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An investigation into the effects of gender stereotyping on academic performance of chemistry students in ordinary level.

BY

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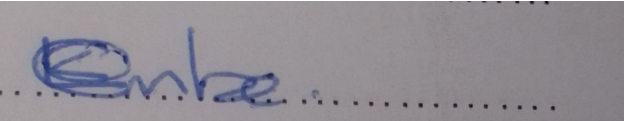
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Acknowledgement

First and foremost, I offer my thanks to the Almighty Jehovah for the guidance given to me throughout the whole process.

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DEDICATION

The research is dedicated to all my sons, family members and friends who gave me the support and courage throughout this research project. I also dedicate this work to my work mates for the support rendered to this dissertation.

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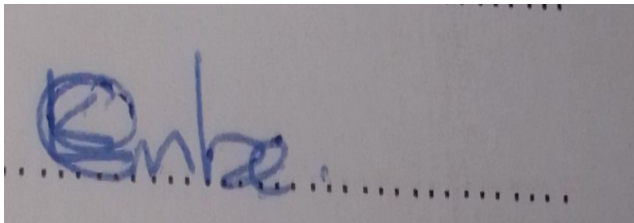
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Release form

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Date: 16/07/2024

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This dissertation is suitable for submission to the Faculty. This dissertation should be checked for conformity guidelines.

Mr Manyeredzi

Signed P.P.  _____

Date : 16/10/2024

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ABSTRACT

By studying gender stereotyping, it was noted that Chemistry was dominated by males, female students came to school late whilst doing household chores and to some extent of being absent. The study findings revealed that gender stereotyping led to poor performance of female students in Chemistry as the subject was considered to be dominated by males. This motivated this study to be carried out on the investigation into the effects of gender stereotyping on academic performance of chemistry students in Guruve district. The major themes were derived from the research questions on the causes, effects as well as mitigation ways to overcome gender stereotyping in academic achievements of female students in Chemistry. The qualitative data collection method was employed that provided detailed insights into people's experiences and behaviours on gender stereotyping. Being participant-centred, the population of 40 students and 5 teachers were randomly selected using stratas. The study administered questionnaires both for teachers and students. Data was presented using tables and graphs. The study descriptive findings from the questionnaires indicated that cultural beliefs was the major cause of gender stereotyping accompanied by gender roles and religious beliefs. In data analyses, the main effects of gender stereotyping were found to be poor performance of female students in Chemistry. Gender stereotyping also led to school dropouts and low enrolment due to discrimination faced by female

learners in terms of fees payment and moral support from the parents, teachers and peers. Furthermore the main effect of gender stereotyping was poor performance of students in Chemistry at ordinary level. Strategies brought forward to overcome gender stereotyping were awareness campaigns to the parents, teachers and learner. Exposure and career guidance would boost moral for the students in the subject area. It was recommended that the other studies would focus on the effective way to overcome gender stereotyping on academic performance of students in Chemistry.

CHAPTER ONE

1.1 Introduction

The study aimed at investigating effects of gender stereotyping on the academic performance of secondary school chemistry students in two selected schools in Guruve district and how these gender roles affect academic performance. The effects were outlined through the background of the study, statement of the problem, significance of the study, research questions, chapters' layout and summary. The study comprises of five chapters. The background of the study explained the necessity of the research.

1.2 Background

Females should take care of the households, while males go out to work and become the breadwinners and females are emotional but males are rational. All of these practices were common gender stereotyping. According to Wrigley-Asante (2023) gender stereotyping is a widely belief or generalization about the behaviors and characteristics attributed to males and females. Morawska et al (2021) further concurred that gender stereotypes emanate from the long-standing role assignments of different genders in specific fields and the comparison between these assignments and the induction of the typical performance of men and women produce gender stereotyping. After being employed in Guruve district, most of the female students came to school late and experienced a lot absenteeism. Guruve is one of the eight districts in Mashonaland Central province in Zimbabwe. The main drivers of the economic activities are agro-farming where maize,

tobacco and beans are grown. Most of the men and young boys embark on informal gold panning. The geography of the area is mountainous such that there is need to watch for problem animals like baboons and monkeys. When this need arises mostly the girl child did not attend schooling, but the boys did attend. For the map of Guruve district refer to Figure 1 on appendices.

Gender stereotypes are pervasive in most societies. According to the World Bank (2022) most of African countries are believed to be mostly patriarchal societies where parents give first preference and attention to males in educational matters compared to females. The girl child was encouraged to perform household chores as they become adolescents. Wrigley-Asante (2023) further postulated that the household chores prepare students into maternity rather than educational practitioners as they copy what their mothers do at home and these attitudes and behaviors are generally learned first at home then are reinforced by peers, school experiences and the media. Xilin (2023) posits that the strongest influence of gender stereotypes occurs in the family setting where parents pass on both overtly and covertly to their children, their own beliefs about gender. The World Bank (2022) concurred that the boy child is viewed with high value mostly in rural households. In developing countries first preference in education is given to boys due to cultural socialization of the roles of the breadwinners when they become fathers.

Gender roles are socially constructed attributes that can be accepted by people in a given society. According to Wringey-Asante (2023) , the social learning theory observed that gender stereotypes are socially constructed beliefs that influence how students perform in the educational setting. In this review, it can be explored that the various causes of stereotype, the mechanisms underlying stereotype effects (both mediators and moderators) are the societal influences. According to Frimpong (2023), the present days, the risks of stereotype continue to spread as the way of sending a message to the mass community become easier through the help of advanced technology. And despite the modernization, which happens in the span of time, there were still the beliefs that never die.

Nonetheless, the literature indicates that educational attainment by girls is low. The government of Zimbabwe has made great strides since attaining independence in 1980 to ensure that all forms of gender inequality are eradicated in the country, including in the classroom when education for all was declared. The government had signatory to a wide range of conventions and declarations to ensure gender equality in schools and in the society at large. Some of the declarations,

conventions and policies ratified by their government of Zimbabwe include 1992 Gender Affirmative Action Policy, the 1999 Nziramasanga Commission of Enquiry into Education and Training, the National Gender Policy of 2004 and 2013. However, the Nziramasanga Commission noted that gender disparities are still evident across all education levels (Government of Zimbabwe, 1999). According to Government of Zimbabwe (2023), the Competence-Based curriculum of 2015-2022 also advocates for gender equality in school environment so as to stop gender stereotyping. Despite for all the steps taken by the government of Zimbabwe and other stakeholders to address gender inequalities, the reality falls far short of targets as gender stereotyping still exist in schools and there is evidenced by statistical data below:

ZIMSEC (2024) argued that the pass rates for students who sat for 2023 examination, the pass rate decreased by 0,2 percent compared to 2022 results. School candidates who wrote five or more subjects in 2023 were 163 533 and 49 373 obtained C grade or B in 5 or more subjects yielding 30.19% as compared to that of 2022 where 162 813 sat for the examination and 49 501 passed. It resulted in 30.40%, which was higher than the 2023 results. ZIMSEC (2024) concurred that in 2023, 141 698 female students wrote Ordinary level and 29 094 were successful yielding 30.01%. In 2022, 86 018 sat for the examination only 21 645 passed. This was different to males where 88 088 wrote and the percentage pass rate was 29.06%. ZIMSEC results were a sign that females in some district are performing better than those in secondary schools in Guruve. Zimstat population (2022) revealed that the population of Zimbabwe comprises of 48% males and females constituting 52%, but still women lag behind across key sectors in the country. From the above population, the result analysis of O-level chemistry students was as follows, shown on Figure 2 on appendices. The graph clearly showed that there was a challenge on the performance of the female students regardless of their population. It signified that there was a decrease on the percentage pass rate of both boys and girls in the district.

