

Association of school, classroom environment factors and academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District

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Abstract

Performance in mathematics has become a serious issue of discussion. The study aimed at establishing the association of school, classroom environment factors and academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District, Uganda. Descriptive and correlation research designs and mix of quantitative and qualitative approaches of data collection were employed. The study involved 69 mathematics teachers and 23 head teachers working in the 23 primary schools in Gombe division. Mathematics teachers were the primary respondents while head teachers formed the key informants. The study findings showed that mathematics teachers rated girls' performance in mathematics as good, there is moderate latrine stance ratio for girls, low availability of changing rooms for adolescent girls, low availability of female teachers of mathematics in upper primary, high level of support to mathematics teachers by head teachers, high existence of safety measures to protect girls against sexual harassment, high level of regularity of class and parent teacher association (PTA) meetings which created good school community partnerships. There was high use of teaching resources, good level of relationship and teachers' level of assessment and feedback. There was positive correlation between school environment factors ($rho = .376$), classroom environment factors ($rho = .597$) and academic performance of girls in mathematics. The study recommended that schools and Ministry of education to improve school and classroom environment factors since they have significant relationship with academic performance.

INTRODUCTION

Many studies revealed that performance of girls in Mathematics is low compared to that of the boys' world over (OECD, 2019, 2016, 2015; Laura Di Tommaso, 2016; Reardon et al, 2018). This gap does not only appear in standardized examinations but also in teacher made tests. Gender disparity in mathematics achievement has not only affected learners in higher institutions but also those in lower levels of education. In United Kingdom (UK) and Australia, performance of girls in mathematics was reported to be worse than that of boys among the 15-year-olds. More boys than girls were found to be proficient in addition, subtraction, multiplication and division (OECD, 2015; Saurabh Arya, Sushma Kaushik and Arpit Arya, 2019). In Italy and the United States of America (USA), too, experience shows that such similar gender disparity in mathematics achievement is identified by (Laura Di Tommaso, 2016; Reardon et al, 2018).

African countries are not exception of the gender disparity in the performance in mathematics. Male dominance in mathematics performance over the feminine gender was reported in Nigerian Secondary Schools and tertiary institutions (Marcus, 2016, Ibos, 2016; & Wokadala, et al (2019). In South Africa's KwaZulu Natal province, gender disparity in mathematics achievement was found among grade six learners (Marcus, 2016; Ibok, 2016); Saurabh Arya, Sushma Kaushik and Arpit Arya, 2019). Gender parity has been effectively achieved with respect to enrolment at primary level in the three East African states of Tanzania, Kenya and Uganda (United Republic of Tanzania Education Sector Development Program (ESDP, 2010; (ESSAPR, 2017; UNESCO, 2015). The Education and Sports Sector Annual Performance Report also indicated the performance of girls in mathematics seems to be

lower as compared to boys (ESSAPR, 2017; UNESCO, 2015). However, disparities in terms of mathematics achievement still exist at primary, secondary and tertiary levels (ESDP, 2010; UNESCO, 2015; Ng'ang'a et al., 2018; Hamilton et al, 2010; Hamilton et al 2010; Lucas and Mbiti 2012; and Kenya National Examination council, 2018).

Over the last four years, at national examinations, the Uganda National Examinations Board (UNEB) reports showed that boys outperform girls in mathematics and science subjects at Primary Leaving Examination (PLE) and Uganda Certificate of Education (UCE) (UNEB 2016, 2017, 2018, 2019). A similar finding of gender disparity in numeracy achievement was found in the UNEB – National Assessment of Progress in Education (NAPE) survey carried out among primary three (P3) and primary six (P6) learners. The study showed that in numeracy, the proportion of P3 girls (56.1%) rated proficient was significantly higher ($p=0.001$) than that of boys (54.3%). However, as the learners moved upwards in the primary classes, the trend changed. At P6, overall, the boys (56.2%) were found to be more proficient in numeracy than their counterpart the girls (45.9%) (UNEB-NAPE, 2018).

