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Gender and performance disparity in mathematics: A study of South Western Uganda

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ABSTRACT

Gender has long been considered a factor contributing to differences in performance for male and female students in diverse educational disciplines and levels. Although male and female students are taught in the same classrooms in most Ugandan schools, there have been noticeable differences in Mathematics performance in national examinations across the country. Thus, the aim of this study was to compare male and female students' performance in Mathematics and to establish factors accounting for the differences. Using the Mixed method design, a sample size of 222 participants was recruited. The major findings revealed that variation in Mathematics performance cannot be attributable to gender. The study deconstructs the common gender-biased assumption that girls are naturally a 'weaker sex' and hence likely to embrace subjects that are considered 'soft' such as language, literacy, communication skills, social sciences among others. Such assumptions commonly fronted inadvertently without considering possible negative consequences, are based on societal construction of social differences with no substantive evidence as demonstrated in this study.

Keywords: Gender, mathematics, performance disparity, male, female.

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INTRODUCTION

Gender refers to the social construction of diverse physical, biological, mental and behavioural characteristics relating to differences between the male and female sex. It is a social and cultural construction of roles, access to and control over resources between men and women, or boys and girls in society (Fennell and Arnot, 2008; Chilisa and Ntseane, 2010; Fogliati and Bussey 2013; MoES, 2016; Akena, 2020). Accordingly, gender characterizes the differing social roles, responsibilities, constraints, opportunities and needs of females and males in any given social context (Filgona, 2016; Akena, 2020). In Uganda, gender has long been a common concept at the centre of the Ministry of Education and Sports (MoES) concern regarding academic performance. This concern mainly gained ground between the 1990s and early 2000, with the advent of multiple education interventions to bridge gender gaps in academic achievement (Kaahwa, 2012). An example of such interventions is the formation of the Forum for African Women Educationalists (FAWE), a not-for-profit Organization. The Organization was launched in February 1997, as part of a Pan-African group with strategies to promote gender equality in education on behalf of MoES. Uganda achieved gender parity on enrolment into primary schools in 2014. While in Secondary schools, enrolment has increased from 54% for boys and 46% for girls in 2008 to 53% for boys and 47% for girls in 2014. For Tertiary institutions, total enrolment for females increased from 38% in 2002 to 44% in 2014 (MoES, 2016). Though there is increasing evidence to show that the proportion of female students taking up science courses in post-secondary institutions is on the rise, this rate is still lower among girls (Kaahwa, 2012; Mbabaali, 2018; MoES, 2016).

Following the recommendations of the Education Policy Review Commission of 1998, the Ugandan government in a bid to promote Science, Technology, Engineering and Mathematics (STEM), introduced the Science Education Policy in 2005. The policy made science subjects such as Physics, Chemistry, Biology and Mathematics obligatory for all secondary school students up to form four (Adyanga, 2014). To boost enrolment in science courses in post-secondary institutions, government reserved over 70% of sponsorship funds in tertiary institutions for science related courses. This is a commendable action by the government because planning educational facility is not having roofs over the heads of students but providing the best possible environment in which the formal and informal teaching-learning process can take place (Musaazi, 2006). With the above interventions to increase students' science enrolment in secondary schools, the government also introduced the Secondary School Science and Mathematics Teachers (SESEMAT) project aimed at boosting the skill of science teaching for staff (MoES, 2016). SESEMAT, a three-year project launched in 2006, was made possible through partnership between Uganda government and Japan International Cooperation Agency (JICA). On its part, JICA injected $1.5m USD to SESEMAT pilot project with the aim of improving the teaching competencies of science teachers in secondary schools. Much as these interventions have heightened enrolment in science courses, gender differentials continue to manifest in academic performance especially in Mathematics in secondary schools across the country. This study therefore examined how gender influences performance in Mathematics in Secondary Schools in South Western Uganda.

To guide the audience, the rest of the paper is organized into four major parts as follows: Part one reviews literature in different geographical location with a focus on gender and academic performance. Part two places the study within a fusion of qualitative and quantitative research methodological pluralism. It argues that methodological pluralism of data collection is the best approach in obtaining rich information because through narratives, qualitative approach fills in any gaps that cannot be articulated quantitatively. Part three discusses the use of qualitative and quantitative data concomitantly. The discussion is interpolated with previously reviewed literatures to pull out convergences and divergences in quantitative data, participants' oral narratives, and perspectives of the researchers. And the last part (part four) offers a conclusion with appeal to parents and guardians who are the key stakeholders in education to take centre stage in ensuring children are given the right resources for education.

