

# Assessment of Teachers' Perceptions on the Integration of Comprehensive Sexuality Education in Mathematics: A Case of Kitwe District

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**Abstract:** *The study assessed the perceptions' of teachers on the integration of Comprehensive Sexuality Education (CSE) in Mathematics in Kitwe district on the Copperbelt Province of Zambia. It aimed at achieving the following objectives; to establish the extent to which CSE is integrated in Mathematics, to explore the challenges and opportunities of integrating CSE in Mathematics and to assess the perceptions of teachers on the integration of CSE in Mathematics. The research design employed was a descriptive case study design. A sample of ten public secondary schools from a population of 36 secondary schools was randomly selected for the study. The respondents were the senior secondary school teachers of Mathematics, heads of Mathematics department, guidance teachers, education standards officers, district resource centre coordinators and district representatives of the Zambia Association of Mathematics Educators (ZAME). The study used both the quantitative and qualitative approaches to collect data by using questionnaires and an interview schedule. Qualitative data was analyzed thematically whilst quantitative data was analyzed using excel to obtain descriptive statistics. The study found out that utmost four (4), representing 66.7% of the six (6) CSE topics covered by the CSE framework were integrated into eight (8) topics representing 26.7% of the thirty (30) senior secondary school Mathematics topics. The study pointed out that, teachers of Mathematics faced some challenges when integrating CSE which included; insufficient time, inadequate training, difficulties in integrating CSE in all Mathematics topics and lack of guidance within schools. Despite the stated challenges, it was established that there were opportunities of integrating CSE in Mathematics and these are; relating Mathematics to real life, enhanced positive attitude towards Mathematics learning and Improved communication with learners. The study concluded that teachers' perceptions towards the integration of CSE in Mathematics were positive. Based on the findings, the study recommended that; the government may consider clearly specifying the CSE topics to be integrated in Mathematics at senior secondary school level, as some of the topics are already incorporated in subjects such as; Biology, Civic Education, Religious Education and Home Economics, the government through the ministry of general education may consider training the in-service teachers adequately concerning the integration of CSE into their classes and school managements may consider providing teachers with support and guidance to effectively implement the policy.*

**Keywords:** Comprehensive Sexuality Education, Opportunities, Challenges, Perceptions

## 1. Introduction

Comprehensive Sexuality Education has gained a significant attention. It has become a key component of the adolescent's development and effective decision making as well as the transition to adult life. According to WHO (2017)<sup>[31]</sup>, investments in adolescent health and wellbeing bring a triple dividend of benefits now, into future adult life, and for the next generation of children. The argument that children and adolescent especially need comprehensive education about sex and sexuality has even heightened due to incidence of teenage pregnancy, abortion and sexually transmitted infections and the emergence of HIV (Esia-Donkoh, Kumi-Kyereme, Awusabo-Asare and Stillman, 2018)<sup>[24]</sup>. This makes the teaching of comprehensive sexuality education especially in secondary schools not only critical but timely.

### 1.1 Background of the study

In the early 1990s the Ministry of education in Zambia formally introduced the teaching of sex education in schools and was integration in science subjects, civic education, social studies and religious education under the life skills and in extra-curricular activities such as clubs (Education, 1996)<sup>[12]</sup>. The World Health Organisation (WHO) in May, 1995 made reproductive health as a main concern area worldwide at the World Health Assembly Resolution

(WHO, 2014)<sup>[30]</sup>. The resolution urged its member states to further develop and strengthen their reproductive health programmes by strengthening the capacity of health workers in addressing the reproductive health needs of individuals in a culturally sensitive manner and specific to their age. According to WHO (2011)<sup>[29]</sup>, this required improving the course content and methodologies for training health workers in reproductive health and human sexuality and to provide support and guidance to individuals, parents, teachers and other influential persons in these areas.

In 2000, the Zambian Government introduced Youth Friendly Health services which promoted Family life education widely as it was realized that, adolescents are a special group and require special attention (Ministry of Health, 2009)<sup>[13]</sup>. In April 2002, the program was integrated into the district offices of the Ministry of Education, Ministry of Community and Social development

In 2007, there was still inadequate Sexual and Reproductive Health (SRH) information available in Zambian schools and in the community and young women were not empowered to make informed decisions about their SRH (Taylor, 2013)<sup>[25]</sup>. According to Bwalya (2011)<sup>[3]</sup>, sexuality education was partially integrated in Environmental Science, Biology, Civic Education and Religious Education both syllabi 2044 and 2046. The first subject was offered at junior secondary

or upper basic school level, while the other three were offered at senior secondary or high school level. Environmental Science is a compulsory subject which is taken by every pupil at junior secondary level. But the topic that touches on sex and sexuality is not detailed, leaving young people with little information (Ibid). Bwalya further states that, Biology, Civic Education and Religious Education were optional subjects in some schools, meaning that not all pupils were learning about sex and sexuality.