Gombe Division schools are among poor performing schools in Wakiso District according to the statistics obtained from Uganda school guide 2020 over the period 2010-2016. The poor grades largely emanate from the poor performance in mathematics (UNEB, 2018; 2019). The 2019 grade distribution in mathematics shows that the performance of boys is better at distinctions, credits 3 and 4. More girls pass at credit 5, 6, pass7, 8 and failed mathematics. The distribution of the grades is indicated in table1.

Table 1: Grade distribution in Mathematics by gender at PLE

Grade	Males	% pass	Females	% pass
1	3161	0.46	2695	0.39
2	17940	2.62	16441	2.40
3	16749	2.44	16000	2.33
4	23176	3.38	22742	3.32
5	35586	5.19	36041	5.26
6	65950	9.63	68691	10.03
7	54056	7.89	58568	8.55
8	62483	9.12	71009	10.36
9	45579	6.65	56168	8.20

Source: UNEB (2019)

Gender difference in mathematics achievement created a lot of research interest in stakeholders. Studies done established a range of factors that shaped achievement as well as helped to understand how the factors operate to limit or enhance the achievement of different groups of students. Factors such as lack of self-confidence in girls, socio economic status of families, geographical location of the schools, parental education, and the number of siblings were established as factors associated with gender gaps in mathematics achievement among girls in Italy, USA and Kenya (OECD, 2015; Reardon et al 2018; Laura Di Tommaso, 2018; Ng'ang'a, 2018). However, these studies were conducted in secondary schools and tertiary institutions where the learning environment is different from that in primary schools. No related study was conducted in Gombe Division, Wakiso District. This study on teachers perceptiveness on school and classroom environmental factors associated with performance of girls in mathematics in Gombe Division, Wakiso District is therefore necessary to understand the association of school and classroom factors and girls academic performance in public schools (OECD, 2019, 2016, 2015; Laura Di Tommaso, 2016; Reardon et al, 2018).

RELATED LITERATURE

Teacher Pupil Relationship

Strong teacher-student relationship is one of the most important environmental factors in changing a child's educational path, Marcus (2016);Ibok (2016); Saurabh Arya, Sushma Kaushik and Arpit Arya (2019) investigated the importance of teacher – student relationships. They posit that positive relationships between teacher and student serve as a resource to students as it helps maintain their engagement in academic pursuits. Poor teacher-student relationships were considered a predictor of “sustained academic problems” and an indicator of future school difficulties. One of the greatest issues facing teacher-student relationships is that many children are not going to class.

According to Marcus (2016); Ibok (2016); Saurabh Arya, Sushma Kaushik and Arpit Arya (2019) in their study on the effects of the teacher- student relationship and academic press and students' engagement and performance found out that supportive teacher student relationship and academic press were significantly related to behavioural and emotional engagement whereas only teacher student relationship was a significant predictor of reading performance (OECD, 2019, 2016, 2015; Laura Di Tommaso, 2016; Reardon et al, 2018). The effects of teacher student relationship on outcome were not contingent on academic press of the school. These findings clearly support the view put forward by Laura Di Tommaso (2016) Reardon et al (2018) Saurabh Arya, Sushma Kaushik and Arpit Arya (2019) suggest that a positive teacher student relationship fulfills the purpose of schooling because learners tend to put trust in their teachers, respect them and develops love for school which also improves their attendance of school. However, these studies reviewed here were mostly done in secondary schools, which is the reason to find more data on this variable in primary schools.

According to Marcus (2016) and Ibok (2016) in their study found that the relationship between pupils and their teachers was found to be a feature in schools where class meetings were held regularly. Marcus (2016) and Ibok (2016) established that the quality relationships between students and teachers was largely determined by regularity of class meetings where students aired their issues. Similarly, in the study carried by approachability and the willingness of the teachers to engage with the students in class were found to be among the major outcomes of class meetings.