As observed by studies, gender is related with how individuals perceive themselves in such a way that most people of the same sex identify themselves with certain attributes. It is a common belief that students perceive each gender to have normative traits that equate to certain levels of success in school; the prolonged reproduction of these set of standards form gender stereotype. Mostly members of a stigmatized group find themselves in a situation where negative stereotypes provide a possible framework for interpreting their behavior, the risk of being judged in light of those

stereotypes can elicit a disruptive state that undermines performance and aspirations in that domain.

1.3 Statement of the problem

After being employed in Guruve district, it was noted that there was low pass rate in the selected schools. In the Zimbabwean context, Chemistry is an important subject and it is required in science, technology, Mathematics and Engineering (STEM) that is needed in most careers in the education system and industrial systems. Surprisingly the academic performance of females were below the expectations as compared to its population which is higher than that of the males. Lack of participation precisely in Chemistry sciences remains to be a threat in the country's economic systems since female students fails to proceed with the subject as from form three to four. It was discovered that absenteeism of girl's child is very high in the selected secondary schools. Females were doing house hold chores in preparation of maternity. Few females proceed to ordinary level due to school dropouts and early marriages. The science curriculum split form three students into Physics, Chemistry and Biology social sciences, only few or none of the female students opted for Chemistry. It was observed that the choice of Chemistry was dominated by males.

Although Chemistry was poorly performed, generally male students dominated as compared to female students. Important positions both at home and school were given to boys to empower them to work hard in everything they do. Boys for instance at school, if they are vice heads, mostly they were tasked to make important decisions in the presence of the head girl. The studies were done in different areas of the country.

Various empirical studies have been conducted into the effects of gender stereotyping in Masvingo urban schools with different cultures mixed up in the area. The study identified the gender related barriers to access, participation and completion of programs by females. These studies have consistently found out that gender stereotyping was contributing to the academic performance of students in chemistry. The study was carried out in an urban and multicultural district, so the results may not suit Guruve district which is a rural set-up with Korekore dialect only. There is need for further studies. Although much effort had been put in place to counter gender stereotyping, including advocating for gender equality by government and Non-governmental organizations, but still gender discrepancy in chemistry academic achievements perseveres. This therefore shows

that exhaustively tackling on the factual problem of effects of gender stereotyping on academic performance in chemistry has not been made, there also seems to be a few researches that have been done in Guruve district. Due to this gap, further probing on effects of gender on students' academic performance in chemistry is needed.

1.4 Research questions

The study was guided by the following main and sub- questions:

1.4.1 Main research question

- What are the effects of gender stereotyping in the academic performance of students in chemistry Ordinary level?

1.4.2 Sub-research questions

- What are the causes of gender stereotyping in secondary schools?
- What support can be put in place to overcome the effects of gender stereotyping?

1.5 Significance of the study

The significance of the research focused on the following groups:

1.5.1 The policy makers

Understanding the effects of gender stereotyping is crucial in the improvement of quality education in Guruve district. The findings of the study will one way or the other benefit the policy makers. The policy makers will use the findings of the research when redesigning the curriculum to incorporate non- gender stereotyping staff to enhance academic performance of students.

1.5.2 The teachers

The study will increase an awareness of gender stereotyping in secondary schools that are associated with academic performance in chemistry. The implementers or teachers on other hand may be sensitized on eliminating gender disparity in performance by embracing suggested approaches to improve students' academic performance in chemistry. Staff development workshops may be organized at cluster or district level to disseminate the information obtained

from this study to empower educators. This will therefore help them improve their teaching methods and in a way, the whole district's performance may improve due to the use of the nullifying solutions to stereotyping.

1.5.3 The parents

The parents, after these findings, will know the effects of gender stereotyping that emanate from home. As a result proper approach to their children will be put in place in the near future. The community at large will also try to lessen these gender stereotyping effects by incorporating all learners. In brief the causes, effects and solutions of gender stereotyping will be identified for each priority area.

1.5.4 The learners

The learners will benefit from the findings of this study through the use of proper language that motivates their colleagues thereby improving academic standards. Thus both boys and girls will tackle all challenges regardless of their gender. Also learning will be interesting to both sex. It is hoped that the findings of this study will help the other studies in the near future episodes.

1.6 Delimitation

The respondents involved in the study were drawn from public secondary schools since they were the majority of the most established schools within the district. A few private schools which are established offer varied curriculum including Cambridge which is not tandem with Zimbabwean curriculum being offered in the public secondary schools. Despite the fact that there may be poor performance in other science subjects, this study only investigated the effects of gender stereotyping in academic performance in chemistry students in public secondary schools in Guruve district.

1.7 Organisation of the study

Chapter one puts the problem and its setting was put into context; chapter two outlines the literature review that forms the lens through which the study will be observed. In addition, the gaps to be filled by this study will be identified; chapter 3 outlines the strategy through which data for this study will be generated, analysed, and discussed; chapter 4 explores the generated data through

analysis, and discussion with the view to provide answers to sub-questions raised in chapter one and chapter 5 gives an overview **of the study conclusion and recommendations.**

1.8 Summary

This chapter had provided the background to the study and thus putting the research problem into context. The main research questions have been articulated. Statement of the problem, significance of the problem and chapter layout had been discussed. Finally this chapter has identified the research gap that will be clarified further through literature review that was reviewed in the next chapter two.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The study focused on the effects of gender stereotypes in the academic performance of secondary schools students. It highlights similar works carried out by other studies elsewhere on effects of gender stereotyping in chemistry. The chapter was accordingly organized along these main concepts: gender stereotypes in chemistry academic performance, causes of gender stereotypes, agents of gender stereotyping, suggestions to nullify gender stereotypes and summary of the chapter.

2.2. Gender stereotyping on academic performance

The widening gap in gender differences can be viewed to have taken its roots from home. In the study carried out by Wrigley-Asante et al (2023) discovered that gender stereotyping was the generalisation and preconceived notions about the roles, behaviours and abilities of individuals based on gender. These social context shape people's attitudes on gender (Morawska et al, 2021). According to Machibaya and Ndamba (2023) gender stereotypes are inculcated in social settings, usually from early age and essentially through parental attitudes. Morawska et al (2021) concurred that as children grow up, they are socialised into gender norms, expectations and associated behaviours that surround them, drawing from schools religious institutions and media representations of gender.