The Government of Zambia (GRZ) in 2011 enacted Education Act No. 23. In Section 108(I)(1), the Act empowers the Minister of Education to amend the curriculum to introduce Comprehensive Sexuality Education (Population Council, United Nations Population Council (UNFPA), Government of Zambia Human Rights Commission, Women and Law in Southern Africa (WLSA), and United Nations in Zambia, 2017)<sup>[21]</sup> The Government of the republic of Zambia recognized the importance of investing in the education sector through the provision of comprehensive sexuality education (CSE) and reproductive health information. This is largely so because it increases the potential and opportunity of reaching out to young people as a large population of adolescents are in school

In 2014, GRZ completed the development of the CSE curriculum, and it was rolled out to all schools, targeting children aged 10–24 in grades 5–12. In 2015, a curriculum for out of school adolescents was developed and plans were made to roll it out by the end of 2016. To ensure the successful implementation of CSE, teacher-training colleges are including it in their curricula. To make it accessible to adolescents, CSE has been integrated into various subjects such as Home Economics, Sciences, Social Studies, and languages (Population Council, United Nations Population Council (UNFPA), Government of Zambia Human Rights Commission, Women and Law in Southern Africa (WLSA), and United Nations in Zambia, 2017)<sup>[21]</sup>. However, little is known about CSE and reproductive health as a whole and its integration in Mathematics, hence the study.

### 1.2 Statement of the problem

CSE is founded on critical thinking, freedom of expression, and modernity (Lindberg, Santelli, & Singh, 2006)<sup>[10]</sup>. CSE empowers adolescents by enabling them to make informed Sexual Reproductive Health (SRH) decisions and choices that will help prevent teenage pregnancy, sexually transmitted infections, and ill health in general (United Nations in Zambia et al, 2017)<sup>[21]</sup>. Although it is believed that CSE empowers adolescents by providing information and knowledge about reproductive health and rights, teachers' perceptions on its integration in Mathematics were not known. Hence this research was conducted to investigate the perceptions of teachers of Mathematics on the integration of comprehensive sexuality education in Mathematics.

### 1.3 Significance of the Study

The findings of the study would help the Government of Zambia especially the Ministry of General Education as well as the teachers in secondary schools to understand the extent

to which CSE is integrated in Mathematics and the challenges and opportunities surrounding the integration of CSE in Mathematics. The inferences drawn from this study would also assist stakeholders in improving the teaching and learning of Mathematics and CSE in secondary schools.

### 1.4 Literature Review

#### 1.4.1 Global Perspective

There has been a strong international commitment to promoting the provision of CSE among young people in schools. These include the Convention on the Rights of the Child, the International Covenant on Economic, Social and Cultural Rights, the Committee on the Elimination of Discrimination against Women (CEDAW), and the Convention on the Rights of Persons with Disabilities The international agreements over the past decades such as the International Conference on Population and Development (ICPD) in 1994, the Fourth World Conference on Women in 1995 and the World Summit on Children in 2002 have extended the scope of the Convention on the Rights of the Child (CRC), by affirming the right of all children and adolescents to receive sexual and reproductive health (SRH) information, education and services in accordance with their specific needs. These policy commitments have also been highlighted in various regional and high-level documents, including the 2005 Protocol to the African Charter on Human and People's Rights on the Rights of Women in Africa (also known as the Maputo Protocol), and the 2008 Latin American Ministerial Declaration articulating a commitment by all countries in that region to provide sexuality education, including the Conference on Population and Development (CPD) 2012/1 Resolution on Adolescents and Youth in New York

In Asia and America, Comprehensive sexuality education has been integrated into the formal school and it is oriented towards personal growth, problem-solving or problem-prevention (Eko et al, 2013)<sup>[7]</sup>. In the United States, the concentration on keeping young people safe has been interpreted into prevention oriented programs. Although these programs may cover a wide range of topics from fertility and reproduction to STIs, from relationships and communication to gender norms, culture and society they are primarily aimed at helping adolescents minimize their risk of adverse outcomes (International Planned Parenthood Federation of America, 2012)<sup>[9]</sup>.

