A STUDY ON THE FACTORS AFFECTING FEMALE STUDENTS PERFORMANCE IN SCIENCE SUBJECTS: A CASE OF MARRY IMMACULATE GIRLS SCHOOL

Mr L. Chizimba¹, Sister Matildha Mulenga², Dr T. Velmurugan³

¹Head of Department, DMI ST Eugene University. P.O Box 330081, Chibombo, Zambia
²DMI ST Eugene University. P.O Box 330081, Chibombo, Zambia
³Associate professor, DMI ST Eugene University. P.O Box 330081, Chibombo, Zambia

ABSTRACT
There has been increasing concerns relating to issues of equality and equity in the education sector amongst education specialist and of great concern has been the poor performance of female students in science subjects. To this effect a study was conducted to find out the factors affecting female student’s performance in science subjects at Mary Immaculate Girl’s Secondary School. The researcher used a descriptive research design and the respondents were sampled using Simple Random sampling Method. The study found out that there are a wide range of factors that affects girls students performance in science subjects and this include availability of qualified teachers, availability of teaching and learning materials, students attitude and perception towards science subjects, parental support and availability of the necessary science relate infrastructure such as laboratory. It has also been found that the performance of girls at the school in science subjects is very good.

Keywords: Science and Technology, Performance, attitude, perception

1 BACKGROUND OF THE STUDY
Access to Education is one of the Fundamental human rights. The United Nations Declaration of Human rights emphases the fact that access to Education is a Human right. The UNDHR specifies ways to hold states accountable for violations or deprivations of the right to education. This clearly demonstrates the importance of Education at the Global level. According to UNESCO the right to education is one of the key principles underpinning the Education 2030 Agenda and Sustainable Development Goal 4 (SDG4) adopted by the international community. SDG 4 is rights-based and seeks to ensure the full enjoyment of the right to education as fundamental to achieving sustainable development.

The Zambia Government is very committed and places significant importance on increasing access to Education. This is evidence by the fact that the Zambian Government has put in places legislations and policies that supports increased access to Education for all Zambians. These regulatory instruments include the National Education policy (Educating our future) which was approved in and the Zambia Education Act which was enacted in 2011. The Zambian Government is a firm believer that education is a right for each individual and It is also a means for enhancing the well-being and quality of life for the entire society. The Government's role in
education arises from its overall concern to protect the rights of individuals, promote social well-being and achieve a good quality of life for every person through all-embracing economic development, therefore the Government seeks to create, promote and support the conditions within which education can realize its potential in society. The right to education applies to all subjects including science subjects.

In a world that is increasingly shaped by science and technology, it is imperative for everyone to access quality science education. As such, many countries across the globe have embraced science education in their curricula. Stressing the importance of science education, Olasehinde and Olatoye (2014) asset that science education is designed to guide the world toward a scientifically literate society and this is important for an understanding of science, personal fulfillment and excitement’s. Further, the European Commission (2015) reports that knowledge of and about science are integral to preparing our population to be actively engaged and responsible citizens, creative and innovative, able to work collaboratively and fully aware of and conversant with the complex challenges facing society.

Poor performance in science subjects is increasing from time to time among secondary schools students in Zambia as well as in Africa and the globe at large in recent years. (Jidamwa, 2012). According to Science Education in Europe (2011) International student assessment surveys carried out under agreed conceptual and methodological frameworks with a view to providing policy-oriented indicators, in Europe indicates that there is decrease of relative standings in the performance of science subjects among European members.