In different institutions gender stereotyping can be shown by the number of females or males in leadership. Tremmel and Wahl (2023) carried a study on leadership gender stereotyping, through online survey and noted that in 2020, women only held 20% senior management positions and with hierarchical positions organisations women's representation decreased. Tremmel and Wahl (2023) further posits that characteristics of successful leaders resemble on masculine characteristics explaining the difficulties of women in reaching leadership positions. According to Charlesworth and Banaji (2022) and Machibaya and Ndamba (2023) it is easier for men to move up company's hierarchies to leadership positions whereas women face a glass ceiling that is hard to break through. Furthermore Tremmel and Wahl (2023) concurred that promotions are given to women when only they have higher performance ratings than men and standards for promotion are held more strictly for women than men. These evaluations are regarded as gender stereotyping among decision makers. These misfits of stereotypical feminine behaviours to leadership

characteristics led to negative behaviour towards female leaders (Raj, 2023). The results of the study signified that stereotype still prevail, thus leaving the gaps for the present study.

Gender stereotyping varies depending on the economy of the country, interms of being developed or developing. Recent evidence showed that in countries like Germany, Spain and United Kingdom in Europe the male and female performance in social sciences like chemistry had no significance differences mostly in urban areas (Zhao 2023). Thus indicated that women living in urban areas expressed more egalitarian attitudes than their peers living in rural areas (Xilin, 2023).

The level and age of learners in the academic performance of students matters as they climb the ladder from form two to three. Based on the Philippine findings by Gicana and Daradar (2023) it has been documented that gender stereotyping inside' the classroom affects the academic achievements of senior school students as they climb the ladder, but when they were young could fully participate. Irungu et al (2019) stated that the level of gender stereotype of males significantly differs from that of females because males know what they are expected to do by the society, so they work very hard. It was discovered that the female at senior secondary schools have low self esteem (Oladejo, 2021). This study is going to look at the effects of gender stereotyping which was not covered by the above studies.

Blair and Posmanick (2023) are of the view that the evidence clearly demonstrated that the gap between man and woman in the science subject was not due to differences in brain structure but was due to external influence. Wicker and Cunningham (2023) found out that success in science related subjects might conflict with girls gender identity, misled them to believe that Science, Technology, Engineering and Mathematics (STEM) were all masculine not feminity.

The masculinity and feminity in the education systems for both males and females may be different. Wringey-Asante (2023) argued that traits linked to or contrasted with masculinity and feminity can have a positive or negative impact on academic performance of both sex. One example of the studies has found that masculine stereotypes portray boys as dominant, competitive and active whilst girls are portrayed as conciliatory (Morawska et al, 2021). This attitude is most likely to give incentives to males to highly perform better knowing that they have an edge over females (Zhao, 2023). On another note females would comply to the gender stereotype and fail to

bridge the gap set by males as they become incompetent (Xilin, 2023). According to Wringey-Asante et al (2023) another stereotyped gender identity is that males have natural intelligence than females showing that females has to work hard in learning than males, of which females opt not to attack challenging social sciences like chemistry. These stereotypical gender identity identities if accepted and reinforced, can negatively affect the school performance of both gender (Oladejo, 2021).

The study on science, technology, engineering and mathematics (STEM) were described as manly. Charlesworth and Banaji (2022) suggested that the involvement of male students in sciences confirmed that males are superior and these views reinforce the idea of pertaining sciences as manly subjects. The research was focused on higher institutions on STEM so there are still some controversial gaps that exist in secondary schools paving way for the present study. In the study carried out in Nigeria on gender differences in students' performance in chemistry, it was noted that there was a problem in enrolling students into chemistry subject at secondary schools especially form 3 and 4, (Oladejo et al, 2021). The study further concurred that the academic performance in chemistry comes from cultural stereotyping, lack of role models in the field and social cultural factors. According to Chauke (2022) suggests that the widening gap in gender difference originated from the primary socialisation, the home where perception and expectations of the society about gender roles are instilled. For instance, wein most Nigerian homes, technical activities were reserved for boys especially in cleaning cars, cutting grass, fixing the bulbs whilst house hold chores like washing the plates, cleaning the house and cooking were meant for the girls, (Oladejo, 2021).

2.3 Causes of gender stereotyping in the academic performance

In some instances gender stereotyping can practised unknowingly. According to Sibanda (2023) gender stereotypes originate from the local culture and traditions of each community or society. These are socially accepted by a certain group of people and they choose to inherit those attitudes and behaviours from one generation to another (Machibaya, 2023). Students learn what they are expected to comply to the local culture as females and males from their families, friends, mass media, teachers and educational instruments like the school.

2.3.1 Mass media

The role played by the media in information dissemination has rampantly increased due to available technology. Recent evidence indicates that media promote the world of experience and the public understands the world through the knowledge and images constructed by the media, (Zhao, 2023). Nowadays mass media were the fastest medium for human information dissemination and it affects people through public opinion. According to Rajay et al (2023) some media through WhatsApp, facebook, twitter, tik tok and or the Internet convey gender stereotypes messages or videos that also subtly affect students cognition and views on the definition of their own nature . For example when real man are advertised , should show gender role difference as a result affects choice of subjects especially chemistry (Priyashantha, 2023).

2.3.2 Religious beliefs

Stereotypes about gender are pervasive in most societies, (Wicker and Cunningham 2023). According to Chauke(2022) these views tend to rigidly define the innate capabilities and attitudes of each sex and social roles that are deemed appropriate for men and women within that society. Tremmel and Wahl (2023) in the study on leadership argued that gender stereotyping influences the actual choices and outcomes of individuals, such beliefs may in large part contribute to gender-achievement gaps as well as the underrepresentation of women in top executive positions, STEM careers, and in leadership.

2.3.4 Teachers

Among many agents of socialisation, the school has become the most agency due to its accommodation of subcultures. Oladejo et al (2021) were of the view that among all the socialising agents, the school has capacity to accommodate and refine multi-cultures of the society. In addition to their families, students now has the ability to interact with their peers in a more structured environment and perhaps more significantly with another adult, the teacher (Tremmel and Wahl, 2023). Charlesworth and Banaji (2022) are of the view that teachers' views towards gender roles may affect students' attitudes, behaviours and outcomes both directly and indirectly. First, a teacher's beliefs may influence students' achievement outcomes by influencing students' own

beliefs for instance the teacher may express his/her views towards a certain subject like chemistry is for males (Wrigley-Asante et al, 2023).

The hidden curriculum has a role to play in the academic performance of chemistry students. Oladejo et al (2021) argued that in the teaching and learning process, mostly students have the tendency of adopting and internalising gender stereotypes from their role models, teachers due to the fact that they are significant authority figures. In gender- sensitive pedagogy teaching, the relationship between educators and students is weakened when they always speak in an unpleasant, harsh or threatening manner towards different gender orientations (Raj et al, 2023). As a result Priyashantha et al (2023) emphasised that teachers who inhibit such behaviour may cause students to feel anxious about receiving poor results, rejection of the subject, frustration or fear of public speaking.