In Botswana, Comprehensive Sexuality Education has been integrated in the school curriculum and according to the international standards (UNESCO, 2015)<sup>[28]</sup>. According to Noorman (2006)<sup>[17]</sup> Botswana had no policy on sex education before 2006. However, he further reports that the issues of sexuality were highlighted in the National Population Policy and discussed under reproductive health. They pointed out the school curricula offer adolescent and sexual reproductive health through guidance and counseling and other school subjects, such as science, also subscribe to the idea of sexual and reproductive health. This point was emphasized by Francoeur and Noonan as quoted by Mimi M, (2009)<sup>[14]</sup>, who reported there is no formal sex education in schools in Botswana and studies show that many parents

are uncomfortable talking about sexuality with their children.

The concept of sex education in Nigerian schools is not a new concept. Adepoju (2005)<sup>[2]</sup> and Abdu (2006)<sup>[1]</sup> postulated that traditional form of sex education and family life education has been in existence where kinship systems, age grade and coming – of – age ceremonies or initiation ceremonies where the youths were tutored about manhood and womanhood. The Federal government of Nigeria through the National Council on Education (NCE) incorporated sexuality education into the national school curriculum in 1999 (Onuwueze and Ekanem, 2009)<sup>[20]</sup>. This became necessary in order to prepare adolescents for their adult roles in line with acceptable societal standard, and to also empower young people to have greater control over their sexuality and reproductive life to their own benefit both socially and economically. It is also a means of safeguarding or protecting the youths against the consequences of sexual ignorance as well as preparing them for responsible life (Njoku, 2008)<sup>[16]</sup>. Omale (2015)<sup>[18]</sup> revealed that sex education was actually part of the school curriculum, and that the teachers actually teach it even though the aspect of contraception and social skills were not taught in the area.

#### 1.4.2 Zambian perspective

In December 2013, Zambia and nineteen other countries in the East and Southern Africa (ESA) region affirmed and endorsed their joint commitment to deliver CSE and SRHR services for young people ‘the East and Southern Africa Commitment on CSE and SRH services for young people’ (UNESCO, 2015)<sup>[28]</sup>. The Ministry of Education in Zambia has been working with other stakeholders to operationalize the process of integrating comprehensive sexuality education curricula for the young people who are in and out of school (Miyanda and Wakunguma, 2014)<sup>[15]</sup>. It is a collaborative effort of the United Nations System and the Ministry of Education as a strategic step to strengthen sexuality education in Zambia’s Education Curriculum (Government Republic of Zambia, 2011)<sup>[8]</sup>.

The government of Zambia is spearheading a major project that aims to strengthen the delivery of CSE to young people from ages 10 to 24, including those living with HIV and with disabilities. By increasing access to high-quality, age-appropriate sexuality education and services, the project ultimately seeks to contribute to improved SRH outcomes for Zambian adolescents and youth (UNESCO, 2015)<sup>[26]</sup>.

Since 2014, a revised curriculum with integrated CSE has been rolled out in Grades 5 to 12 in all schools across the country (UNESCO, 2015)<sup>[28]</sup>. By December 2014, a total of 12,852 in-service teachers had been trained in effective delivery of CSE at classroom level, and a further 25,017 were to be trained by the end of 2015. Teaching and learning materials have also been produced by the Ministry of Education for all grades, and National and Provincial Standards Officers have been trained to monitor the quality and delivery of CSE at school level. Teachers are expected to use the CSE Framework in tandem with the syllabi for their subjects to identify places where CSE can be integrated, and thus develop schemes of work and lesson plans that include CSE components (UNESCO, 2016)<sup>[27]</sup>.

In 2015, the ministry of education took a step forward to try to improve the teaching of sex education by introducing the comprehensive approach (Simalimbu, 2016)<sup>[22]</sup>. Comprehensive sex education approach will not only deal with behaviour change but equip teenagers with values, skills, attitudes and self-efficacy (Ecker & Kirby, 2009)<sup>[6]</sup>. This will help to deal with practical sexual problems teenagers might face and improve on communication with their parents and other stakeholders on sexual related issues (ibid).

Zambia acknowledges that Sexuality Education (SE) is an essential part of any good curriculum and an essential part of a comprehensive response to HIV&AIDS at the national level. Effective CSE can provide young people with age-appropriate, culturally-relevant and scientifically accurate information. It includes structured opportunities for young people to explore their attitudes and values, and practice the decision-making and other life skills they will need to be able to make informed choices about their sexual lives. Teachers also need skills to effectively deliver CSE at school level and must consider their own value-systems and attitudes to avoid undue bias (UNESCO, 2015)<sup>[26]</sup>.