Teaching Learning Resources

Teaching learning resources may be of different forms. They include classrooms, laboratories, library and instructional media. For the case of this study, teaching learning resources refer to those materials that are required for use during teaching – learning such as charts, abacus and other real objects for example cubes, solids (Reardon et al, 2018) Laura Di Tommaso, 2018; & Ng'ang'a ;2018). Availability of teaching/learning resources enhances the effectiveness of teaching and they can bring about good academic performance in the students. Similar views are echoed by Marcus (2016) and Ibok (2016) who based on a study in India, observed that quality of classroom conditions have strong positive effects on girls. Marcus (2016); Ibok (2016); Kurt (2019); Reardon et al (2018) Laura Di Tommaso (2018) Ng'ang'a (2018) noted that many rural schools across African countries lack essential infrastructure thus making the learning environment less safe, less efficient and less effective. Therefore, poor teaching and learning environment contribute a lot to less number of girls opting for Mathematics. This phenomenon needs to be investigated in context of the school performance of boys and girls. Availability and proper utilization of instructional materials have a close tie in fostering students' learning (Adele, 2015; Dumisani, 2019). The nature, condition, adequacy of learning material, and relevance of learning materials definitely have impact on learning engagement and learning habits (Marcus, 2016; Ibok, 2016; Dumisani, 2019; & Wokadala, 2019).

According to Reardon et al (2018) ; Laura Di Tommaso, (2018); Ng'ang'a, 2018) the availability of instructional materials offer reality of experience, provides visual aspects to a process or technique, facilitates the understanding of abstract concepts, save time by limiting the use of wordy explanations and provides opportunity for the learners to manipulate objects in the environment. This observation is in line with that given by (Kenobi, 2015; & Ibok, 2016). According to Reardon et al (2018) Laura Di Tommaso (2018) Ng'ang'a (2018) there is a statistical relationship between the academic performance of mathematics students and the use of instructional materials. In their study, Reardon et al (2018) Laura Di Tommaso (2018) Ng'ang'a, (2018) used a pretest and posttest quasi experimental design. This design used a small sample making the generalization rather difficult. In all these studies, there was none done in primary school setting in Uganda for comparison.

Teaching Methods

Teaching methods are standard procedure of presenting subject matter and organizing teacher- student interaction during a lesson. Each teaching strategy is associated with a method. A teaching method can be teacher centred or pupil centred in nature. In pupil centred methods, the pupil plays an active role in the learning process. The teacher plays a moderating role Kurt (2019) on the other side, a teacher centred method is where the teacher becomes the provider of knowledge and learners simply listen and take notes. Teaching methods can be general and specific. General teaching methods are the procedure that is common in the teaching of different subject; on the other hand, specific teaching methods may be applicable mainly to specific teaching subjects. Reardon et al (2018) Laura Di Tommaso (2018) Ng'ang'a (2018) indicated that in order to bring desirable changes in students, teaching methods used by educators should be best for the subject matter.

Reardon et al (2018) Laura Di Tommaso (2018) Ng'ang'a (2018) Reardon et al (2018) Laura Di Tommaso (2018) Ng'ang'a (2018) used experimental study design to investigate the effectiveness of different teaching methods on students' academic performance. The independent variables were teacher-centered method, student-centered method and teacher-student interactive method; and the dependent variable was student test scores. The effectiveness of teaching methods was analysed using descriptive statistics and the ANOVA approach. The results

revealed that combining both teacher-centered and student-centered teaching methods in teaching learners is the most effective approach that produces best student results.