2.3.5 Cultural beliefs

The formation of gender roles and their conforming behaviors and attitudes likely begins very early in childhood from parents and become self-fulfilling. In a Chinese study by Xilin (2023) argued that families especially parents follow a traditional role of 'male masters outside and female masters inside'. According to Zhao (2023) concurred that male superiority and female inferiority is social gender stereotype that emanated from the feudal society to the modern society which was affecting academic achievements of chemistry students nowadays. Wrigley-Asante (2023) states that traditional beliefs gives the father the responsibility of being employed or employing while mothers spend most of their time in doing housework. By so doing gender roles is passed onto teenagers whom they will pass on to their peers to school (Oladejo, 2021). Since the study was conducted in China, this study has to answer the question on the effects of gender stereotyping in Gurube district.

2.3.6 Peer pressure

Peers have a role to play in gender stereotyping. Several studies have shown that association with peer groups has an influential role on academic performance of male and female students (Sibanda, 2023). Charlesworth and Banaji (2023) argued that peer pressure shapes a person's attitude, perception and motivation because one has to conform to the subculture mostly identified by their

peer groups. Blair and Posmanick (2023) explained the effects of peer groups as either positive or negative on academic achievements of males and females depending on the subculture of the peers. One of the subcultures of male students was the prioritisation of other activities and conducts over academic work resulting in an unexpected result (Wrigley-Asante et al, 2023).

2.4 Suggestions to overcome gender Stereotypes

It was noted that gender stereotyping can be reduce through various ways. Wicker and Cunningham (2023) studied how gender stereotypes may be nullified. They further advised that awareness campaigns, role models and education were brought forwards in trying to nulified gender stereotyping. Different ways were employed in trying to overcome gender stereotyping with the likes of awareness campaigns, role models and education.

2.4.1 Awareness Campaigns

Priyashantha (2023) suggested that gender disparities and gender norms can be improved through gender-transformative education where students can be equipped and empowered. Machibaya and Ndanga (2023) suggested that in transformative education, learners should be supported in the four key areas that are 'learn to learn', 'learn to live together', 'learn to do' and learn to be. Sibanda (2023) further advised that awareness of pervasive gender stereotypes of influential groups is a critical step in combating gender stereotypes.

2.4.2 Role models.

It has been documented that whole school approach can be adopted and implemented at the school set up in the way to challenge gender stereotyping, (Zhao, 2023). Wicker and Cunningham (2023) are of the view that the whole school should adopt a whole school approach by ensuring equality across the school, with an explicit culture of anti-sexism and have drafted policies to be followed by classroom practitioners. Raj et al (2023) further concurred that creation of an inclusive environment by the teacher and administrators is the best tone that can help students to go away with gender stereotyping.

2.4.3 Education

The school area has been assumed to be a better environment for learners to prove their aspirations. Priyashantha et al (2023) suggested that gender stereotyping and harmful gender norms in education can be minimised through gender-transformative education where learners can be equipped with skills that empower them to be self-esteem, assertive and critical thinking. It further advised governments at all levels of education to identify and remove gender bias and stereotypes from the curricula, teaching and learning methods. World Bank (2022) postulated that the states should ensure all learners and teachers acquire the knowledge needed to examine, challenge and change dangerous gender stereotyping practices. The United Nations Transforming Education Summit (202) further concurred that four key areas were needed to achieve transformative education which were learn to learn, learn to live together, learn to do and learn to be. Since some other studies managed to come out with those solutions, this study will search out some that suits the area of study.

Raj (2023) suggested that gender stereotypical beliefs should be tackled among teachers and other gatekeepers who potentially involved in the development of chemistry interest in secondary school students. According to Charlesworth and Banaji (2023) educators contribute to gender differences when giving comments to the learners which can reinforce or demotivates them. Wicker and Cunningham (2023) examined correlates of gender stereotypes and the moderating role of membership in a voluntary sports club. Furthermore concluded that membership in a sports club significantly reduces or lessen gender stereotypes (Wicker and Cunningham, 2023).

2.5 Summary

Different studies on gender stereotypes had been analysed in this chapter. Effects of gender stereotypes in general like in leadership and sports and in the academic performance had been discussed. The causes, agents and possible solutions were also under discussion. Therefore with the expectation of finding the effects of gender stereotyping the question of the current study is positioned: What are the effects of gender stereotyping in the academic performance of chemistry students? Thus the present study systematically analyses selected literature in the last 5 years to identify the effects of gender stereotyping gaps in the prevailing knowledge. The coming chapter is chapter three where research design and methodology was going to be analysed.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

As indicated by the title, effects of gender stereotyping on the academic performance of chemistry students in Guruve district, the study presents research methodology, which was used when data was collected. The focus was on the research design (research paradigm and approach), sample and sampling procedure, data generation procedure, data presentation and analysis, research integrity and chapter summary.

3.2 Research design

The research design was inductive which does not have special treatment given to the subject and there is no control group. Data were obtained through stratified random sampling due to its.....The research is descriptive which is a scientific approach used to describe and observe phenomena as they occur naturally. Descriptive method is observational, non-interference, accurate and cross sectional to the study.

3.2.1 Research approach

The study employed quantitative research approach to value depth of the meaning and people's subjective experiences about effects of gender stereotyping in Guruve district on the academic performance of chemistry students. Qualitative research approach was able to comprehend methods and procedures that were put in place to ascertain data. In the study by Merrian (2017) qualitative was used so that the respondents would participate through narrative and descriptive interaction. Also Flick (2022) states that a study rooted in interpretivism and constructivism view should be quantitative in nature. The research was able build a lot of understanding of the topic. According to Gupta and Gupta (2022) the approach explores and enquires more deeply into participant's social life. Other studies used qualitative research approach to solve complex issues concerning the gender stereotyping of the girls. The current study used the same approach to close the gap on the effects of gender stereotyping in both boys and girls.

3.2.2. Research Paradigm

The study used the interpretivism research paradigm. Research paradigm is a simple collection of beliefs that guides actions (Irakoze, 2021). The research is motivated by a variety of research paradigms which includes post-positivism, interpretivism, feminism, the analytical methods, postmodernism and transformative frameworks. (Trammel and Wahl, 2023). Some studies prefer to study people in their natural settings whereas others prefer to nostudy them in controlled settings. Interpretivism research paradigm was chosen based on people's lives experiences in specific historical context (Tremmel and Wahl , 2023).

3.3.Area of study

This study was conducted in Guruve district in Zimbabwe. The case study was chosen due to the problem encountered in the area and the place to be studied was near for data collection from the respondents. This reduced the cost for the research conduction. According to Zimbabwe National Statistics Agency (2022) states that the population of Guruve district is 153 606 as per 2022 census. It covers the area of 2 994 square kilometres.

3.4. Sampling

The respondents included students from form three to four with the teachers from the two selected schools from five that offers pure chemistry. The four teachers were selected using the purposive sampling method whilst the students were selected using stratified random sampling in determining the quota of population because of its way that covered the whole population.

3.5. Data collection

Data collection instrument used was the questionnaire because this method collected data easily from respondents. Questionnaires were administered by Kojah (2020) who stated that they provided detailed insights form the study and was similar to the study by Chauke (2020) who recommended that questionnaires collected data that is simple to analyse.