Progress has been made in meeting government obligations to respect, protect, and fulfill the Sexual reproductive Health (SRH) of all people in Zambia. In most thematic areas assessed, statistics show improvements. For example, maternal deaths and HIV prevalence have significantly reduced; knowledge and use of FP services has improved, and post abortion-care services are available (Population Council et al, 2017)<sup>[21]</sup>. Comprehensive Sexuality Education has been introduced in schools and progress is being made to ensure that CSE reaches out-of- school adolescents. National policies have been developed, and progressive laws have been enacted (Ibid). In spite of these achievements, the perceptions of teachers on the integration of CSE in mathematics are not known.

#### 1.4.3 Comparative studies

A study by Scarlett (2010) in Canada revealed that, the rates of teen pregnancies and contraction of STD’s had dropped due to school-based sexuality education. He further stated that teen pregnancy was still a problem in Canada and many other countries, but it was not as bad as it used to be before the introduction of sexuality education. Scarlett indicated that if young people cannot receive accurate information, they will rely on rumours. Another study by Christman (2014)<sup>[4]</sup> in Canada revealed, that in spite of the benefits of CSE, secondary school teachers negatively perceive the state of sexualities education programs. The main reason for this is that there is no real, tangible program to be implemented. Instead, teachers in all subject areas are basically being encouraged to create, teach and assess their own sexualities education programs. A study in Tanzania by Matungwa (2012) demonstrated teachers’ inability to discuss issues relating to sexuality, sex, condom use and family planning and their belief that discussing issues relating to masturbation, condoms, sexual pleasure and homosexuality was counter to community norms, culture and religion. Increasingly, teacher training programmes in the region are now focusing on examining personal attitudes and values in order to improve comfort and confidence as well as the

content and teaching skills required. In Nigeria, many studies have been conducted since the introduction of family life and sex education into the school curriculum to ascertain its acceptability and people's perception of it. Within the area of study, a study conducted by Omale (2011)<sup>[19]</sup> revealed that sex education was actually part of the school curriculum, and that the teachers actually teach it even though the aspect of contraception and social skills were not taught in the area. The study also indicates that the perception of most teachers towards sex education is positive.

This is in line with the study by UNESCO (2016)<sup>[27]</sup> in Zambia which revealed that teachers were particularly supportive, recognizing the need to provide learners with the knowledge, skills, attitudes and values that they will need to protect themselves and make healthy decisions throughout their lifetime. Teachers who had received training on CSE reported that it was relatively easy to integrate CSE in the carrier subjects, for example, Biology, Integrated Sciences, Home Economics, Civic Education and Religious Education, as in many cases the topics were already covered in those subjects. They were extremely positive about being trained in CSE and felt that this had/would facilitate their work.

A study entitled 'Perspectives on Sex Education in Relation to Sexual Health of Teenagers in Zambia' by Simalimbu in 2016 revealed that the current teaching of sex education in most schools in Zambia is the integration of topics of sex education in other subjects like environmental science, biology, religious education, civic education and home economics (Simalimbu, 2016)<sup>[22]</sup>. In this study teachers wanted the subject to have the title of Sex Education and be allocated time on its own so that it addresses the many sexual questions teenagers have (ibid). They said the integration of sex education topics with other subjects would make teachers not to cover all the topics because they would be rushing through, as they have to finish the syllabus before the onset of examinations (ibid). Previous findings on a similar question in some Zambian schools done by Bwalya (2012)<sup>[3]</sup> also found corresponding responses from teachers and head teachers from a number of schools. Some of the findings were that most of the subjects in which sex education was integrated except for environmental science were not compulsory to all pupils. Time allocated for each subject was limited to cover the necessary information so at times teachers tend to leave out the sexuality part, as no questions from that part might be included in the examinations.

## 2. Research Methodology

### 2.1 Research design

A case study design was used in this research because it allows the exploration and understanding of complex issues.

### 2.2 Target population

The target population included all secondary school teachers, guidance teachers, head of departments for Mathematics, education standards officers, resource centre

coordinators and the Zambian Association of Mathematics Educators (ZAME) district representatives.

### 2.3 Sample Size

The sample size was sixty (60) in total and the breakdown of the respondents were as follows; the number of secondary school teachers of Mathematics were thirty five (35), and the number of school guidance teachers were ten (10), the number of heads of Mathematics departments were ten (10), one education standards officer (1), two (2) district resource centre coordinators and two (2) ZAME representatives in Kitwe.

### 2.4 Sampling techniques

Random and purposive sampling methods were used to help target a group which was suitable to bring out rich data related to the central issue being studied for in-depth analysis. Simple random sampling technique was used to select ten secondary schools and come up with the sample of thirty five teachers of Mathematics in the selected schools whilst purposive sampling technique was used to come up with the sample of ten guidance teachers, ten heads of Mathematics departments, one education standards officer, two district resource centre coordinators and two ZAME representatives in Kitwe.