Motivational Techniques

According to the expectancy theory as advanced by Reardon et al (2018) Laura Di Tommaso (2018) and Ng'ang'a (2018) "motivation is the amount a person will be stimulated by the situation they find themselves in". It is an attribute influenced by many factors. For example, the presence of Mathematics teachers would motivate girls in taking the subject and eventually will increase the number of female experts in Mathematics. This in turn can foster girls' long-term interest in Mathematics because they are of the same gender, hence they will be motivated in order to perceive themselves as capable of doing Mathematics. In addition to this, these female Mathematics teachers would motivate girl children by providing them with authoritarian information feedback concerning their achievement (OECD, 2019, 2016, 2015; Laura Di Tommaso, 2016; Reardon et al, 2018).

Learning achievement is influenced by many factors; some of these factors are intrinsic while others are extrinsic. Piaget believed that motivation is the best to gain students achievement. The existence of good motivation in learning shows good results. According to Fuqoha et al (2018), Saurabh Arya, Sushma Kaushik and Arpit Arya (2019) low motivated students easily give up when they get problems that are complicated.

In order to raise the performance of girls in Mathematics subject, they need to be motivated in attempting this subject. Girls' motivation is associated with both mothers and peers' support. Girl child achievement in Mathematics is higher when moth (Reardon et al 2018; Laura Di Tommaso, 2018; Ng'ang'a, 2018). In addition to this, exposing girls to the female role models who have prospered in Mathematics have a positive impact on girl children on their performance and can support to disperse the negative stereotypes Reardon et al (2018) Laura Di Tommaso (2018) Ng'ang'a (2018) and extrinsic motivation is often viewed as less desirable than intrinsic motivation, but research shows that extrinsic motivation affects adolescent academic performance (Reardon et al, 2018; Laura Di Tommaso, 2018). Although reported less frequently than factors such as ability, practice, and instructional approach, students identified extrinsic motivation as having a positive influence on their academic performance (Reardon et al, 2018; Laura Di Tommaso, 2018; Ng'ang'a, 2018). Given the scope of this study, the focus of this study was on how the variable of motivation influences performance of girls in mathematics.

Assessment and Feedback

Assessment is an important tool in the process of teaching and learning. Formative assessment, which is an on-going assessment, is best suited to improve instruction as well as bridging the gap between learners' performance and targeted learning outcomes (Reardon et al 2018; Laura Di Tommaso, 2018; Ng'ang'a, 2018) According to Rakoczy et al, (2018) educational assessment should not only create opportunities to gather data and interpreting it but also acting on interpretation, which may include feedback. This in itself emphasizes the importance of feedback in learning.

Formative feedback is the information communicated to the learner to modify his or her thinking or behavior for the purpose of improving learning Reardon et al 2018; Laura Di Tommaso, 2018; Ng'ang'a, 2018). To enable the learner to reduce discrepancy between learning goal and their current performance on mathematics concept, the feedback should target the strengths and weaknesses as well as strategies that may be appropriate for solving the task. Feedback helps learners to identify the particular aspect of their work that need attention Reardon et al 2018; Laura Di Tommaso, 2018; Ng'ang'a, 2018). Learners should be helped to perceive feedback as a way of correcting error. This helps to develop in them self-efficacy in a forth coming task which is one way of teachers can enhance learning outcomes in mathematics.

RESEARCH DESIGN

This study adopted a mix of quantitative and qualitative approaches where questionnaires and interviews were used to collect data. The study also used the qualitative approach to analyze the data collected through the key informant interview. However more emphasis was put on quantitative and qualitative supplemented quantitative where results were not convincing the researcher.

The study used a descriptive and correlation research designs. The descriptive design was used to describe the level of performance of girls as perceived by teachers and also the status of school and classroom environment factors in primary schools in the study area. Perry (2011) noted that the descriptive design accurately describes the characteristics of the subject in the study. The correlational research design was used to establish whether there was significant association between school, classroom environment factors and the performance of girls in mathematics.

FINDINGS OF THE STUDY

Objective three of the study was set to establish the association of school, classroom environment factors and the assessed academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District.