3.5.1. Questionnaires

The study was motivated to use questionnaire from all other research instruments. Questionnaires were used for data collection in which the respondents complete a form. There were two

questionnaires that were administered, one for the students and the other for teachers. The questionnaires were structured and it gathers information about students' attitudes, beliefs and self reported academic performance with demographic information like gender, age and the school. The questionnaires view students' about effects of gender stereotyping in the teaching and learning process.

3.6. Validity and Reliability of research instruments.

The research instruments were reviewed under the guidance of the supervisor and pilot data was collected from 10 students exclusive of the sample population so that the study would familiarise with the challenges to be faced.

3.6.1. Validity

The research instruments were reviewed by the supervisor so as to guide the questions if they were ambiguous that can provoke response. Moore (2019) defines validity as the accuracy and meaningfulness of inferences which are based on research results. That was the case of the study where the instrument was highly valid as it was based on direct participant and feedback of the respondents. To ensure validity, the study reviewed the instruments under the guidance of the supervisor. (Kojag, 2021) recommends that questionnaire to be plotted in schools outside the considered sample to establish whether the questions are ambiguous and whether the questions provoke response.

3.6.2. Reliability of the research instruments

In the research study the pilot data was collected through personal contact, which would familiarize the study with problems likely to be encountered in the field during the main study. Reliability is the measure of the degree to which research instrument yield, consistence results or data after repeated trials (Chauke, 2020). This was similar to the study.

3.7 Data analysis

The study employed inductive thematic analysis to analyse data. The method was selected due to it's system of identifying, organizing and offering insights into the patterns of meanings across

dataset. It was motivated to use thematic analysis because it offers a way into qualitative research (Majumdar, 2019). In the study themes were formed, coded and defined on the effects of gender stereotyping to the academic performance of students in Guruve district secondary schools. Themes are data that was collected and broken down for easy management. The themes comprised of familiarization with data through organizing and printing transcripts as the instruments to collect data. The data collected were analysed according to the research questions and discussions presented soon after data presentation. Hennick (2017) points out that data analysis involves textual data, synthesising the analysis into various themes to respond to research questions and thus bringing about a theoretical conclusion on the data.

3.8 Ethical consideration

The study complied to ethical responsibilities and legal procedures through the permission granted, informed consent, confidentiality, anonymity, protecting the participants from harm and honesty. The Bindura University of Science Education granted permission for the study by providing a clearance form to be used when collecting data. The certificate was used to seek permission from the Ministry of Primary and Secondary Education (see appendix 3). Astroth and Chung (2018) supported the idea that it is necessary to obtain official approval for commitment's sake. Parents and students were given informed consent forms to sign. Merrien (2017) concluded that the consent form avoids deception. The study maintained confidentiality by keeping the questionnaire and names of the respondents anonymous through exclusion of names.

3.9 Expected outcomes

The study expects to identify the gender stereotypes on the academic performance of chemistry students in ordinary level. The outcomes would be compared to conclude the most affected gender by stereotypes. Recommendations for policy makers, educators and parents to mitigate the gender stereotyping will be expected.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.1 Introduction

In this chapter, the collected data from the questionnaires administered to the respondents were presented, analyzed and interpreted. The study sought to establish the effects of gender stereotyping into the academic performance of chemistry students in ordinary level in Zimbabwean secondary schools. Data were presented under the categories that emerged from the main and sub-research questions. The chapter comprises of the responses from the respondents, instrument return rates on distributed questionnaires, background data for the teachers and answers to research questions.

4.2 Demographics of the respondents

The sample of the teachers comprised of 5 teachers of which three were males and two were females. 40 participants were drawn from two secondary schools for which 20 females and 20 males were questioned. Respondents' demographic data such as gender and age group were highlighted. The respondents rate for both the teachers and the learners were 100%. The participants were grouped into two groups, that is the teachers and students.

4.2.1 Students

The demographic of students, were categorised into gender, number and age group was analysed on table 4.1;

Table 4.1: Demographic of students by gender and age group.

Statement	Number	Percentage
Male	20	50
Female	20	50
16-17 years	24	60
18-19 years	12	30
20 years	4	10
Total	40	100

Table 4.1 showed the number of students who took part in the study on the effects of gender stereotyping in academic performance of chemistry students in ordinary level who were randomly

selected. 20 male and 20 female students were given questionnaires and all them responded, showing 100%. The majority age group was 16-17 years as shown by the table comprised of 60% of the sample population. Some learners were aged 18-19 as shown by 30% on the table. A few of the learners were 20 years old that was revealed by 10%. Thus the demographic showed learners who were doing form 3 and 4 as shown by the age group.

4.2.1.1 Causes of gender stereotyping

The causes of gender stereotyping from the respondents were collected from the students. The data collected showed that cultural beliefs, gender roles and religious beliefs were the route causes of gender stereotype. The information was summarised on figure 4.1;

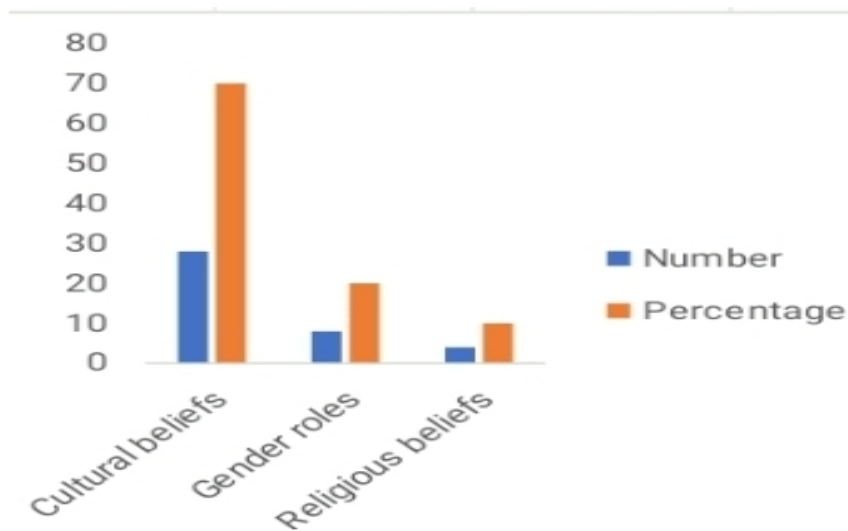
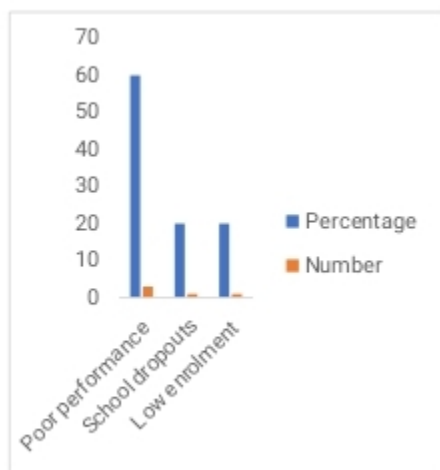


Figure 4.1: Causes of gender stereotyping

The role of culture in the development of gender stereotyping was discovered to be the main cause as shown by constituting 70% of the respondents hence affecting academic performance of students. The findings were similar to Manwa (2018) who studied the impact of gendered cultural codes on academic performance of female students. Gender roles also plays a role in causing gender stereotyping since 30% of the participants it. 10% of the students agreed to the Idea that it causes gender stereotyping. The results significantly supported that female students conform to what the society expect them to do.