### 2.5 Instruments for data collection

The questionnaires and interview guides were used to collect data that was needed for the study.

### 2.6 Data analysis techniques

Data which was collected was analyzed using both quantitative and qualitative methods. Qualitative data was analyzed thematically using content analysis, as themes and sub themes emerged from the data that was collected. Quantitative data was analyzed excel to obtain descriptive statistics such as frequencies and percentages.

## 3. Findings and Discussion

The study sought to establish the following study objectives; to establish the extent to which CSE is integrated in Mathematics, to explore the challenges and opportunities of integrating CSE in Mathematics and to assess the perceptions of teachers on the integration of CSE in Mathematics.

### 3.1 The extent of CSE integration in Mathematics

The results of the study showed that all the sixty (60) sampled respondents representing 100% of the respondents mentioned that not all CSE topics are integrated in Mathematics. This illustrates that teachers of Mathematics are also integrating CSE in their respective classes.

**Table 1:** Integration of CSE topics in Mathematics

Responses	Frequency	Percentage
All CSE topics	0	0
Not all CSE topics	60	100

Source: Field Data, 2018

Since Comprehensive Sexuality Education is one of the cross-cutting issues that can be approached in diverse ways, in many compulsory and optional subjects of the school curriculum. The study found out that all the sampled senior secondary school teachers and heads of Mathematics departments were integrating Comprehensive Sexuality Education into their classes. It was further established that 100% of the aforementioned did not integrate all the CSE topics in Mathematics. The CSE topics integrated in Mathematics varied from one respondent to another depending on the Mathematics topics and grades they were handling. In addition, the study found out that teachers of Mathematics mostly integrated four (4) representing 66.7% of the six (6) CSE topics covered by the CSE framework in Zambia. These topics included; relationships; values, attitudes and skills; sexual and reproductive health and culture; society and human rights. The study further revealed that CSE was mostly integrated into eight (8) topics representing 26.7% of the thirty (30) senior secondary school Mathematics topics. However some respondents mentioned that, despite integrating sexuality and reproductive health in some Mathematics lessons, issues concerning pregnancy prevention were not integrated.

### 3.1.1 The integration of CSE in Mathematics at grade ten level

The sampled teachers who were handling grade ten (10) classes indicated that CSE was mainly integrated into only two (2) topics which included sets and similarity and congruency. One teacher mentioned that it was easy to integrate families and relationships when introducing sets to the learners. The teacher further gave an illustration on how the integration of attributes of a health family relationship was done when introducing the lesson on the intersection of sets

### 3.1.2 The integration of CSE in Mathematics at grade eleven level

The study findings pointed out that at grade eleven (11) CSE was mostly integrated into five (5) topics which included; approximations, sequences and series, relations and functions, probability and statistics. Some HODs gave examples on how CSE was integrated in some of the above

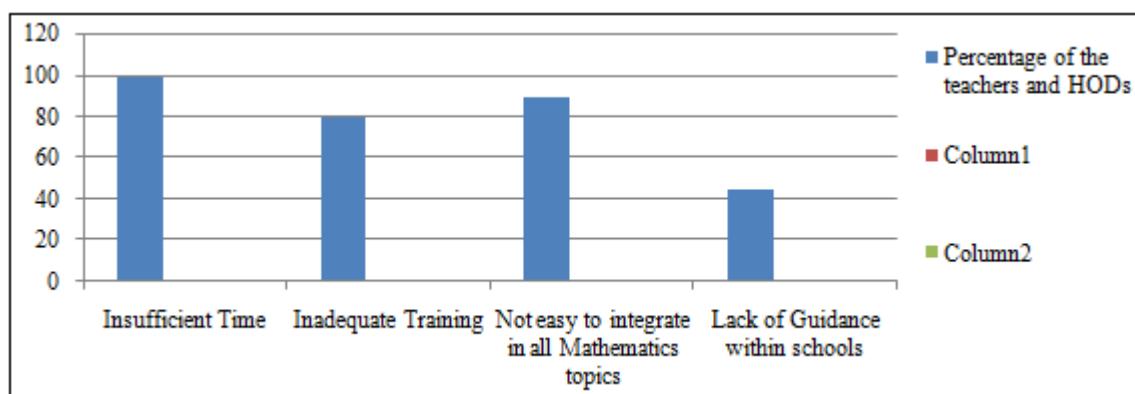
mentioned topics. One of the examples given was on how decision making which falls under values, attitudes and skills was integrated when teaching sequences and series. According to the findings, this was mainly done by reasoning with pupils on how in decision making a person would expect either positive possible outcomes or negative possible outcomes. It was further revealed that friendship and relationship was integrated in relations and functions, tolerance in approximations and HIV/AIDS related issues in probability and statistics.