LITERATURE REVIEW

There is a growing body of literature based on research in different geographical contexts that focuses on the comparison of performance in Mathematics examinations between boys and girls in different educational contexts. Mathematics is seen as a discipline that helps learners to describe in concreate terms, ideas and relationships drawn from the environment (Kitta, 2014). Mathematics enables learners to make the invisible to be visible (Devlin, 2000; Patel and Dexter, 2014), thereby solving difficult computational problems. However, there are performance disparities in Mathematics among various groups of students. Performance disparity refers to the differences in quality and quantity of knowledge, skills, techniques, attitude, behaviour and philosophy that different students acquire (Hanushek and Wößmann, 2006; Muola, 2014), and the differences in performance denote differences in student ability, which is evaluated by marks and grades obtained through diverse modes of assessment such as tests, examinations, coursework, among others (Nsubuga, 2008).

Male students' academic achievements have traditionally been considered superior to that of female students, especially in Mathematics and Science, because of their higher levels of innate spatial abilities (Benbow and Stanley, 1980) What is sometimes focussed on by researchers is performance in Mathematics and science disciplines. The assumption is that teachers may believe that males have higher levels of innate spatial abilities, which in turn affects the way they treat males and females in the class (Benbow and Stanley, 1982; Nosek and Smyth, 2011). Other studies have pointed out that female students generally perform better in language due to their verbal and reasoning abilities (Wilberg and Lynn, 1999; Sahragard et al., 2011; Jordan-Young, 2011). This, according to Erikson et al. (2012), can be attributed to the fact that infant girls are encouraged to use more types of communicative gestures than infant boys and both infant and toddler girls produce more words than same-aged boys. Much as the above literature posits that girls develop verbal and reasoning abilities faster than boys which possibly has later influence on academic performance between the two groups, other studies found some overlap in cognitive development of the two (Grace et al., 2003). This links to Petersen and Hyde (2014) who argued that gender differences exist in academic ability and occupational goals mainly manifested in the field of science and Mathematics. Their rendition is that these gender differences exist because of multiple factors such as cultural anticipations, variations in developments, stereotypes and prejudice from one context to another (Petersen and Hyde, 2014).

Further, in Grace et al.'s (2013) study that looked at contextual factors and alternative explanations for relationships between post-partum development (PPD) and child cognitive development, their findings feed into the research by Wilberg and Lynn (1999). Both of these studies revealed that boys of PPD mothers scored more poorly on the perceptual, motor and verbal subscales of the McCarthy Scales of Children's Abilities. The McCarthy Scales of Children's Abilities (MSCA) is a psychological test given to young children. The scales present carefully constructed individual tests to gauge the child's ability (Kaufman and Kaufman, 1973). In another study, Eriksson et al. (2012) citing Maccoby and Jacklin (1974) argued that girls matured faster in verbal abilities than boys. However, the study falls short of pronouncing the reason for this faster maturity in verbal abilities among girls. Responding to this bottleneck, scholars such Jeje and Olajoke (2016) placed the blame on students' attitude towards Mathematics. They reasoned that male students have more positive attitude towards Mathematics than their female counterpart (cf, Hannula, 2002). Much as this may be the case, attitude alone cannot account for the performance disparity in Mathematics within Uganda education system. This is because there are occasions when female students outperformed their male counterparts in Mathematics.

For instance, evidence from the 2018 Uganda Advanced Certificate of Examinations (UACE) results shows that a total of 99,672 students registered for the final examination. Out of this, 53,359 were males and 41,313 were females. Female candidates performed better at all levels with failure rate being low at 0.8% than 1.8% for male counterpart (Ahimbisibwe, 2019). In the same year however, boys outsmarted girls in the lower level of secondary school examination, the Uganda Certificate of Education (UCE). According to the results, boys performed better than their girls with 10.2% of the boys passing in division one, compared to 6.6% in division one for girls. Further, more boys (18.1%) passed in division two compared to 13.9% for the girls (Kazibwe, 2019). It is this egregious representation of the scale of performance disparity between boys and girls that motivated this study to gauge gender influence on performance in Mathematics. Performance disparity between boys and girls is critically important when it comes to gender equity issues in occupational choices (Petersen and Hyde, 2014). Working with participant voices from questionnaire responses and interviews, examination reports from Uganda National Examinations Board (UNEB), and published literatures, the study builds on earlier research on gender and academic performance.

