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HONOURS DEGREE IN SCIENCE EDUCATION

FACTORS ASSOCIATED WITH MASS FAILURE OF STUDENTS IN CHEMISTRY IN SECONDARY SCHOOLS: A CASE STUDY OF NYAMURORO HIGH SCHOOL IN GOKWE NORTH DISTRICT

BY

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APPROVAL FORM

The undersigned certify that they have read, and recommended to the Bindura University of Science Education for acceptance a project entitled “Factors associated with mass failure in chemistry at Nyamuroro High School in Gokwe North.” Submitted by Nyamande Tendai in partial fulfilment of Honour’s Bachelor of Science Education Degree.

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DEDICATION

This research is dedicated to myself for the support and many sacrifices financially and materially in my education endeavours, not forgetting my ever-supportive husband David Matinyarare as well as my family for bearing with me and giving me time to do my project especially to my family I'm forever grateful for the encouragement and support . May God bless them in everything they do. And not forgetting the most amazing ladies Faffy and Cynthia who made this programme possible and their support.

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Abstract

This study is an exploration into factors that are associated with mass failure in 'O' level chemistry at Nyamuroro High School. The sample consisted of two chemistry teachers and the head of Science Department at Nyamuroro High School. Data was collected by the use of questionnaires and interviews for teachers. From the study, the researcher found that, a number of factors contributed to the poor performance of chemistry, teacher academic qualification, the unavailability of teaching resources and students' attitudes are the main factors that are affecting the performance of the subject. For effective teaching and learning the study therefore recommends teachers with highest qualification in chemistry to teach pure science subjects and let the diploma holders teach combined science subject. As well as use of teaching aids during teaching process so as to make learning more interesting.

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CHAPTER ONE

1.1 INTRODUCTION

This chapter introduces this study to investigate factors associated with mass failure of secondary school learners in chemistry at Nyamuroro High School in the Gokwe North District in the Midlands Province. This chapter presents the background of the study, statement of the problem, research objectives, research questions, significance of the study, delimitations, limitations, definition of term as well as summary of the chapter.

1.2 BACKGROUND OF THE STUDY

There has been a concern over students' poor performance in science subjects particularly chemistry leading to a mass failure with the pass rate dropping to zero at Nyamuroro High School in Gokwe North district at Ordinary level.

Table 1.1: Pass rate from 2017 to 2021 of science subjects.

Year	Subject	Percentage pass rate (%)
2017	Chemistry	40
	Biology	45
	Physics	43
2018	Chemistry	30
	Biology	45
	Physics	60,6
2019	Chemistry	0
	Biology	50
	Physics	40
2020	Chemistry	0
	Biology	45
	Physics	47
2021	Chemistry	30
	Biology	55
	Physics	60

These statistics clearly indicate that the performance in chemistry is lower compared to any other science subjects. This decline in the pass rate has resulted in some schools for example, Nembudziya, Denda and Batanai High Schools dropping sciences in preference to subjects like humanities and commercials at 'A' level. Chemistry is one of the branches of science, including physics, biology, and combined science which are taught in Zimbabwean schools. Chemistry as a subject is universally accepted and realized not only by students but also people who are keen to know about chemicals. The subject provides a broader knowledge about science in general.

The variables which affect chemistry teaching are not clear whether it is because of the negative attitudes of students towards chemistry subject or the methodology used by teachers. In addition, it may be because of the absence of instructional materials used in teaching, lack of inspiration, and poor foundation particularly in the essential level when it was consolidated with other science disciplines. The issue of language seems to be another area of discussion. In secondary schools, English language is the medium of instruction and it is taught as a subject on its own in the Zimbabwean curriculum. Many students seem to be facing the problem of capturing or getting the chemistry concepts due to possible lack of familiarity with language and terminologies used in chemistry. This appears to affect their performance. Therefore, the researcher's aim was to find out the factors influencing the mass failure in chemistry, the extent of the leaners performance and to collect the views of the teachers, Ministry of education officials and students and suggest possible remedies that could be taken to overcome these problems.