According to Osaki (2007) despite significant achievements in improving access to quality education over the past two decades in Zambia, there is continuation of poor performance in mathematics and science subjects at the primary and secondary school level which raises concerns over whether, or not the education system can supply graduates who possess the competencies required of them within the emerging technology sector. A study by Monde (2012) compared the performance between urban Grade 9 school pupils and rural Grade 9 school pupils in the Junior Secondary School Leaving Examinations in basic schools in Senanga District province of Zambia and investigated the factors which affected their performance. The study revealed that the performance of urban and rural Grade 9 school pupils in Junior Secondary School Leaving Examinations was generally poor. The poor performance of the Grade 9 pupils was attributed to factors such as lack of qualified teachers, shortage of Grade 9 school teachers, long distance to and from school, lack of homework, insufficient learning materials and lack of library facilities.

The researcher therefore identifies the need to investigate on the factors influencing poor performance of science subjects in secondary schools in Zambia with a special focus on Mary Immaculate Girls Secondary School since there is no similar study done on the factors influencing poor performance of science subjects at the school. Mary Immaculate Girls Secondary School is a catholic private secondary school run by little servants of Mary and was opened in 2015 with the intention of developing and building the girl child to be spiritually, morally and academically right. The researcher therefore seeks the research gap and decides to conduct the study in order to investigate, and provide information on what are the factors influencing poor performance of science subjects in secondary schools in Lusaka, also to give
out recommendations on what are the possible solutions to the problem of poor performance in science subjects among secondary schools in Lusaka.

2. OBJECTIVE OF THE STUDY

2.1 GENERAL OBJECTIVES
The general objective of the study is to investigate on the factors influencing poor performance in science subjects of girls in selected secondary schools in Lusaka District.

2.2 SPECIFIC OBJECTIVES OF THE STUDY
The following are specific objectives of this study:
(i) To assess the students attitudes and perceptions towards science subjects
(ii) To determine the factors affecting performance of girls in science subjects.
(iii) To identify the strategies currently used to improve the performance of grades 9 and 12 learners in science
(iv) To identify the difficulties faced by teachers in the teaching science subjects in secondary schools
(v) To propose possible suggested measures to improve performance in science subjects amongst girls.

3 SIGNIFICANCE OF THE STUDY
The study is very significant as it brings to light the factors that affect girl’s performance in Science subjects in Zambia. Thus policy makers, School administrators, teachers and other key stakeholders in the Education sector will be able to utilize the findings so as to inform the development of strategies that will improve the performance of girls in science subjects in Zambia. The study will also contribute greatly to the to the existing body of knowledge on factors that cause poor performance of girls in the sciences.

4. RESEARCH METHODOLOGY
The researcher used the descriptive survey research design for the study and this research as it provides a clear description of the phenomenon which in this case is the performance of girl in science subjects. The Research was specifically conducted in Lusaka at the Marry immaculate secondary school. Therefore the Universe of the study is all students at the Mary Immaculate Girls Secondary School, The researcher used probability sampling procedure to select respondents. At the school level respondents were selected using simple random sampling method. The total population for the study area is 300 learners and a total of 50 respondents were randomly sampled. In addition five teaches were selected as key informants. The researcher used semi structured questionnaire to collect data from the respondents. Data analysis was done using the Statistical Package for the Social Sciences (SPSS).

5. RESEARCH KEY FINDINGS
This section of the article presents objective wise presentation of the research key findings:

5.1 The student’s attitudes and perceptions towards science subjects
Attitudes and perception of students have a bearing on the performance of students in particular subjects including science subjects. The results from the study in relation to whether students attitudes in science subjects affect performance 6% of the respondents strongly disagree, 14% of
the respondents disagree, 8% of the respondents are not sure, and 34% of the respondents agree and 38% of the respondents strongly. This shows that majority of the respondents feel that student’s attitudes affect students’ performance in science subjects.

In relation to what is the attitude of most of the students in relation to science subjects the results showed that 34% of the respondents reported positive and 66% of the respondents reported that they have a negative attitude. This result shows that majority of the learners who are female have negative attitude towards science subjects. Furthermore inters of whether girls negative attitudes towards science subjects contributes to poor science subjects performances. The results showed that 14% of the respondents strongly disagree, 10 of the respondents disagree, 10% of the respondents are not sure, and 24% of the respondents agree and 42% of the respondents strongly agree that negative attitudes of girl students towards science subjects contributes to poor science subjects performances. This shows that majority of the responds agree that negative attitudes of girl students towards science subjects contributes to poor science subjects performances.