METHODOLOGY

The study used a fusion of qualitative and quantitative research approaches to constitute the overall approach, or what is called the mixed method research approach (Tashakkori and Teddie, 2010; Hesse-Biber and Johnson, 2015). A mixed methods approach was used in this study because of its flexibility in generating data for studying complex educational problems. Besides, using the two research tactics allows strength of both approaches to be combined, leading to a better understanding of research problems that one approach alone cannot provide (Creswell, 2002; Creswell and Garrett, 2008; Akena, 2012). With this in mind, three methods of data collection were used, thus: interview, questionnaires, and document analysis. The researchers examined documents (UNEB examination reports) obtained from the selected schools and in a range of nine years (2009 to 2018). Documents supplemented data from questionnaires and interviews conducted in June, July and August 2019, respectively. Study participants were recruited using purposive and convenient sampling techniques (as explained, for instance, by Onwuegbuzie and Leech, 2007).

The researchers chose four schools using convenience sampling based on their easy accessibility during the rainy season in the region since most roads are not tarmacked or maintained. Another reason for using convenient sampling strategy was the schools' proximity to the researchers' workstation (Adyanga and Romm, 2016; Onwuegbuzie and Leech, 2007). Schools were also purposively sampled because of their status of being amongst traditional schools with the largest students' enrolment in the region (Creswell, 2013). To protect confidentiality of the schools, pseudo names such Rwanda Senior Secondary (S.S), Angola S.S, Zambia S.S and Kenya S.S were used. This is to ensure that no data get traced back to any single schools or participants.

Teacher recruitment

A homogenous sampling method was then used to purposively select twenty-eight (28) teachers based on the criterion of their teaching Mathematics in the selected schools (Adyanga and Romm, 2016). A few non-Mathematics teachers were also conscripted in the study because of their specialty teaching sciences mainly Physics, Chemistry and Biology. The researchers approached the schools and asked the headteachers (after briefings about the study) for names of all Mathematics teachers. From the list provided, the researchers contacted the teachers individually, briefed them about the study, and invited them to participate. Some teachers declined participation claiming they did not have time. To fill the gaps, selected teachers of Physics, Chemistry and Biology were recruited. Those who accepted to participate were given consent forms, which they signed and returned to the researchers. Because some of the identified teachers were not at their duty station on the day the researchers visited, their consent forms were left in the office of the headteachers after a telephone conversation with the researchers in which their consents to participate were first orally sought.

Recruitment of students

The second set of participants in the study was students from the four selected schools. Because these are vulnerable members (Belmont Report, 1979) of the community since all were below the age of 18 (*in Uganda, one is considered a child when he/she is below eighteen years old*), the researchers sought consent for their participation from their headteachers – since they are in residential schools. When the headteachers okayed students' participation, they were given consent forms to sign on behalf of the students. Therefore, all students who participated in the study had their consent forms signed by either their headteacher or deputy headteacher. These two are the highest office bearer in the Ugandan school settings. The objective of the research was then explained to the students and they were told that participation is voluntary, and they could leave the study at any time. In the even that they chose to quit the study, any information they had already provided would be discarded.

Informed consent to teachers

Questionnaires were distributed in four secondary schools across Kabale District, South Western Uganda. In the letter to potential participants in the teaching category, the researchers explained that the central purpose of the study is to establish (*using the teachers' experiences in teaching Mathematics*) the factors for continued examination performance disparity in Mathematics between boys and girls. As part of their participation, they are to fill the questionnaires and return them to the researchers within a reasonable timeframe possibly, a week. They were further informed that some of them may later be invited to participate in face to face interviews. The researchers further reaffirmed that their participation in the study was voluntary and they have the right to withdraw from the study any time without penalty (cf. Adyanga and Romm, 2016; Romm, 2018; Schaefer and Wertheimer, 2010; Sekiwu, 2013). Finally, the researchers expressed that any information given in the questionnaires or during interviews (for those who would be invited to participate) will be kept confidential and quasi names would be used in the place of their names and that of their schools. This is to ensure that no information can be traced back to participants or schools.

