership for the PAs and BoMs were male-dominated. The fact that these bodies lack the capacity on gender mainstreaming and are also not gender inclusive in their membership may be a key impediment to the effective implementation of gender inclusive practices within the schools. In the same light, the quality assurance and standards and public health officers did not adequately address issues of gender mainstreaming in the study schools despite having the mandate to ensure the provision of quality education. This is perhaps why pertinent gender mainstreaming challenges such as inadequate policies on gender-based violence, inadequate toilet facilities for SNE students, inequalities in membership of BoM and PA, and inequalities in leadership positions persist in schools.

Support for Special Needs Education (SNE)

Increasing the education participation for disadvantaged girls and women, boys, and men, including those with special needs, is a key objective of the Education and Training Sector Gender Policy. In this respect, one of the key focus areas for this study was assessing the support provided to students with special needs in terms of facilities to enable them to fully participate in education and the availability of trained teachers on SNE. Results from this study illuminated huge gaps in access to education and support for students with special needs. One of the key gaps was low enrollment of SNE students in the study schools. The results showed that of the 4,662 students reached in the study, only 21 students (8 boys and 13 girls) with special needs were enrolled in the study schools.

Evidence indicates that some of the key reasons for low school participation that is consistent with the study findings are inadequate education facilities and learning materials that cater to students with special needs and the lack of knowledge about available facilities by households with children with disabilities (Moyi, 2017a; Okech et al., 2020). For instance, whereas nearly all primary and secondary schools in this study reported having separate toilet doors/stances for male and female students, only 8% of primary schools and 7.3% of secondary schools that enrolled SNE students had designated toilets for them. The type and severity of the disability also increases the likelihood of children with disabilities not participating in education (Moyi, 2017a). Identification of students with special needs so that they can receive specialized support is, therefore, a key gap, with the lack thereof resulting in the students being accommodated in ordinary classes without special educators or assistive learning facilities (Mapunda et al., 2017). This was consistent with the study findings, where students with special needs were mainly integrated into normal classes with other students despite inadequate SNE facilities and trained teachers to support learning. To echo these challenges, Allam and Martin (2021) highlighted that most teachers supporting special needs education students either have not received SNE training or do not feel qualified to teach them. Teachers have also been shown to use limited inclusive pedagogical practices, such as instructional adaptations, to meet the needs of SNE students (Kuyini & Desai, 2008). For SNE students to fully participate in education, it is imperative for the Ministry of Education and relevant stakeholders to ensure that adequate education facilities are available, teachers are well trained to support the students, and that the community is sensitized on available facilities. In addition, considering that disability is associated with poor long-term life outcomes such as poverty because children living with disabilities are less likely to access education and employment opportunities (Filmer, 2008), it is vital to ensure that they are supported to fully participate in education and acquire requisite skills for employment.



Conclusion

7. Conclusion

Using the Gender Integration Continuum framework, the findings from the study highlight that teacher training, pedagogical practices at the basic education level, and institutional practices generally fall within the gender-aware segment of the framework. However, there are notable gaps, which necessitate the need for enhanced sensitization, implementation, and review of the Education and Training Sector Gender Policy. For instance, the content analysis of the teacher training curriculum designs revealed that gender mainstreaming in education is not explicitly covered, meaning that they do not define and illustrate strategies for how teachers can be gender inclusive in their teaching practices. Although teacher trainees and their trainers tended to have a relatively good understanding of the concept of gender mainstreaming, this tended to be superficial. There is also need for capacity building of teachers on gender responsive pedagogy by considering the learning needs of male and female learners during lesson planning, ensuring gender responsive classroom set up, eradicating gender stereotypes in assigning roles to male and female students, and mentorship to enhance participation of female learners in STEM subjects and careers. This calls for a review of the teacher training curriculum designs to make them gender responsive or gender transformative. Moreover, theoretical and pedagogical content knowledge on gender mainstreaming and gender responsive instructional skillsets need to be integrated into as an assessment component in the practicum experience, and the college-level internal and external Kenya National Examination Councils (KNEC) teacher certification exams.