### 3.1.3 The integration of CSE in Mathematics at grade twelve level

Regarding the integration of CSE in Mathematics at grade twelve (12), the study revealed that the integration was mainly done in linear programming. However, examples on how this was done were not given by most respondents who mentioned that they integrate CSE in linear programming. This finding brings the question to whether or not the sampled grade twelve (12) teachers integrated CSE in their lessons as all of them could not give an example of how this was done. This finding clearly indicates that not much was done in the face of CSE integration in Mathematics to the grade twelve (12) learners and may be against the theoretical framework of this study which holds that, individuals are accountable for fulfilling their civic duty; the actions of an individual must benefit the whole of society. In the same vein, despite some respondents indicating that they integrated culture, society and human rights in Mathematics, no respondent gave an example of how the integration was done

### 3.2 Challenges of integrating CSE in Mathematics

According to the findings, all the stated participants representing 100% mentioned insufficient time as one of the challenges of integrating CSE in Mathematics while 80% of the stated respondents mentioned inadequate training as another challenge. The findings further revealed that 90% of the aforementioned indicated that it was not easy to integrate CSE in all topics in Mathematics and 45% mentioned the lack of guidance within schools.



**Figure 1:** Challenges teachers and HODs faced when integrating CSE in Mathematics  
Source: Field Data, 2018

#### 3.2.1 Insufficient time

The study revealed that all the sampled teachers and HODs mentioned insufficient time as one of the challenges of

integrating CSE in Mathematics. According to Harn, Thompson and Roberts (2008) the amount of time learners are actively and successfully engaged in essential academic

skills contributes significantly to achievement. However some stated respondents indicated that integrating CSE into an eighty (80) minute lesson was a challenge. Despite the Ministry of General Education policy for all teachers to integrate CSE into their classes because sexuality is a cross-cutting topic that can be approached by different ways in many compulsory subjects of the school curriculum, there is no change in instructional time allocated to Mathematics to accommodate effective integration of CSE. One of the stated respondents mentioned that, the instructional time for Mathematics has been reduced to two hundred forty (240) minutes per week in the new curriculum from two hundred eighty (280) minutes because of the increase in the number of subjects and that it was difficult to incorporate more CSE issues in the lessons considering the fact that it was not examined. Another respondent indicated that the eighty (80) minutes was not adequate to teach the learners more about CSE, it was further established that the integration was mainly done when introducing the lessons to avoid wasting more time on CSE than the examinable Mathematics. These findings are similar to Mchunu (2007)<sup>[11]</sup> who found out that there was no time allocated on the timetable for sexuality education. He further found out that sexuality remained closeted and educators claimed that they wanted to finish the syllabus for the entire examination-oriented subjects.

### 3.2.2 Inadequate training

According to the findings of the study, 80% of the teachers and HODs pointed out that were not adequately trained to integrate CSE in Mathematics. It was established that most of the sampled respondents agreed to the fact that they received some CSE training during a one day ZAME district workshop but were quick to mention that the training was not adequate to prepare them in delivering and integrating CSE. These findings are in line with the findings of UNESCO (2015)<sup>[28]</sup> that teachers in some countries were not adequately prepared to deal with every aspect of Sexuality Education in the classroom. Training of educators for any curriculum reform is essential if it is to have an affirmative result. Successful CSE integration requires highly skilled and motivated teachers. Hence adequate training of teachers is vital in the delivery of school-based CSE. However there were concerns that some teachers shunned CPD meetings where CSE issues were mostly discussed and this could be one of the reasons why they claimed not to be adequately trained. All the sampled guidance teachers also mentioned that some teachers were trained on how to integrate CSE in their classes but could not tell whether the training was adequate or not. One guidance teacher pointed that there were still teachers of Mathematics who failed to integrate CSE into their classes.

### 3.2.3 Difficulties in integrating CSE in all Mathematics topics

The study established that 90% of the respondents stated that it was not easy to integrate CSE in all Mathematics topics at senior secondary school level. Mathematics aims at developing clear mathematical thinking and expression in a learner and also develop ability to recognize problem and to solve them with related mathematical knowledge and skills. In this vein, some of the teachers mentioned that it was not easy integrating CSE in topics such as earth geometry, trigonometry and cubic functions among others because of

the nature of these topics. Mathematics is a compulsory subject that often brings difficulties to most learners as it can be seen from their low performance. One HOD mentioned that earth geometry can easily be linked to the environment but integrating CSE in earth geometry could perhaps just confuse the learners.