Data collection methods

Three methods of data collection were used thus questionnaire, interviews and documentary review as articulated below.

Questionnaire

This method was used to collect data from 194 students from the four schools. After the consent for participation was given on students' behalf by the headteachers/deputy headteachers, students from each school were gathered in their Assembly Halls to meet with the researchers. The researchers verbally briefed students of the study objectives and how their participation can make a difference. From each of the four schools, the researchers randomly picked students to participate in filling the questionnaires. For gender sensitivity, 100 students (50 boys and 50 girls) were picked from the first two schools, while 94 (44 boys and 50 girls) were picked from the last two schools making a total of 194 participants under this category. Because of the enthusiasm engendered about the study among this group of participants, most of them filled and returned the questionnaires to their headteachers' office the next day. Additionally, 28 teachers (12 females and 16 males) were selected from the four schools to fill the questionnaire. In total, two hundred twenty-two respondents (194 students and 28 teachers) participated in filling the questionnaire.

The questionnaire itself was constructed as follows: It was taken from the Uganda Child and Wellness Survey and modified to the context of South western Uganda. From this, we adapted the questionnaire to use a 5 Likert scale. The questionnaire contains five basic parts: demographic information, gender issues questions, age issues questions, education background issues questions and parents' participation in supporting children with homework.

Interviews

This method was used to obtain data from teachers and headteachers. Upon successful signing of the consent forms, interview dates were set for the teachers who had accepted to participate. All the interviews took place within the school premise either in the offices, staff rooms or outside in the open ground under trees. Although all the 28 teachers were invited to participate in the interview session, only 17 (11 females and 6 males) honored the invitations. The interview questions were structured in a way that allowed for free conversations between the interviewers and participants with ample opportunities for probing (cf. Adyanga and Romm, 2016). The following were the key questions that guided the interview process:

- What is gender and gender role?
- Elaborate what is meant by gender difference.

- What factors account for the differences in performance in Mathematics between boys and girls in your school?
- How does gender influence academic performance in Mathematics in your school?

While the interviews were based on a set of predetermined questions, in order to create an environment of trust, researchers avoided reading questions directly from the scripts but engaged in a conversational topic around the research theme *gender and its influence on performance in Mathematics*. The conversations took place between each participant and a member of the research team. In the process, the second researcher listened and recorded selected responses of respective participants, as well as noting down in a notebook, any gestures and suggestive body language, as these would provide useful insights during interpretation of participant voices.

Also, a voice recorder was being run by the third researcher (*participants were informed that the conversation would be recorded to allow researchers refer to the recorded files where clarity was later required*). All participants agreed to their voices being recorded. Of the seventeen participants, twelve requested the researchers to provide them with the recorded voices from their specific interview sessions. Two weeks after the study, the researchers honoured these requests by giving Compact Disks (CDs) to all teachers who participated. The CDs contained recorded interview sessions since they (participants) needed this information for their private use. This was a way of thanking them for their participation in the study.

Documentary review

A documentary review is a systematic process in which a researcher analyses the available literature in form of reports and files for the purposes of retrieving information relating to the subject under study (Bowen, 2009; Privault et al., 2012). For this study, the following documents were requested and received from the schools by the researchers: work plan, staff records of attendance, examination results for UCE and UACE, scheme of work and lesson plans. The review of these documents enabled researchers to acquire crucial information such as the number of times a teacher attended school in a semester, performance of students in national examinations for the period under study, how often Mathematics lessons are taught in a week for each school, etcetera. Such information became critical in buttressing the interpretation of quantitative data.

Data analysis

Quantitative data were coded and analyzed using contingent tables, t-statistic and chi-square. The tape-recorded qualitative data were transcribed and then analyzed for possible emerging themes arising from the participant voices. In the analysis process, the researchers used qualitative data to back up findings obtained from the quantitative method of data collection. In this way, descriptive data filled in gaps that could not be explained quantitatively. For example, the quantitative data suggested that males performed much better than females at Rwanda S.S in both O and A level examinations, but it was unclear why this might be the case. When we looked at the qualitative data, we were able to suggest that the extremely large number of males compared to female students at the school accounted for this quantitative finding.

RESULTS AND DISCUSSION

The quantitative component of the study adopted a multivariate approach to understanding the influence of gender in performance in Mathematics. In particular, the researchers used contingent tables, t-statistic and chi-square to test for the existence of any significant differences in Mathematics performance based on gender. The outcome of this approach is presented in Table 1.