The results shows that majority of the students agrees that negative attitude affects girl performance in science subjects as the study results showed that 16% of the respondents strongly disagree, 6% of the respondents disagree, 2% of the respondents are not sure, 32% of the respondents agree and 44% of the respondents strongly agree. This shows that 76% of the respondents agree that negative attitudes affect student’s performance in science subjects.

There have been perceptions that male students are better in science subjects than female students and according to whether male students are always good at science subjects than female students. The results showed that 44% of the respondents strongly disagree, 36% of the respondents disagree, 10% of the respondents are not sure, and 8% of the respondents agree and 2% of the respondents strongly agree that male students are always good at science subjects than female students. The results shows that the female respondents feel male students are not always good in science subjects as compared to female students and that female students are equally good in science subjects. The results further shows that female students also enjoy science subjects as the results showed that 12% of the respondents strongly disagree, 28% of the respondents disagree, 30% of the respondents are not sure, 24% of the respondents agree and 6% of the respondents strongly agree that majority of girl student dislike science subjects. The results shows that majority of the respondents reported that majority of girl students do not dislike science subjects. In relation to the perception that science is difficult the results show that 54% of the respondents feel that science is difficult and 46% feel that it’s not. This shows that half of the respondents who are female students have the perception that science is difficult.

5.2 The factors affecting performance of girls in science subjects.
According general students’ performance of the respondents in science subjects at the school, the results shows that 6% reported that the performance is very good, 32% reported that the performance is good, 40% reported that the performance is average, 18% reported that the performance is poor and 4% reported that the performance is very poor. These shows that majority of the respondents reported that the performance is average. In terms of how they rate other students' performance in science subject at the school and 20% of the respondents reported that the performance is very good, 22% reported that the performance is good, 32% reported that the performance is average, 22% reported that the performance is poor and 4% reported that the
performance is very poor. These shows that majority of the respondents reported that the performance is average.

There are a wide range of factors that affects student’s performance in science subjects and below is an analysis of some of the major factors that have been found to affect students performance in science subjects.

**Availability of science laboratory**
The results showed that 90% reported that they have a laboratory and 10% reported that they don’t have. In relation to the condition of the laboratory at the school and 24% of the respondents reported that it is very good, 8% reported that it is good, 36% reported that it is in average condition, 26% reported that the laboratory is in poor condition and 6% reported that the laboratory is in very poor condition. This shows that majority reported that the library is in average condition, In addition the results show that 26% of the respondents indicated that they have sufficient laboratory equipment and 74% indicated that they don’t have sufficient laboratory equipment. The results show that 18% of the respondents reported that they have easy access and 80% of the respondents reported that they don’t have easy access to the science laboratory at the school. The result shows that majority of the learners do not have easy access to the science laboratory. In conclusion the study results shows that the school has a laboratory which is in average condition however there are some concerns as the results shows that the laboratory do not have sufficient laboratory equipment and also students have limited access to the laboratory.

**Availability of school library and science text books**
88% of the respondents reported that they have a school library and 12% reported that they don’t have a school library. In terms of to availability of science books at the school 18% of the respondents reported that it is very good, 26% reported good, 32% reported that it is in average, 26% reported that it is in poor and 4% reported very poor condition. The results also shows that 50% of the respondents indicate that every learners has access to individual science books and 50% reported that not all students have individual access to science books Thus from the results it shows that the school have sufficient science related material in the library that supports the students learning of science subjects.