1.3 PURPOSE OF THE STUDY

This study aims to evaluate different factors affecting mass failure in chemistry performance by collecting people's view especially those of the teachers and the students at Nyamuroro High School in Gokwe North district.

1.4 STATEMENT OF THE PROBLEM

The level and extent at which students are failing 'O' Level chemistry poses a threat to the Ministry, District, parents and guardians and raises questions about chemistry teaching and learning. Although a lot of issues may be responsible for the massive failure of students in chemistry at Nyamuroro High School to the extent of the school scrapping chemistry preferring other subjects like commercials and arts at 'A' level. Performance in chemistry at Nyamuroro

High School in Gokwe North District has been very poor. Chemistry is a key subject for selective advancement in science and technology and is a requirement for most careers in the engineering, technological, medicinal and pharmaceutical sectors. Countless effort in trying to improve the performance of chemistry have been witnessed but yielding nothing in return. Numerous initiatives have been undertaken by the ministry geared towards improving pedagogical approach and in shaping of the chemistry subject but the efforts have all been in vain. A lot of research has been conducted on the causes of failure in chemistry, but the trend in performance has not changed. It is because of this problem that this research was undertaken. This research looks at factors associated with mass failure in chemistry at Nyamuroro High School in Gokwe North District.

1.5 RESEARCH QUESTIONS

1. What is the effect of teachers' qualifications on academic performance of learners?

2. In what way does unavailability of teaching and learning materials contribute to poor academic performance?

3. What is the effect of students' attitudes on performance in chemistry?

1.6 RESEARCH OBJECTIVES

The main objective of the study was to identify the factors associated with mass failure in chemistry at Nyamuroro High School in Gokwe North District.

SPECIFIC OBJECTIVES

1) Examine the influence of teachers' qualification on academic performance.

2) establish the effect of students' attitudes towards chemistry and assess the effect on performance in chemistry.

3) Assess availability and application of teaching and learning materials.

4) Suggest the possible ways of solving the problem of mass failure in chemistry.

1.7 SIGNIFICANCE OF THE STUDY

The research will provide answers to the questions particularly those which relate to factors associated with mass failure in chemistry in secondary schools. The findings are expected to provide useful information that can be used by the Ministry of Education and other stakeholders

in coming up with a more appropriate system based on adequate and effective methods of recruiting, training and enrolling of teachers. Learners will benefit from the study in that they will be able to conquer challenges being faced in mastering chemistry concepts.

1.8 DELIMITATIONS

The study focused on the factors that are associated with mass failure of students in chemistry at Nyamuroro High School in Gokwe North area as a whole but only one school was chosen. The school that was selected was the one most accessible to the researcher.

1.9 LIMITATIONS

(a) Since the sample respondents were drawn from one public secondary school in Gokwe North District the factors discovered mainly reflected the situation at the school involved. Hence, the findings may not be representative of all secondary schools in Gokwe North District or the whole of Zimbabwe.

(b) Respondents may fail to interpret questions on the questionnaire as the questionnaires are administered in English which may be a barrier.

(c) Respondents may have fear of the unknown in giving honest responses.

1.10 DEFINITION OF TERMS

Failure is defined as a lack of success or the inability to meet an expectation**.** Obtaining a grade, either a D, E or U which is a fail. These three grades are considered fails since they do not in any case allow a candidate to join Form 5 or be identified to have a passing grade in a certain subject, according to the Zimbabwe School Examinations Council (ZIMSEC).

Mass failure is a situation when failure in examination is recorded by a larger percentage of the students that participated in an examination.

Chemistry: Is a branch of science that deals with study of nature and properties of all forms of matter and the various changes that these substances undergo in different conditions.

Student is a person formally engaged in learning especially one enrolled in a school or college.

Student is any person who studies, investigates or examines thoughtfully. According to the Cambridge Advanced learners dictionary a student is a person enrolled in a school or other institution and who is under learning with goals of acquiring knowledge.

Secondary School refers to the schooling offered after a primary school, and before higher, optional education. According to Merriam Webber Secondary School is an intermediate in level between elementary school and college. It usually provides educational instruction for students after primary school.