On the other hand, the classroom observation data showed that in-service teachers at the pre-primary and primary education levels were relatively gender responsive in their pedagogical practices, with gaps noted at the secondary school level. In particular, the teachers illustrated that they were gender responsive by allowing sufficient time for students to answer questions, enhancing a culture of positive and respectful relationships, professionalism in teacher presentation, and mixing boys and girls in the classroom. Some of the areas where teachers showed gaps were in phrasing questions to reflect gender representations, considering gender in group discussions, and using unbiased corrective measures. Again, the retooling and sensitization of all teachers to be gender inclusive in their teaching practices – and especially at the secondary school level – cannot be reiterated enough thus highlighting the need to undertake a reform of the teacher training curriculum.

Finally, the study results showed that institutions of basic education were skewed toward being gender aware or responsive in their practices related to policies on gender-based violence, facilities, staffing, governance, and school leadership. However, as the study illuminated, having policies and guidelines on gender-based violence is not sufficient. Deliberate steps need to be taken to ensure that the school community (students, teaching staff, non-teaching staff, and community members interacting with the school) is well sensitized on the gender-based violence policies and guidelines to curb the cases of GBV in schools. That also calls for availing the policies and guidelines for public consumption within the schools, for example, on notice boards, school diaries, and school websites. In terms of hygiene and sanitation, the provision of toilet facilities was found to be gender transformative, with nearly all the schools having separate toilet doors/stances for female and male students. Whereas this is a positive finding, the study recommends that going forward, the quality and adequacy of the facilities also be considered to enhance health and academic outcomes. Although the schools tended to be gender aware in the staffing and participation of teachers in leadership positions, a multi-sectoral gender transformative approach that enhances equity in the deployment of teachers by TSC while at the same time eliminating the negative social norms that discourage girls and women from being leaders is needed.

In the same breath, with the participation of students with special needs tending towards being gender-blind, it is imperative that communities are sensitized on the need for these students to learn, enhance identification of students with special needs, ensure adequate teaching and learning facilities, and train teachers on SNE.



8. Policy Recommendations

Based on the study findings, the study team proposes policy recommendations and strategic interventions in line with each thematic area of the Education and Training Sector Gender Policy 2015.

Gender Inclusive Teacher Training:

- Include engendered instructional approaches in the training modules in the Diploma Teacher Education Curriculum Guides.
- Gender mainstreaming could be taught explicitly as a stand-alone unit or integrated into the teaching methodology in the learning areas.
- Gender mainstreaming should also be a target of the assessment in the teacher training courses and practicum experience.
- Provide capacity building for teacher trainers on gender mainstreaming in the curriculum.
- Strengthen coaching, mentorship, and modeling of best practices in gender mainstreaming for training.
- Allocation of financial resources to support the implementation of gender mainstreaming in all areas of teacher education.

Access:

- To strengthen the nutritional support to schools to enhance school attendance especially for learners in marginalized areas.
- Expand the EduAfy medical scheme to cover primary schools to enhance school attendance.
- Institutionalize targeted interventions to increase the enrollment and attendance for boys and girls based on regional disparities and student gender. For instance, have programs to reduce pregnancies at secondary school levels or programs to support pregnant and parenting adolescents.
- Sensitize communities on the availability of resource centers and schools that support SNE and promote enrollment, retention, and transition of children with special needs.
- Build the capacity of teachers and school administrators on the availability of Educational Assessment Resource Centers to refer learners with special need for assessment and support.
- Establish and equip Educational Assessment Resource at county and sub-county levels to evaluate and identify learners with special needs.
- Equip basic education institutions with facilities and trained teachers to support students with special needs.

Equity:

- Enhance school management structures such as BoM and Parents Associations that are gender inclusive – formation, representation, training, and discussions.

Quality Education:

- Capacity building on gender inclusive teaching practices in basic education for both in-service teachers and teacher trainees.
- Strengthen quality assurance and monitoring for effective implementation of gender equity in education and training at the college and school levels.
- Enhance supervisory mechanisms (head teachers, QASO, and CSOs) to ensure effective gender mainstreaming practices in the classroom.