4.2.1.2 Effects of gender stereotyping

It has been found out that that gender stereotyping had some effect on education, academic performance of students in chemistry. It has been discovered that the female students tend to accept the inferiority resulting in poor academic performance of female students. Female learners were discrimination by both the parents and the peers and importantly drop out of school ending up in lower enrolment. The figure 4.2 further shows the main and the least effects of gender stereotyping.

Figure 4.2: Effects of gender stereotyping

With reference to figure 4.2 there were some basic effects of gender stereotyping on academic performance of the students which are poor performance, school dropouts and low enrolment. The graph showed that poor performance is a major outcome of gender stereotyping as shown by constituting 60% of the respondents. This agrees with Manwa (2018) who had a similar study on impacts of gendered cultural codes on academic performance of female students and had the similar results. Furthermore the results indicated that 20% of females drop out of the school due to lack of some financial and morals support from the parents since first preference were given to male students. 20% of the results showed that lower enrolment effected from gender stereotyping. The results agrees with Xilin (2023) who found out that gender discrimination tends to result inequitable access to education between the female and male students in a similar study. From the

above figure, it can be observed that poor academic achievements, school dropouts and lower enrolment of female students in Chemistry.

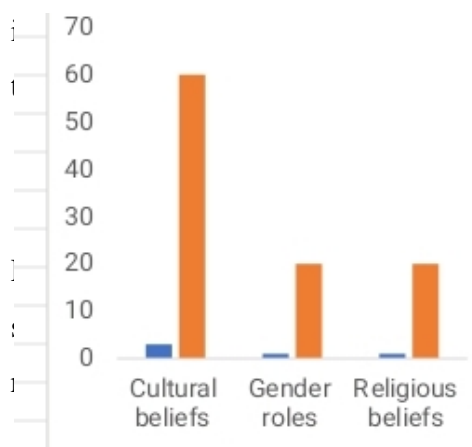
4.2.2 Teachers

Five teachers were given questionnaires, and all of them responded. So the respondents rate was 100%. The demographic data for the teachers, that is gender and number were analysed and summarized as follows on table 4.2;

Table 4. 2: Demographic data for the teachers

Statement	Number	Percentage (%)
Male	3	60
Female	2	40
Total	5	100

The table 4.2 indicates that the majority of the respondents were males which constituted 60% compared to 40% for the females. Five questionnaires were distributed to 2 female and 3 male teachers. This therefore represents a total of 5 teachers. The data showed that males are dominating



female student's lack role models in the schools

red to the teachers showed that gender the likes of cultural beliefs, gender roles and re analysed on figure 4.3;

Figure 4.3: Causes of gender stereotyping

As indicated by the figure 4.3, cultural beliefs had been found to be the most cause of gender stereotyping in secondary schools. Most respondents, 60% agreed that it causes stereotyping. The findings showed that the role of culture in the development difference was therefore considered to be very significant. This agrees with Wrigley-Asante (2023) with a similar study and found out that learners bound by traditional identities exhibit poor academic achievements. Gender roles and religious beliefs also plays a role in students' failure in schools since 40% of the responses supported these factors. This therefore showed that cultural beliefs, gender roles and religious beliefs has a significant role in academic performance of chemistry students.

The responses from teachers revealed that gender stereotyping had effects on academic performance of students. That was shown by constituting poor academic performance, school dropouts and low enrolment. The figure 4.4 showed what the participants revealed.

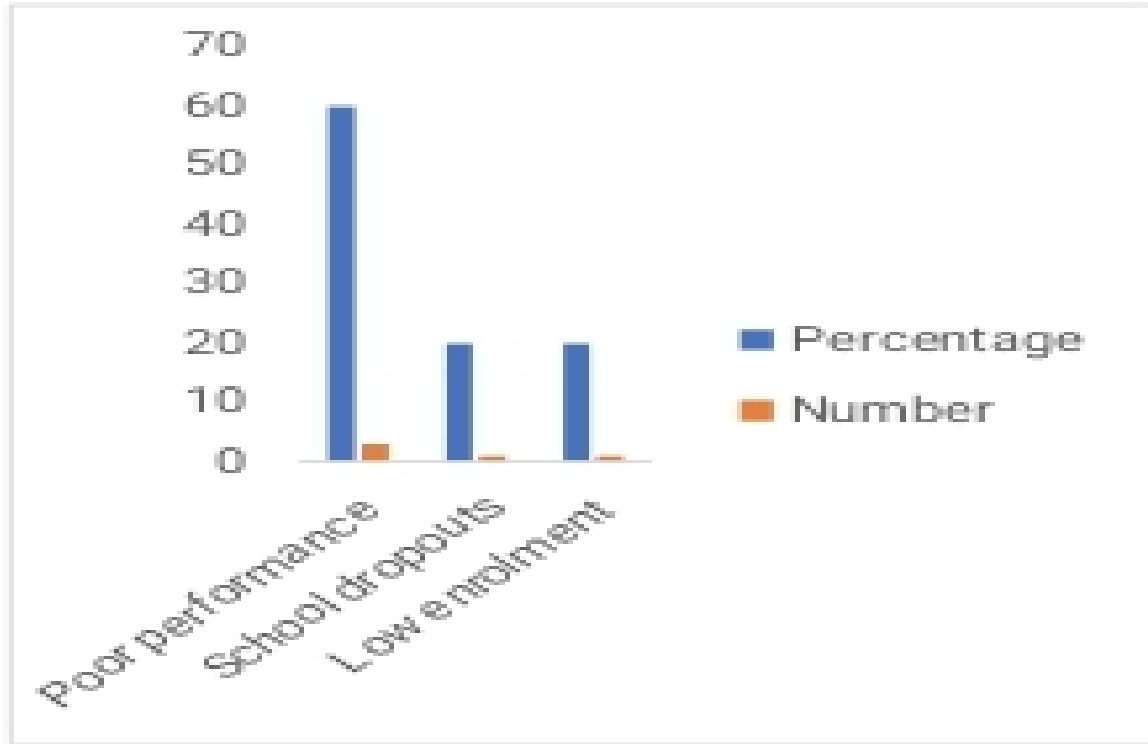


Figure 4.4 Effects of gender stereotyping in academic performance

In Figure 4.4, the respondents viewed that poor performance was as a result of gender stereotyping as expressed by the graph that constituted 60%. On a similar study by Irungu (2021) documented that gender stereotyping affects academic achievements of female students as they climb the ladder to ordinary level. It was shown by the results that 20% of the teachers agreed that school dropouts was an effect of gender stereotyping on academic achievement of students in chemistry. Due to discrimination of learners female students turned to drop out of school evidenced by 20% of the study findings.