The performance in Mathematics at UCE level indicates that majority of the students scored credit five (16.7%), of which 15.1% were male while 18.5% were female. This suggests that more female than male scored a credit five. The percentage of students who scored a distinction one (13.6%) was higher than those who scored a nine (8.1%). Among the male, only 5.7% scored a nine compared to 10.9% among the female. This suggests that more female than male failed Mathematics at UCE level. Contrastingly, more female (14.1%) than male (13.2%) scored a distinction. The percentage of female who scored a distinction one (13.6%) was more than those who failed (10.9%). This suggests that performance in Mathematics was better among female than male. However, much as females performed better, the number of males taking up science related subjects in high schools still outmatches the number of females (Kaahwa, 2012; Mbabaali, 2018; MoES, 2016).

To paint a better picture on performance differences according to gender, the grades were grouped into levels: 1 – 2, distinction; 3 – 6, credit; 7 – 8, pass; and 9, failure. Table 2 shows the details.

Performance in Mathematics was grouped according to high performers that includes distinction and credit, and low performers for those in pass and failure. At distinction and credit level, there were more girls (21.0%) than boys (19.7%) respectively. And these being higher grades, the performance among girls appeared better than that of boys. Majority of the students passed with credit (42.8%)

Table 1. Performance in Mathematics at UCE level.

Gender	Mathematics at UCE								
	1 (%)	2 (%)	3 (%)	4 (%)	5 (%)	6 (%)	7 (%)	8 (%)	9 (%)
Male	13.2	9.4	6.6	13.2	15.1	13.2	9.4	14.2	5.7
Female	14.1	8.7	2.2	13.0	18.5	14.1	7.6	10.9	10.9
Total	13.6	9.1	4.5	13.1	16.7	13.6	8.6	12.6	8.1

Table 2. Grouped performance in Mathematics.

Gender	Math grade				Total (%)
	High performers		Low performers		
	Distinction (%)	Credit (%)	Pass (%)	Fail (%)	
Male	19.7	41.8	20.5	18.0	100
Female	21.0	44.0	17.0	18.0	100
Total	20.3	42.8	18.9	18.0	100

followed by those with distinctions (20.3%). This was followed by those with pass (18.9%) and failure rate at 18.0%. Almost the same percentage of students scored a pass and failed. The rendition from this table is that the percentage of students who passed in the high improvement scale (distinctions and credits) favours the females. While the male students are mainly dominant in the lower improvement scale of pass and fail respectively. Inferring from this table therefore, female have high numerical competence than their male counterparts which is a sharp contrast with most existing literatures which tends to put male above female (Benbow and Stanley, 1982; Kazibwe, 2019; Petersen and Hyde, 2014).

In Table 3, performance in Mathematics shifts direction regarding school and gender. In Rwanda S.S for example, there are more males at distinction level (53.3%) than females (46.7%) while at credit level, there are still more males (60.9%) than girls (39.1). This implies that males rank highest on the high-performing scale than their female counterparts. More still, at the low performing scale, males perform highest with pass (60%) and failure (71.4%) than females with 28.6% pass and 40% failure rates respectively. Although male and female registered equal performance at distinction (50%) in Angola S.S, there is a slight alteration in the tide where more females register more credits (61.9%) than males (38.1%). This alteration in the performance tide continues to reflect more males (62.5%) with passes than females (37.5%). However, the tide is short-lived where female perform poorer (76.9%) than males (23.1%) as indicated by the number of failures. In order to obtain some insight on why this may be the case, we turned to some of the qualitative data. For instance, when asked to speak about the rationale for poor performance among girls in Mathematics, a female headteacher at Angola S.S linked this to insufficient teaching and learning aids. She succinctly stated

Our school has inadequate education facilities such as Mathematic, English and Integrated science textbooks. When I took over leadership two years ago, this problem was compounded by high indiscipline cases among students. With this, you cannot expect good academic performance. Also, most of our students come from poor socio-economic family background and cannot afford to buy their own learning resources and often perform poorly in national examinations.