Safety, Security, and Gender-Based Violence:

- Require/mandate institutions of learning to have guidelines on safety, security, and gender-based violence accessible to students, teachers, and non-teaching staff.
- Sensitize teachers, students, and non-teaching staff (including the board of management and parent association) on the institutional guidelines.
- Develop a monitoring and evaluation framework for ensuring compliance e.g., on student diaries, posters, and seminars).
- Gender inclusivity in regards to provision of separate toilets for male and female learners and teachers should continue.
- Training on gender-based violence and sexual harassment for teachers, Quality Assurance and Standards Officers (QASO), and Curriculum Support Officers is needed to build their own capacity to handle the cases if they arise and build the capacity of other teachers, students, and colleagues.
- Establish and implement standard operating procedures for reporting GBV and abuse in and out of school for learners, teachers, and non-teaching staff and legal redress for perpetrators of abuse and GBV.

Nurturing and Mentoring:

- Deliberate efforts to encourage girls to pursue STEM subjects and careers at an early age through formal mentorship programs to encourage STEM careers and role modeling.
- Encourage female teacher trainees to pursue STEM-related subjects and male teacher trainees to pursue humanities and languages.
- Provide incentives and create an enabling environment for students, particularly females, to participate in research and STEM courses.
- Provide incentives and create an enabling environment for students, particularly males, to pursue careers in the teaching profession in pre-primary and primary.
- Disseminate gender-friendly information on STEM degree programs and innovation, careers, job creation, and employability to learning institutions.

Governance and Management:

- TSC and relevant stakeholders should ensure equal representation of male and female teachers in school and in leadership positions.
- Encourage and empower female teachers and parents to take up leadership positions in schools (administrative, HoD, BoM, and PA).
- Continue to encourage equal representation of students in leadership positions.

9. Limitations of the study

A few limitations of the research are worth noting. There were no readily available KNEC standardized assessments for grade six and form two students that were administered in 2022. It would have been ideal to examine the associations between teaching practices and student outcomes by looking at the linkages between a particular teacher and their current students' learning outcomes in the target subjects. Due to this limitation, the research team had to use proxy measures of the KCPE and KCSE assessments that indicated the school performance patterns over a duration of five years.

10. Future Research Considerations

Future research should gather more in-depth evidence on the implications of lack of access to the SGBV and sexual harassment guidelines on the well-being and safety of learners, teaching, and non-teaching staff. Researchers should also examine the extent to which the curriculum at the institutions of higher education including universities and Technical Vocational Education and Training (TVET) among others, use gender-responsive pedagogy in their curriculum implementation, system programming, institutional policies and administration. There is need for an empirical review of gender representation in teaching and learning materials in basic education. Education stakeholders should plan to generate rigorous research studies to examine and explore the strategic interventions in all six thematic areas in the revised policy.

There is need to plan an evidence-based capacity building across institutions of higher learning, including Universities and TTCs to improve gender-mainstreaming and pedagogical practices. Further research should evaluate gender mainstreaming gaps and needs for students and teaching staff with special needs and establish strategic interventions to address the needs. Lastly, future research should consider exploring the associations between gender mainstreamed pedagogical practices and student learning outcomes using measures that directly link a teacher's instructional practices with their current learning outcomes

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12. Appendix

Appendix 1: Gender mainstreaming Compliance

Gender compliance indicator (Availability)	Scoring criteria
Gender parity index (GPI)	1 = each school that had an index ranging from 0.96 to 1.04 0 = index below 0.96
Mixed gender library set-up allocating	1 = mixed gender library use allocation 0 = no mixed gender library allocation
Boys' and girls' toilets within the school compounds	1 = availability separate toilets for boys' and girls' toilets 0 = no separate toilets for boys and girls
Separate toilet doors/stances for boys and girls	1 = availability of separate toilet stances for boys and girls 0 = no separate toilet stances for boys and girls
Functional bins for disposing sanitary towels for the students and teachers	1 = availability of functional bins for disposing sanitary towels 0 = no sanitary bins
Equal utilization of playground by boys and girls	1 = equal utilization 0 = one gender dominating the playground
Head teacher gender parity	1 = male head teacher and female deputy vice versa 0 = gender imbalance in school leadership
Gender balanced student leadership	1 = the proportion of one gender of the student leaders fell in the range of 40-60% 0 = the proportion of one gender of student leaders was above 70%
Balanced BoM gender composition	1 = the proportion of one gender fell within 30-70% to incorporate the two-third gender rule 0 = disregard to the two-third gender rule
Balanced gender parents' association	1 = the proportion of one gender fell within 30-70% to incorporate the two-third gender rule 0 = disregard to the two-third gender rule
BoM trained on gender issues	1 = BoM trained on gender issues 0 = BoM not trained on gender issues
PA trained on gender issues	1 = PA trained on gender issues 0 = PA not trained on gender issues
BoM discussed gender issues during meeting	1 = Gender issues discussed during BoM meetings 0 = Gender issues not discussed during BOM meetings
Gender balance among heads of departments	1 = proportion of the number of heads of departments fell within 40-60% 0 = disregard to the two third gender rule
QASO addressed gender issues during inspection	1 = QASO addressed gender issues 0 = QASO did not address gender issues