4.3 Solutions to overcome gender stereotyping

In this section, details on strategies to reduce gender stereotyping were brought forward. One of the ways participants suggested was to counter stereotypical exemplar exposure. This agrees with Gonzalez (2018) in the similar study who found out that educators and parents could create opportunities for students to learn girls and boys who pursue counter stereotypical domains. Parents might show learners television shows and movies whilst educators might expose them in-person meetings like Career Day where learners are exposed to different STEM careers.

Parents, teachers and peers can become aware of their own biases towards chemistry that they can unintentionally convey to their children or colleagues. On a similar study, Gonzalez (2018) noted that parents were more likely to engage boys in scientific conversations than girls a behaviour that promotes that chemistry is for boys. The other respondents suggested that gender stereotyping can be reduced through elimination of gender stereotyping cues that promote the idea that STEM subjects are for men.

4.4 Summary

Chapter four analyzed, and discussed data generated through document analysis and personal interviews. In addition, the researcher attempted to provide answers to the research questions raised in chapter 1. The next chapter will provide a summary of the study, general conclusion, and recommendations. Chapter four analysed, discussed and interpreted collected data through questionnaires.

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS.

5.1 Introduction

The major purpose of the study was to investigate the effects of gender stereotyping in academic performance of chemistry students at ordinary level in Guruve district in Zimbabwe. This chapter presents summary of the findings, conclusions and recommendations. Finally the chapter ends with the suggestions for the further research.

5.2 Summary of findings

It was established from the study findings that gender stereotyping caused poor academic performance of the female students. The findings of the research were descriptively represented according to causes, effects and solutions to reduce gender stereotyping. As per study, it was noted that cultural beliefs, gender roles and religious beliefs were the causes of gender stereotyping, but cultural beliefs being the main cause. Based on the research research questions cultural beliefs was the main cause of poor Chemistry achievement. It was due to the belief that Science subjects should be dominated by boys. The findings were in conformity with the current study by Xilin (2023) who noted that gender stereotyping affect performance of female students due to their beliefs that channel boys to challenging subjects than girls.

The chapter came up with the major effects which concluded that gender stereotyping causes poor performance to most of the female students as they comply with what was considered appropriate by the society that is teachers, parents and peers. The study came out with the view that female students face descrimination which resulted in school dropouts and low enrolment due to lack of school fees to the girl child resulting in poor performance. The responses from the questionnaires revealed teachers, peers and parents should encourage all learners to strive hard for achievement's sake of the students regardless of gender.

5.3 Conclusion

From the generalised, analysed and interpreted data, it was noted that cultural beliefs, gender roles and religious beliefs are the causes of gender stereotyping but culture being the main cause since both teachers and students agreed on it. The study findings revealed that gender differences has effects on academic performance of students in chemistry since males performed better than females because of subscription to what society considered appropriate. One example was when

culture ascribed chemistry as for men. Also females have a mentality that chemistry is difficult as a result they do not put any effort for improvement thus performing poorly.

The results in relation to effects of gender stereotyping in academic performance of female students were poor performance, school dropouts and low enrolment. Acceptance of inferiority resulted in fulfilling an inevitable destiny and the desire to achieve is lost. Discrimination emerged from parents or guardians who prefers to support the education of boys at the expense of their daughters. Parents do not treat females and males equally when it comes to provision of school needs like fees, uniforms and support at large. As a result females were expected to attend schooling as a formality leading to miss lessons, lack of resources and support for their academic pursuit which negatively impacts on their performance. As per the study both discrimination and acceptance of inferiority led to poor academic achievements of female students who lack aspiration in chemistry, but males become confident.

5.4 Recommendations

The recent study was looking at the effects of gender stereotyping on academic performance, therefore the future studies were recommended to design more experiments to figure out effective solutions to reduce gender stereotypes and how to apply them on every lives.