**Availability of qualified and experienced teachers**
The availability of adequate and qualified science teachers is an important factor that affects student’s performance. The results show that 48% of the respondents reported that they have adequate and qualified science teachers and 52% reported that they do not have adequate and qualified science teaching teachers. This result shows that the school is on average in terms of having adequate and qualified science teaching teachers. The results showed that 52% strongly disagree that science teachers are incompetent at the school, 36% of the respondents disagree, 8% of the respondents are not sure, and 4% of the respondents agree that science teachers are incompetent at the school. This shows that majority of the respondents feel that science teachers are competent at the school.

According to if they have adequate and qualified science teaching teachers at the school. The results show that 48% of the respondents reported that they have and 52% reported that they do not have adequate and qualified science teaching teachers. This result shows that the school is on
average in terms of having adequate and qualified science teaching teachers. According to if the teaching methods are inappropriate at the school. The results showed that 48% strongly disagree that teaching methods are inappropriate at the school, 28% of the respondents disagree, 14% of the respondents are not sure, and 2% of the respondents agree and 8% of the respondents strongly agree. This shows that majority of the respondents are of the view that the teaching methods are very appropriate at the school. According does if science teachers make lessons interesting to learners. The results showed that 48% strongly disagree that teaching methods are inappropriate at the school, 28% of the respondents disagree, 14% of the respondents are not sure, and 2% of the respondents agree and 8% of the respondents strongly agree. This shows that majority of the respondents are of the view that science teachers make lessons interesting and 18% of the respondents reported that they don’t. This shows that majority of the respondents feel that teachers make the lessons interesting.

However in terms of the rating of the presentation of science subjects by your teachers and the results shows that 62% of the respondents reported that teachers are too theoretical, 2% of the respondents reported that teachers are too practical and 36% of the respondents reported good balance of theory and practical. This shows that majority of the teachers are too theoretical. In general terms the respondents are happy with the performance of the teachers as majority of the learners did not attribute poor performance of other learners at the school in science subjects as being because of the teachers. In relation to if they agree that science teachers contribute greatly towards poor performance of science subjects and the results showed that 42% strongly disagree that science teachers contribute greatly towards poor performance of science subjects, 30% of the respondents disagree, 18% of the respondents are not sure, 4% of the respondents agree and 6% of the respondents strongly disagree. This result shows that majority of the respondents do not attribute the poor performance in science subjects at the school as being due to the teachers.

Availability of enough resources to facilitate effective students learning of science subjects
According to if the school has enough resources to facilitate effective students learning of science subjects. The results showed that 30% of the respondents strongly disagree, 36% of the respondents disagree, 18% of the respondents are not sure, and 16% of the respondents agree and 2% of the respondents strongly agree. The result shows that majority of the respondents disagree with the facts that the school have enough resources to facilitate effective students learning of science subjects. According to if they have access to internet at the school. The results show that 52% indicate that they have sufficient access and 48% indicated that they do not have sufficient access. This shows that the access to internet at the school by students is average.

The size class
According to if the size class affects the learning of students. The results showed that 26% of the respondents strongly disagree, 22% of the respondents disagree, 14% of the respondents are not sure, and 20% of the respondents agree and 16% of the respondents strongly agree. The results shows that majority of the strongly disagrees that the size class affect the learning of student at the school and this can be attributed to the fact that the school has small class size.

Parental support
Parental support is another important factor to enhance the performance of girls in science subjects. According to if parent involvement in students school work motivates the students. The results show that 66% of the respondents reported that parent’s involvement motivates students and 34% of the respondents reported that it doesn’t. This shows that majority of the respondents feel that parent’s involvement motivates learners in addition, according to if they receive support
from parents in relation to science subjects. The results showed that 10% of the respondents strongly disagree, 14% of the respondents disagree, 8% of the respondents are not sure, 20% of the respondents agree and 48% of the respondents strongly agree that receive support from parents in relation to science subjects. This shows that majority of the respondent feel that they receive support from parents.