### 3.2.4 Lack of guidance within schools

The study found out that 45% of the respondents mentioned lack of guidance within schools as another challenge of integrating CSE in Mathematics. However, there were some concerns that some supervisors did not give guidance on how to go about the CSE integration. One teacher indicated that despite being trained on how to integrate CSE through conferences and CPD meetings, there was no emphasis on its importance and adequate monitoring from their supervisors. These findings are similar to the findings of Christman (2014)<sup>[4]</sup> who found out that, educators were being asked to integrate CSE in their classes but did this without support or guidance from their school boards and sometimes even their administration. Their idea of lack of guidance may be questionable as all the sampled Guidance and Counseling teachers agreed to the fact that enough guidance was given to teachers on how to integrate CSE and the importance of doing so. One of the roles of guidance and counseling teachers is to educate teachers, non-academic staff and parents to be sensitive to the developmental needs of the students at school and home environment. In the same vein, it was established that some schools even held workshops locally to discuss on how best teachers from different departments can integrate CSE. At one named secondary school, the teachers indicated that, CSE topics were shared among departments depending on the compulsory subjects offered to enhance effective implementation and integration.

### 3.3 Opportunities of integrating CSE in Mathematics

**Table 2:** Opportunities of integrating CSE in Mathematics

Response	Percentage
Opportunities	90
No opportunities	10

**Source:** Field Data, 2018

The study revealed that 90% of the respondents agreed that there are opportunities of integrating CSE in Mathematics while 10% of the respondents stated that there are no opportunities of integrating CSE in Mathematics. The opportunities mentioned included; relating Mathematics to real life, enhancement of learners' positive attitudes towards mathematics and improved communication with learners.

From the findings of the study, that 90% of the respondents agreed that there were opportunities of integrating CSE in Mathematics. Some of the opportunities mentioned included; relating Mathematics to real life, enhanced positive attitude towards Mathematics learning and Improved communication with learners.

### 3.3.1 Relating Mathematics to real life

Ability to relate mathematics to real life is one of the goals of school Mathematics curricula in Zambia ("O" Level Mathematics Syllabus, 2013). Mathematics is very important

not only in science and technology that is vital for the development of the country but also in everyday life. The study findings indicated that one of the opportunities of integrating CSE in Mathematics were that it helps relate Mathematics to real life. Some respondents mentioned that CSE provided the teachers with a chance of making Mathematics meaningful to the learners by incorporating CSE issues in it. Making mathematics a part of learners' life experience enables them to easily understand, recall and make critical sense of the world in which they live. These findings agree with Cofre, Macedo, Braga, Moreira, Souza, Rodrigues, Nascimento, Vieira and dos Santos (2018)<sup>[5]</sup>, who found out that, the schoolchildren who have received sex education in the math context recall more about sexually transmitted diseases (STDs) and claim to be better acquainted with prevention methods. Integrating CSE in Mathematics also enables learners to be aware of the importance of Mathematics in everyday life.

### 3.3.2 Enhances positive attitude towards Mathematics

It was established from the findings of the study that, enhancing the positive attitude of the learners towards Mathematics was one of the opportunities that the integration of CSE offered. Attitude towards mathematics plays a crucial role in the teaching and learning processes of mathematics. The way that mathematics is presented in the classroom affects learners' attitude towards the subject. The integration of CSE was considered as one of the ways of helping learners develop a positive attitude towards Mathematics which is mainly seen as a stumbling block in school by many. According to Sharooq and Shaah (2016), positive attitude towards mathematics lead students towards success in mathematics also influences the participation rate of learners. The attitude of the student contributes a lot towards their achievement and perception about mathematics. Some respondents mentioned that positive attitude of the learners towards Mathematics enhanced their learning and understanding as most enjoyed the subject.

### 3.3.3 Improved communication with learners

The study also found out that, integrating CSE in Mathematics provided an opportunity for teachers to improve Mathematical communication with the learners. According to Serio (n.d) Communication in and about mathematics serves many functions. These include among others; to enhance understanding, establish some shared understandings, empower students as learners, and promote a comfortable learning environment. Mathematical communication is an indispensable process for learning mathematics because through communication, students reflect upon, clarify and expand their ideas and understanding of mathematical concepts. In this vein, one teacher indicated that integrating CSE in Mathematic facilitated communication by providing a point for talk that enhanced mathematical thinking. These findings also confirm the findings of Small (2013)<sup>[23]</sup> who found out that, communication plays a critical role in facilitating students' understandings and providing teachers with multiple opportunities to assess students' abilities in order to further guide mathematics instructions so that it is in line with the students' current understandings of the concepts being taught. To promote mathematical communication in the classroom, the teacher is expected to encourage students'

interest and to have the ability to enrich their mutual interactions.