To determine whether there was a relationship between school, classroom environment factors and the assessed academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District, Spearman's correlation coefficient (ρ) was used to test the association and regression were used to test the hypothesis. Table 2 shows the result of this analysis. Table 2: Correlation results for the association between school, classroom environment factors and academic performance of girls in mathematics in public primary schools in Gombe Division Wakiso District

	School Environment factors	Classroom Environment factors	Academic Performance
Spearman's rho	School factors	Environment	Correlation coefficient 1 Sig. (2-tailed) N 69
	Classroom factors	Environment	Correlation coefficient 1 Sig. (2-tailed) N 69
	Academic Performance		Correlation coefficient .376** Sig. (2-tailed) N .007 69
			Correlation coefficient .597** Sig. (2-tailed) N .000 69
			Correlation coefficient 1 Sig. (2-tailed) N 69

** . Correlation is significant at the 0.05 level (2-tailed).

Source: *Primary Data, 2021*

Using spearman's correlation coefficient analysis, findings show that there was positive correlation ($\rho = .376$) between school environment factors and the assessed academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District. When the findings were subjected to a test of significance (p), the significance of the correlation of ($p = .007$) is less than the recommended critical significance at 0.05 at 2-tailed. It therefore showed there is a statistically significant correlation between the assessed academic performance and school environment factors.

Similarly, the findings show that there was positive correlation ($\rho = .597$) between classroom environment factors and the assessed academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District. The test of significance of ($p = .000$) is less than the recommended critical significance at 0.05 at 2-tailed. This implied that there was a statistically significant correlation between the assessed academic performance and classroom environment factors. This means that presence of both good school and classroom environment leads to improved academic performance of girls in mathematics and vice versa.

The study was set to test the hypothesis that there was no significant association of school, classroom environment factors and academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District. Thus, a multiple regression analysis was conducted to establish this association. Findings are presented in table 2 accompanied by analysis

Table 3: Multiple regression result showing the association between school environment factors and academic performance of girls in mathematics in Gombe Division, Wakiso District.

School environment factors (predictor)	Beta	P-value	Interpretation
Girl's friendly facilities	0.540	0.042	Significant
Female teacher who teach mathematics in upper primary classes	0.023	0.674	Not Significant
Instructional Leadership offered	0.040	0.025	Significant
School climate	0.090	0.009	Significant
School and Community Partnership	-0.370	0.500	Not Significant

R = 0.379
 $R^2 = 0.312$
 F = 13.013
 Std error = 0.4657
 ANOVA P-value = 0.007

Source: *Primary Data, 2021*

The findings in table 10 above show a positive linear relationship (Multiple R = .379) between school environment factors and academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District. Girl's menstrual hygiene facilities, Instructional Leadership offered and School climate were found to be the statistically significant school environment factor associated academic performance of girls in mathematics. The ANOVA showed that the significance (P-Value = .007) of the Fishers ratio (F = 13.013) was greater than the critical significance at 0.05. This means that the combination of school environment factors had a positive association with academic performance of girls in mathematics in public primary schools in Gamble Division, Wakiso district.

Table 4: Multiple regression results showing the association between classroom environment factors and academic performance of girls in mathematics in Gombe Division Wakiso.

Classroom environment factors (predictor)	Beta	P-value	Interpretation
Teacher- Pupil relationship	0.420	0.049	Significant
Use of teaching/learning resources	0.054	0.008	Significant
Teaching methods used	0.840	0.005	Significant
Assessment and Feedback	0.090	0.000	Significant
Motivational Techniques	0.365	0.970	Not Significant

R = 0.597
 $R^2 = 0.522$
 F = 16.782
 Std error = 4.3257
 ANOVA P-value = 0.000

Source: *Primary Data, 2021*

The findings in table 10 above show a moderately high linear relationship (Multiple R = .597) between classroom environment factors and academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso District. Teacher- Pupil relationship, Use of teaching/learning resources, Teaching methods used and Assessment and Feedback were found to be the statistically significant school environment factor associated academic performance of girls in mathematics. The ANOVA showed that the significance (P-Value =

.000) of the Fishers ratio ($F = 16.782$) was greater than the critical significance at 0.05. This means that the combination of school environment factors had a positive association with academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso district.