5.3 The strategies currently used to improve the performance of grades 9 and 12 learners in science

The strategies used by teachers can make science subjects interesting or not interesting to the students and this will have a bearing on the performance of the students in science subjects. According does if science teachers make lessons interesting to learners. The results shows that 82% of the respondents reported that teachers make lessons interesting and 18% of the respondents reported that they don’t. This shows that majority of the respondents feel that teachers make the lessons interesting According to rating of teaching of science subjects at the school and 36 reported that it is very good, 54% reported that it is good, 8% reported that it is average and 2% reported that it is poor. This shows that majority of the respondents are happy with the teaching of science at the school.

According to if science learning is interesting to the respondent. The results showed that 10% of the respondents strongly disagree, 22% of the respondents disagree, 10% of the respondents are not sure, 16% of the respondents agree and 42% of the respondents strongly agree that science learning is interesting to the respondent. This shows that majority of the respondents agrees that science learning is interesting to the respondents. According to if they are motivated to study science and the results showed that 90% reported that they are motivated and only 10% reported that they are not motivated subjects. This shows that the learners are motivated to study science subjects.

The results shows that 86% of the respondents reported teachers use test/assignments results to give extra help to students and 14% of the respondents reported that they do not. This shows that majority of the respondents are of the view that teachers uses test/assignments results to give extra help to students. 76% of the respondents reported that teachers use a variety of reaching methods and 24% indicated that teachers don’t use a variety of teaching methods. This shows that majority of the students feel that their teachers use a variety of teaching methods. The results also shows that 62% of the respondents reported that teachers are too theoretical, 2% of the respondents reported that teachers are too practical and 36% of the respondents reported good balance of theory and practical. This shows that majority of the teachers are too theoretical and this can have a negative effect on student’s performance as science is both theory and practical thus there is need for a good blend of both theory and practical.

In addition the school has put in place the following strategies to support students learning in science subjects:

- Remedial teaching
- Holiday tuitions
- Monthly test and awarding good results
- More practical are being conducted
- Tutoring students more in science subjects
5.4 The difficulties faced by teachers and students in the teaching science subjects in secondary schools

Results from the study shows that the major challenges faced by learners in the learning of science subjects includes negative perception and attitudes towards girls in science subjects, lack of sufficient science textbook and unavailability of the necessary equipment chemicals in the science laboratory. On the teachers side majority of the teachers indicated the following as the major challenges that they are facing lack of interest among the girls in science subjects, inadequate supply of science laboratory equipment and reagents chemicals and lack of general teaching materials, limited printing of learners worksheets, poor science infrastructure.

6. CONCLUSION AND RECOMMENDATIONS

In conclusion the study has found out that there are a wide range of factors that affects girls students performance in science subjects and this include availability of qualified teachers, availability of teaching and learning materials, students attitude and perception towards science subjects, parental support and availability of the necessary science relate infrastructure such as laboratory. It has also been found that the performance of girls at the school in science subjects is very good.

In view of the findings the researcher makes the following recommendations:

(i) The school should purchase more science apparatus for the laboratory
(ii) The school should strengthen science clubs and giving them more science projects
(iii)The teachers should use a well balanced approach of theory and practical
(iv)The school should put in place mechanisms to ensure that students have more access to the laboratory

REFERENCES

Abd-El-Khalick, F. 2012. Teaching with and about nature of science and science teacher knowledge domains. Department of Curriculum and Instruction, College of Education, University of Illinois at Urbana-Champaign, 1310 South Sixth Street, Champaign, IL 61820, USA.


Akinsolu, A.O. & Fadokun, J.B. 2009. Teachers’ perception on teaching large classes in Nigerian secondary schools: Implications for qualitative educational planning. National Institute for Educational Planning and Administration, Nigeria, ONDO.


Akinsolu, A.O. & Fadokun, J.B. 2009. Teachers’ perception on teaching large classes in Nigerian secondary schools: Implications for qualitative educational planning. National Institute for Educational Planning and Administration, Nigeria, ONDO.