### 3.4 Perceptions of teachers on the integration of CSE in Mathematics

The perceptions of teachers towards integrating Comprehensive Sexuality Education in Mathematics were assessed by asking what they thought about the Ministry of General Education policy which states that all teachers should integrate CSE into each of their classes and if agreed or not to the necessity of integrating comprehensive sexuality education (CSE) in Mathematics.

It was established from the findings of the study that the majority of respondents representing 90% were in support of the CSE policy. This clearly shows that the majority of the respondents were in support of the policy which is one of the indicators of the positive perception of most participants towards CSE integration in Mathematics.

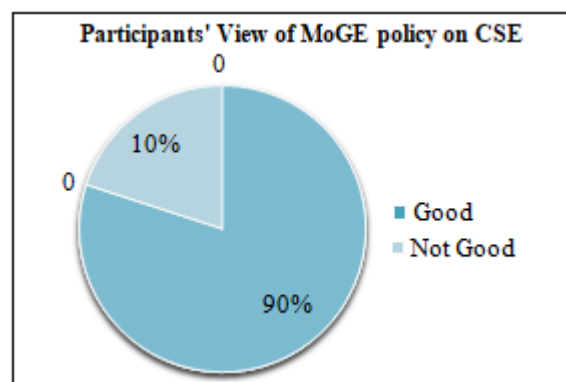


Figure 2: Participants' Views on the CSE policy

Source: Field Data, 2018

The study further revealed that 86.7% of the sampled teachers of Mathematics and HODs agreed that it was necessary to integrate CSE in Mathematics. These findings clearly show that the majority of respondents had a positive perception towards the integration of CSE in Mathematics. Despite the positive perception from a good number of respondents, it was established that some key issues such as pregnancy prevention were not integrated in Mathematics which may imply that teachers' perceptions were not positive on the integration of certain CSE topics. These findings are similar to the findings of Kasonde (2013) that general knowledge of key sexuality issues was high among respondents even though some had incorrect attitude and their perception of sexuality education was in some cases not positive with regards to some key sexuality issues. The integration of CSE in Mathematics is viewed as significant because secondary schools are where most learners have reached in the adolescent stage, and it is important for teachers to understand that they have a responsibility to make a difference in the lives of students and thus contribute to society.

## 4. Conclusion and Recommendations

### 4.1 Conclusion

Based on the findings, the study concludes that, CSE is mostly integrated into eight (8) topics representing 26.7% of the thirty (30) senior secondary school Mathematics topics. The study revealed that about four representing 66.7% of the six (6) CSE topics covered by the CSE framework are integrated in Mathematics lessons. These topics include relationships; values, attitudes and skills; sexual and reproductive health and culture, society and human rights.

On the other hand, the study revealed that teachers face some challenges when integrating CSE in Mathematics. These include; insufficient time, inadequate training, difficulties in integrating CSE in all Mathematics topics and lack of guidance within schools. The study established that the instructional time for Mathematics was insufficient to allow teachers integrate adequate CSE issues in the lessons. In the same vein, most teachers claimed that they were not adequately trained to integrate on how to integrate CSE in Mathematics. Despite the challenges, the study also concludes that the integration of CSE in Mathematics provide teachers with some opportunities. Some of the opportunities mentioned included; relating Mathematics to real life, enhanced Mathematics learning and Improved communication with learners.

The study further concludes that that the majority of teachers have a positive perception towards the integration of CSE in Mathematics. The study revealed that all the sampled senior secondary school teachers and heads of Mathematics departments were integrating Comprehensive Sexuality Education. However, key issues such as pregnancy prevention among others were not integrated in the subject for various reasons. The CSE topics integrated in Mathematics varied from one teacher to another depending on the Mathematics topics and grades.

### 4.2 Recommendations

For the integration of CSE in Mathematics to be a success, the study recommends the following:

- 4.2.1 The government may consider clearly specifying what CSE topics to be integrated in Mathematics at senior secondary school level, as some of the topics are already incorporated in subjects such as; Biology, Civic Education, Religious Education and Home Economics.
- 4.2.2 The government through the Ministry of general education may consider training the in-service teachers adequately concerning the integration of CSE into their classes.
- 4.2.3 School managements may consider providing teachers with support and guidance to effectively implement the policy

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