Since both school and classroom factors were proven to have positive association with academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso district, before led the study to reject the null hypothesis which stated that there was no significant association of school, classroom environment factors and academic performance of girls in mathematics in primary schools in Gombe Division, Wakiso District.

Several studies too have found that school and classroom environment, or perceptions thereof, are related to both self-efficacy beliefs and mathematics (OECD, 2019, 2016, 2015; Laura Di Tommaso, 2016; Reardon et al, 2018). One study of the relationships between perceptions of the classroom environment, intrapersonal factors and mathematics achievement in 10 year-old children found that pupils who perceived their mathematics classrooms as caring, challenging and mastery oriented reported significantly higher levels of mathematics self-efficacy (Laura Di Tommaso, 2016; Reardon et al, 2018). In turn, having higher levels of mathematics self-efficacy was positively associated with mathematics performance.

The results of another study suggested a direct association between perceptions of the classroom environment, derived through observational measures and gains in test performance (OECD, 2019, 2016, 2015; Laura Di Tommaso, 2016; Reardon et al, 2018). A further study, using self-reported perceptions of chemistry classrooms found an indirect relationship with both achievement and intrinsic motivation via achievement goals (Laura Di Tommaso, 2016; Reardon et al, 201). Findings about inter-relationships between learning environments, achievement and intrapersonal factors have been somewhat heterogeneous (Tosto et al., 2016). Some of this heterogeneity may have been derived from how constructs are operationalized and which mathematical components have been assessed. Inconsistencies in the literature may also reflect different measures and definitions of classroom environment as well as complex inter-relationships between learning environments, intrapersonal factors and achievement (Laura Di Tommaso, 2016; Reardon et al, 2018; Kurt, 2019). As academic motivation tends to decline with age, academic subject, age and developmental stage may also be important to perceived classroom environment. Therefore, it is possible that relationships between intrapersonal measures, environmental measures and achievement may differ by age.

Conclusions

From the research findings, it was established that good or high academic performance in schools is a function of good school and classroom environment factors such as safe and conducive latrine/toilet facilities, friendly teacher pupil interaction, positive school climate, school community partnership, use of collaborative teaching approaches and a high level of motivation to both learners and teachers. These factors can increase learners' school and class attendance and consequently increased academic performance.

The further analysis showed that school and classroom environment factors had a positive association with academic performance of girls in mathematics in primary schools in Gombe Division, Wakiso district and it school environment factors accounted for 31.2% ($R^2=0.312$) while classroom environment factors 52.2% ($R^2=0.522$) of the observed girls performance in mathematics. Both school and classroom factors were proven to have positive association with academic performance of girls in mathematics in public primary schools in Gombe Division, Wakiso district. This led the study to reject the null hypothesis which stated that there was no significant association of school, classroom environment factors and academic performance of girls in mathematics in primary schools in Gombe Division, Wakiso District

Recommendations

Based on the key study findings and conclusions, the following recommendations are suggested.

To School Management Committees and head teachers

The public primary school management committees, PTAs and head teachers in Gombe Division, Wakiso District should lobby through the District Education Officer, Non-governmental organisations working in Wakiso for construction of more latrines blocks with changing rooms and water sources to further improve school environment for the girl pupils.

The schools management and head teachers should design strategies for supervision of mathematics classes. Of all the elements measured by the study, head teachers observation of lessons scored the least. Findings

revealed that head teachers were burdened with a heavy work load and they sacrifice this role for other administrative duties. This can improve effective use of instructional time and sufficient engagement of girl pupils.