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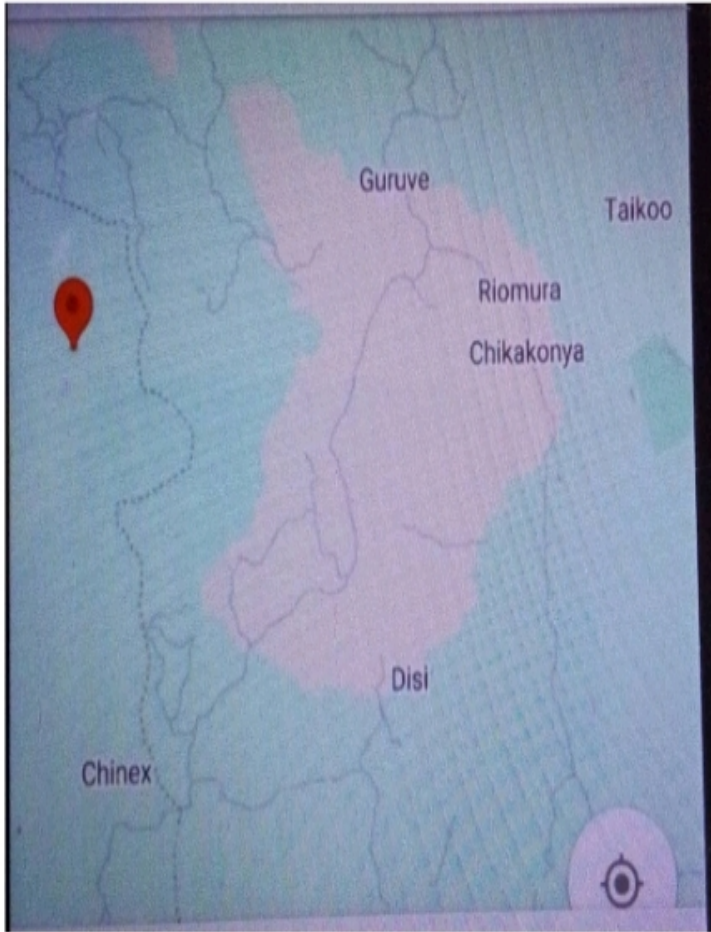
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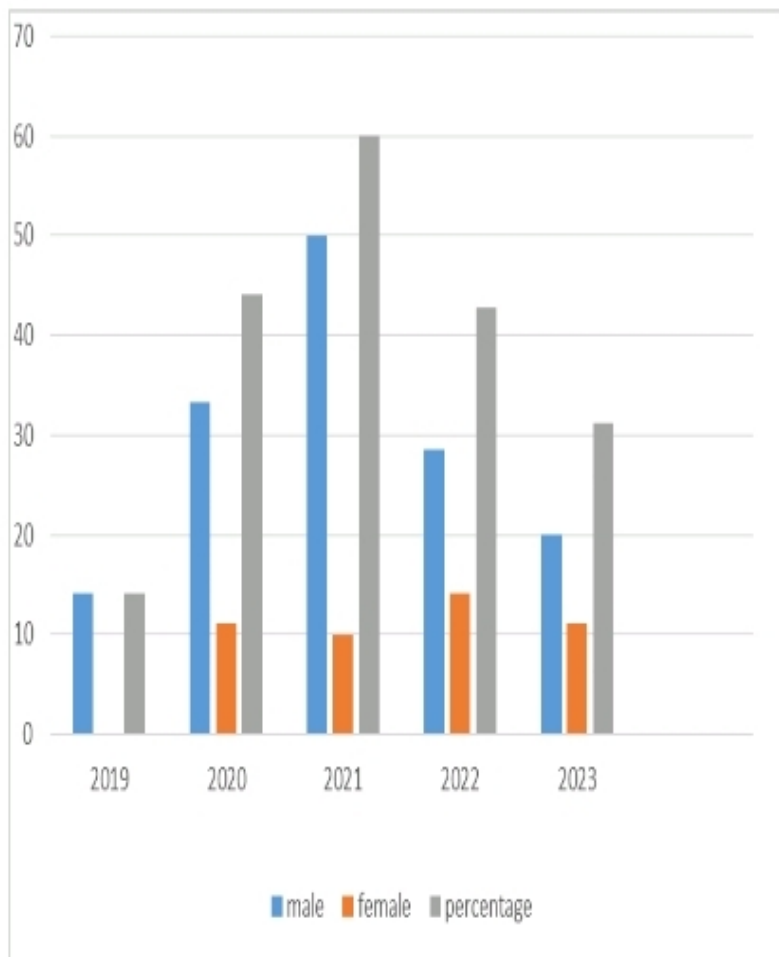
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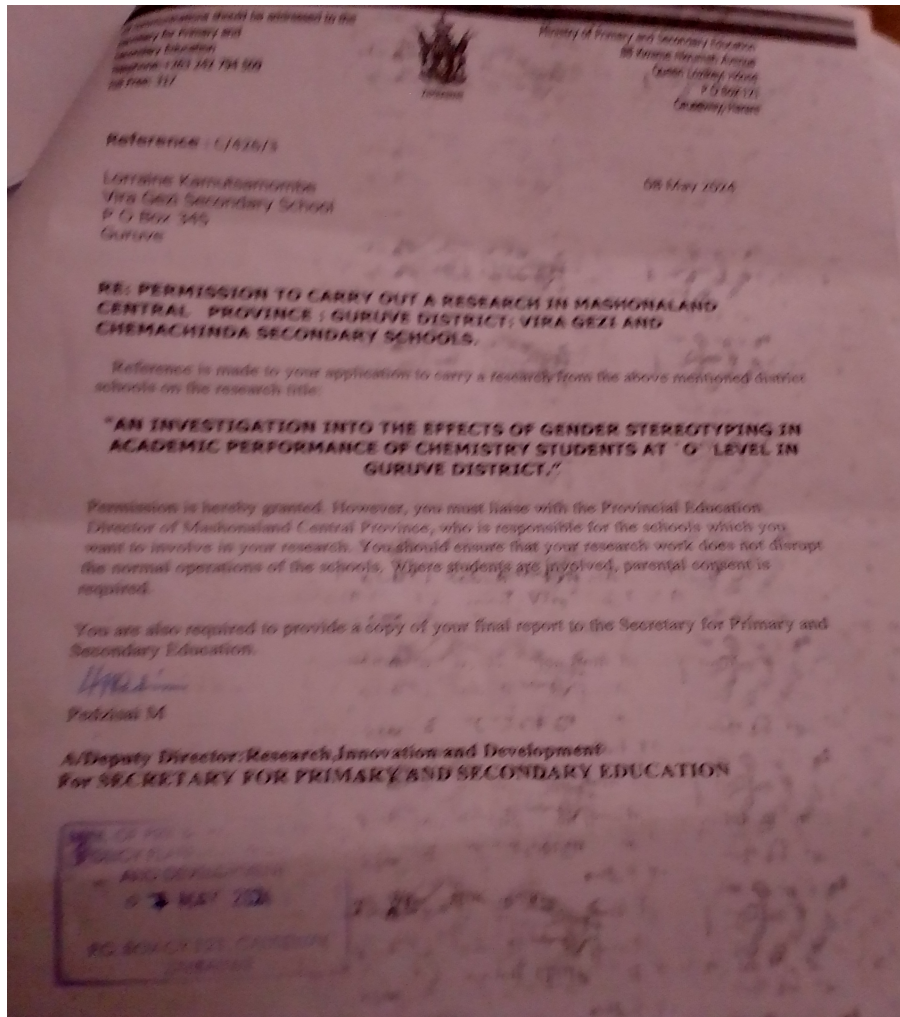
APPENDICES

Appendix 1. Map of Guruve district.



Appendix 2 . Ordinary level pass rate





Appendix 5

Questionnaire for the teachers

The purpose of the questionnaire is to collect academic data. The information shared will be confidential. Feel free to give your honest answer.

Section A: General Information

1. Gender. Male. [] Female []

2. Which type of school do you belong to?

Boys. [] Girls []. Mixed. []

3. How long have you been teaching chemistry?

1year [.]. B. 2-3 years [.]. C. 5 years [.]. D above 5 years.

4. Have you been teaching both boys and girls?

Yes. [.]. No. [.]

Section B: Gender stereotypes and academic performance

In your opinion, does the gender stereotypes have an effect on students academic performance?

Yes. [.]. No. [.]

Section C: Students' academic performance

Is there any gender stereotypes in your class concerning chemistry?

Yes [.]. No [.]

Are gender stereotypes affecting students' academic performance in chemistry?

Yes. [.]. No [.]

If yes suggest what should be done to nullify gender stereotypes in the academic performance of chemistry students at ordinary level

.....
.....
.....
.....

THANK YOU.

Appendix 6

Student Questionnaire

The purpose of the questionnaire is to gather academic data. The information will be confidential.

Put a tick [✓] to the correct option . Be free to give your answer. No answer will be regarded as wrong or correct.

Section A: General Information

1 . Gender Male [] Female []

2.Type of school

Boys [] Girls [] Mixed []

Section B :Societal perceptions and academic performance

1. Are you given the same duties at home with your brother or sister? If not state the allocated to you. Yes [] No []
2. Are you given same duties at school? Yes [] No []
3. How do you feel when given different tasks with others at school?
4. Who perform better in chemistry? Boys [] Girls []
5. Does your teacher treat boys and girls in the same way? Yes [] No []
6. Are you given equal time to study with your brother or sister at home? Yes [] No [] If not explain Why?.....
7. What can you say about your female/male performance in chemistry?

Appendix 7

Parental consent form

I invite your child to take part in a research study conducted by Kamutsamombe L, who is a student at Bindura University Science Education as part of her investigation on effects of gender stereotyping in academic performance of chemistry students.

Description

The study will present a questionnaire for the student to respond to. The identity of the student and responses will not be revealed to anyone.

Confidentiality

No names will be noted down. The questionnaire will be destroyed after it has been transcribed.

Risks and safety

There are no risks to your child, no sensitive issues. The learner will benefit on the academic purposes. If you have questions, please feel free to ask before or after signing this form at any time.

Guardian's signature..... Date.....

Investigator's signature..... Date.....