Availability of guidelines on sexual harassment of students, teachers and non-teaching staff	1 = availability of guidelines 0 = guidelines not available
PHO addressed gender issues	1 = PHO addressed gender issues 0 = PHO did not address gender issues

Appendix 2: Description of Regression Variables

Classroom Observation Checklist: - by using school and classroom checklists, enabled the research team to we collected information about *teacher's lesson preparation, available teaching materials and learning resources, and a classroom's physical environment*. For the **pre-lesson plans**, the study team had 5 items namely schemes of work, record of work, lesson plan, and student's progressive records, which were measured in terms of availability (1=Yes; 2=No; 3=Yes, but teacher could not show a copy), we recoded the responses to (0=No 1="Yes, but teacher could not show a copy" 2=Yes) and subjected them to reliability test to assess internal consistency and then applied the PCA for dimension reduction procedures. In Primary school level, the items demonstrated a high level of internal consistency with a Cronbach alpha score of 0.86 and in PCA they all had good factor loading scores aligning to component 1 which explained 65% of variation, we thus predicted a score arising from this component and renamed it *lesson preparation*. In secondary school level, the Alpha score was 0.90 and the PCA indicated that the items explained a proportion of 71.9% of the total variation, a predicted score was obtained for use in the regression analysis.

Materials and Resources were assessed in terms of visibility and use (*with responses 1=visible but not used in this lesson; 2=used in this lesson; 3=not visible but available; 4=not available*), which were recoded as follows (1="Not available", 2="Not visible but available", 3="Visible but not used in this lesson", and 4 = "Used in this lesson"). The examples of materials and resources observed were; *visual teaching aids, chalk boards, books, and student-made resources*. The Cronbach Alpha score for the primary school level data in four out of the seven items was 0.74 which was very good and these items explained a proportion of 57% of variation in PCA. In secondary school level, five out of the seven items revealed a Cronbach Alpha score of 0.74 a very good score and the PCA of three items with highest factor loadings explained 71.2% of total variation and these were applied in the score prediction.

Classroom physical environment was assessed by use of eight checklist items which included items such as *ventilation, natural lighting, noise, floor, writing surface, seating space, and cheerfulness*. In primary school level, the items had a high level of internal consistency (0.90) and were aligned to the first component of the PCA explaining 61.3% of the total variation. In secondary school level, seven out of the eight items provided an Alpha score of 0.70 and five out of the eight items aligned to the first component of the PCA explaining a proportion of variation of 56%.

Number of years school existed - number of years were computed as a difference between the survey year (2022) and the year of school's establishment.

School type- This is school's classification if it is public or private.

Pupil Teacher Ratio - this is defined as the total number of pupils and students in the relevant level in a given academic year expressed as a percentage of the number of qualified teachers in the same level in that academic year.

Library- refer to a dichotomous variable capturing if a school had a library (assigned 1=Yes) and if not (assigned 0=No)

School feeding - refer to a dichotomous variable capturing if a school had a school feeding programme (assigned 1=Yes) and if not (assigned 0=No)

Choice of subject: This referred to a question answered by students who were in Form 2 which asked about their preferred subject choices in Form 3 among the optional subjects, the subjects included sciences and humanities, i.e. Chemistry, Physics, Biology, History, and Geography.

Student attendance- this was obtained from checklist data obtained from schools where classroom observations were done. The checklist collected data regarding the students present in Grade 6 and Form 2 as well as the number of students absent.

Student's sex- This was student's sex either boy=1 or girl=2

Teacher's sex- This was teacher's sex either male=1 or female=2

Reasons for subject selection- this referred to a number of dichotomous questions asking the student's motivation to choose a certain optional subject.



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