Schools management should continuously sensitise parents about the fact that girls can perform as well as boys. Excelling girls should particularly be rewarded. This will in the long run remove such stereotype that girls are weaker in mathematics.

To Ministry of Education and Sports

Ministry of Education and Sports (MoES) should emphasize the importance of putting in place girl friendly facilities in schools through a special budget line. Further there should be in place a budget line to address menstrual hygiene in primary school. This study found out that in Gombe Division, the public primary school are managed this aspect well because of the support they are receiving from 'Save the Children Fund'. There is therefore need for sustainability since the fruits are visible.

Ministry of Education and Sports through the District Local Government should consider putting in place a deliberate teacher recruitment and deployment policy that can lead to a significant number of female teachers recruited and equitably deployed to primary schools.

To improve teacher effectiveness of teaching mathematics, the MoES could provide schools with modern teaching learning resources such as audio-visual equipment like projectors, white board and internet based gadgets among others. With the current technological trends and social calamities like pandemics, this can help to improve the teaching and learning experience

REFERENCES

- Asamani, P.M, Kor, J. and Opare, K.J. (2018). Impact of School Climate and Academic Performance: A case of Ghanaian Schools. *Journal of Education and Practice*. ISSN 2222-288X Vol9 No. 22.
- Bisong, C.B.A. (2018). Female Mathematics Role Models and Girls Performance in Mathematics in South West Region of Cameroon: A gender Issue. *International Open Access Journal* Vol.2 issue 4. www.ijtrsd.com
- Dumisani, H. (2019). Instructional Leadership and Academic Performance: Eastern Cape Educators Perception and Quantitative evidence.
- Eubank and Kari, (2017). The Relationship of School Community Partnership with ACT Benchmark Scores in Rural Tennessee Schools. *Electronic Thesis and Dissertation*. Paper3334 <https://dc.etsu.edu/etd/3334>
- Kurt, S. (2019) Social Learning Theory: Albert Bandura in Educational Technology. Retrieved from <https://educationaltechnology.net/social-learning—theory-albert-bandura/>
- Malunda, P., Onen, D, Musaazi, J C. S., & Oonyu, J. (2016). Instructional supervision and the pedagogical practices of secondary school teachers in Uganda. *Journal of Education and Practice*, 7(30), 117–187.
- Perry, J. C. (2011). Conducting mixed methods research. In Maree, J. G. (Kobus) (ed.) *Complete your thesis or dissertation successfully: Practical guidelines*. Cape Town: Juta & Co. Ltd.
- Ng'ng'a, A. Leopold P, Mureithi and Wambugu /GokhanOzsoy (Reviewing editor) (2018) Mathematics Gender Gaps in Kenya: Are Resource Differentials between Boys and Girls to blame? *Cogent Education*, 5, 1 DOI:10.1080/2331186X.2018.1564163
- Saurabh Arya, Sushma Kaushik and Arpit Arya (2019). Nature, extent, causes and effects of sexual harassment faced by school girls. *The Pharma Innovation Journal*; 8(11): 44-48
- Tosto Maria G., Asbury Kathryn, Mazzocco Michèle, Petrill Stephen and Kovas Yulia (2016). From classroom environment to mathematics achievement: The mediating role of self-perceived ability and subject interest. *Learning and Individual Differences* 50 (2016) 260–269
- UNEB PLE release Reports (2016, 2017, 2018 and 2019)
- UNEB-NAPE (2018). The Achievement of Primary School Learners and Teachers in Uganda in Numeracy and Literacy in English.

UNESCO (2019) Strengthening Gender Responsive Pedagogy in Uganda.

Wakiso District Development Plan 2015/2016- 2019/2020

Wokadala, J. et al (2019). Impact of School Facility Grant on Access and Learning Achievement in the primary Education sector in Uganda 3ie Grantee final report. New Delhi International Invitation for Impact Evaluation (3ie)