The problem of poverty espoused by the above participant was repeated with high intensity among most teachers who partook in the different interview sessions across all the four schools. This also supported by existing literatures which reasoned that schools in poor neighbourhood generally perform poorly due to scarce education resources (Kaahwa, 2012; Mbabaali, 2018; MoES, 2016, Awori et al., 2020). Among others, poverty is argued to limit parents' ability to pay fees in time, buy school uniforms, feed children on balanced diets and buy books and pens which influences academic performances across subjects. In the words of a female teacher from Rwanda S.S, the picture is pithily painted with the statement:

> … you can't expect children to pay attention and grasp the content of any lesson when they are on empty stomach. Because we don't have school feeding programs, some of our students, especially those from poor family background are often inactive during afternoon lessons due to hunger. They simply pass time in classes.

Relating the above participant's perspective to existing literatures, the challenge of poverty and child labour is

Table 3. Mathematics performance according to school and gender.

Name of school		Distinction (%)	Credit (%)	Pass (%)	Fail (%)	Total (%)
	Male	53.3	60.9	60.0	71.4	60.0
Rwanda	Female	46.7	39.1	40.0	28.6	40.0
	Total	100	100	100	100	100
	Male	50.0	38.1	62.5	23.1	40.0
Angola	Female	50.0	61.9	37.5	76.9	60.0
	Total	100	100	100	100	100
	Male	63.2	56.0	60.0	66.7	59.7
Zambia	Female	36.8	44.0	40.0	33.3	40.3
	Total	100	100	100	100	100
	Male		57.7	57.1	70.6	58.3
Kenya	Female	100.0	42.3	42.9	29.4	41.7
	Total	100	100	100	100	100

long known to be major factors accounting for children absenteeism from school with later negative influence on academic performance (Duryea and Arends-Kuenning, 2003; Emerson and Souza, 2008; Nielsen, 1998; Zhang, 2003). This problem is not unique to any geographical context as most of our study participants think. It is a global challenge that requires multipronged interventions of all stakeholders to ameliorate.

For Zambia S.S, males continue to uphold the tradition whereby they had more distinctions (63.2%) than the female students (36.8%). The same continues to suffice where more male had credits (56%) than females (44%). In Kenya S.S, the females took the day with 100% distinctions and no male (0.0%). Conversely, the male had more credits (57.7%) than their female counterparts (42.3%) while to another extreme, male performed poorer (57.1%) with passes than the female (42.9%). This same trend continues with more male having failures (70.6%) than female (29.4%). This data feeds into the perspective of the male headteacher from Kenya S.S who espoused that:

> It is a mistake to tag academic performance in any subject to gender. Instead, there are many factors that account for differences and although gender could be one of them, it is at the lower end of the scale. I have been at the centre of leadership in high schools for 17 years and seen how the balance in performance keeps shifting between the two genders.

The above participant and eight others therefore called for more studies to understand some of the hidden factors such as economic, environmental, and political influencing academic performance of students. Although they are not completely dismissive of the influence of gender, they argue that such influence is very microscopic to account for wide discrepancies.

From Table 4, syllabus coverage (α = 2.459; sig. < .05) indicates that Mathematics syllabus coverage at Uganda Certificate of Education (UCE) did not differ significantly across the sampled schools. All the schools gathered similar efforts to ensure syllabus coverage in Mathematics, but it is not enough to use syllabus coverage as a variable to gauge performance disparity across schools. However, availability of textbooks (α = 160.73; sig. < .05) and number of Mathematics lessons (α = 83.459; sig. < .05) significantly varied across the sampled schools. This is because different schools had different quantities and quality of textbooks that would help learners in improving their grades in Mathematics. Similarly, significant differences in the number of mathematics lessons per week suggest that different schools accorded varying importance to the teaching of Mathematics. Ideally, Mathematics is meant to be taught in at least six lessons a week. However, the statistics denote that some of the schools provided less than six Mathematics lessons and others more than the minimum requirement. This probably explains the huge disparities in Mathematics performance across the sampled schools as lamented by a female participant from Zambia S.S during an interview session

Talking of factors for poor performance in Math in our schools, the answer, to me, lie within. We don't have to look further. The number one factor is absenteeism from duty among some of my colleagues. As a result, most of them teach Math once a week instead of three times as time tabled. In such a case, they do not finish the curriculum and students go to final exams when half baked.

The challenge of teacher absenteeism is not a preserve to Zambia S.S but a general concern across the studied schools as articulated by many participants during interviews. It is also a general problem nationally. Except

Table 4. T-statistics.

	Syllabus coverage	Students' textbooks	Number of Math lessons in a week
Chi-Square (a, b)	2.459	160.730	83.459
Df	2	2	2
Asymp. Sig.	0.292	0.000	0.000

for Angola S.S, teacher attendance records from the sampled schools revealed that most of the teachers failed to complete the curriculum in the academic year 2017/2018 due to multiple absenteeism from work. Nationally, a study conducted by a Dutch agency SNV indicated that teacher absenteeism in Uganda is ranked the highest in the world at 35% with teachers guaranteed to miss at least two days of work each week (Talemwa and Eupal, 2009). We, therefore, believe that when schools fail to follow the Ministry of Education and Sports guideline to teach above the set minimum lessons, there is a likelihood for that school to register many failures in national examinations such as UCE and UACE.

The study also established if there existed any association between gender and performance in Mathematics. Using cross tabulation procedures, chi-square statistics were obtained (Table 5). Low Pearson significant values indicate existence of some association while high significant values indicate absence of association.

From the statistics above, there was no relationship concerning gender and performance in Mathematics among students in the schools investigated (α = 0.776; sig. < .05). The implication here is that performance in Mathematics cannot not be attributable to gender disparity because there were instances when girls performed better than boys, and other instances where boys took the lion's share in performance. There are certainly multiple factors that needs critical examinations. For instance, a good grasp of language among girls as articulated in the literature (Wilberg and Lynn, 1999) could contribute in one way or the other, to a better interpretation and understanding of examination questions in Mathematics and other subjects leading to better performance (Sekiwu et al., 2020). This view is widely shared by interview participants, many of whom disassociated academic performance in Mathematics from gender influence.

Table 5. Chi-squares statistics.

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.822	8	0.776
Likelihood Ratio	4.982	8	0.760
Linear-by-Linear Association	0.197	1	0.657

CONCLUSION

As the preceding discussions illustrated, the gender factor is considered important in Mathematics performance since a significant portion of literature across the globe theorizes that there are performance variations between boys and girls. In order to promote educational equity, these performance variations must be examined and ameliorated if detected. We also recommend here, an epistemological grounding where theoretical declarations regarding the way gender is constructed in society, can be negotiated as "biased" and hence, needs to be problematized further.

This study, therefore, sought to examine the influence of gender on Mathematics performance in secondary schools in South Western Uganda. The findings of the study indicated that although there are performance disparities across the sampled schools between boys and girls, *Mathematics performance cannot be attributable to gender*. There are cases where boys outperformed girls as well as instances where girls outpaced boys. The implications of this study to educational policy influencers are that the gender factor alone is inadequate in accounting for the continuous performance disparity between boys and girls in Mathematics across Ugandan schools. This might have implications for the way in which feminist theory is applied in an African context, as suggested by Chilisa and Ntseane (2014), where they argue that we cannot transpose Western-generated feminist theory into African contexts. It is therefore important that we constantly monitor and question the influence that social construction of gender, even from African lived experience can have in society. This process is critical for identification of potential leverage points for collective empowering actions.

Therefore, the assumption that feminists across the board criticize — that girls are naturally a 'weaker sex' and hence likely to embrace subjects that are considered 'soft' such as language, literacy, communication skills, social sciences among others are biased and based on societal construction of social differences (Akena, 2020). Also, the way in which these assumptions play out in different social contexts cannot be generalized across all societies. In our study, such biased construction of social differences is debunked with evidences from the four mixed (boys and girls) schools with relatively large students' enrolment. However, given the limited number of participants examined in this study, the findings cannot in any way be claimed to represent the entire state of academic performance in Mathematics in the country. Instead, it should inspire more studies on larger scale to derive data for transferability across the country, which in turn can contribute to the literature world-wide.

Finally, in keeping up with the principles of social justice education, education policy makers should always cater for the gender and equity dimensions in schooling as a way of bestowing equal rights/access to quality education for boys and girls. This feeds into the requirements of Uganda's Vision 2040 that aim to establish a middle-class status for all Ugandans and to build an industrial society. For this to materialize, there is need to invest in science education as well as ensuring gender parity across technical and vocational training institutions nationally. This cannot be accomplished by the State alone. The family (parents and guardians) needs to take a central lead as the first social institution naturally mandated with the upbringing and general welfare of children.

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