1.11 ORGANIZATION OF THE STUDY

This study comprises of five chapters. Chapter one introduces the study. Chapter two reviews on similar studies done in the past. Chapter three discusses research design and methodology to be used. Chapter four covers data analysis and discussion of the findings of the study. Chapter five gives the summary, conclusion and the recommendations of the findings.

1.12 CHAPTER SUMMARY

This chapter has presented the general introduction of the whole study. This chapter outlined the contextual background of the study, the statement of the problem, objectives, research questions, significance of the study, limitations, delimitations as well as definition of terms. Literature will be reviewed in the next chapter.

CHAPTER 2

Literature review

2.1 Introduction

This chapter reviews literature on the topics related to the causes of mass failure of students in chemistry. It will provide the contributions of different authors as a way of and so to helping the researcher to acquire more knowledge on the topic.

2.2 FACTORS THAT INFLUENCE MASS FAILURE IN CHEMISTRY

According to Nzekwe (2018) emphasized that home background factors were more important than those in schools in determining students' performance. Asikhai (2012) posits that the educational levels of parents are among the family factors which have great contribution to students learning performance because parents who are educated value education as well. Looking at the situation in most parts of the country parents who are not educated advocate for their children to pursue mining, farming or to go to neighbouring countries in search of employment rather than getting an education. They don't even help their children with school work, they do not pay school fees and as a result learners end up dropping out of school to become gold panners or housemaids (Mkhize, 2006). Factors such as marital status of the parents, child headed family as well as status of the learner for example orphans or children left in guardian care affect learners negatively. How these children are treated can badly affect their school work such that they end up losing focus. These responsibilities are considered developmentally inappropriate and lead to disruptions in education. Science subjects needs to be studied by a focused mind. In some child headed families, the elder one is supposed to take care of the other siblings. That parental role on a minor is a disturbance on the learner performance at school, especially for abstract subjects like sciences (Kabede, 2015). By the time they reach school they will be already exhausted and will find it difficult to concentrate as they are burdened physically, financially, emotionally, socially and psychologically.

Parents or guardians can help with homework and assignments or with issues their children are encountering in the classroom, for example, and they can exert a positive influence on a

child's behaviour and attitude towards school. They can also foster relationships with teachers that promote better learning. Parents' interest and encouragement inevitably affect their children's conduct in the classroom, their self-esteem, and their motivation to learn.

Abdullah, (2018) argued that, most of the schools which are performing better are those found in urban areas which have good living conditions. Rural schools have fewer and sometimes no supportive infrastructure for carrying out school activities while on the other hand the working environment is not conducive to all employees. The government should be blamed for a number of reasons and mostly for of them are failure to create conducive working environments for teachers.

Chemistry is different from other disciplines because it involves observation, classification, measurement, prediction, problem identification, collection, analysis, experimentation, interpretation of data, and drawing conclusions(Taylor, 2017). Since it is an abstract subject, the explanations should be clear so that learners understand well. Another research has shown that students' performance in chemistry has not been encouraging due to some factors such as substandard teachers, poor teaching methods and poor laboratory facilities. In his study Siwel, (2016) revealed that there is a close relationship between subject preference and performance. The researcher concluded that, preference and poor performance in science subjects were linked to the following factors. Students' characteristics, subjects being optional, teachers' characteristics, and lack of proper guidance and counselling for students and shortage of teaching and learning materials.

2.2.2 The effect of teachers' qualification on academic performance of learners

The teachers' level of education is a crucial factor in determining student achievement. A number of studies have examined the ways in which teachers' qualifications are related to students' achievement. Many of the studies found that teachers' qualifications correspond positively with students' achievement (Rice, 2013). He goes on to say that when teachers have an advanced degree in their teaching subjects, there will be a positive impact on the students' achievement.

Teachers are the facilitators who are to impact the theories and concepts into the students. They are saddled with the responsibility of imparting the concepts considered fundamental to technology through the teaching of these basic concepts to the students. Adeniyi, (2015) noted in his study that a country's manpower development depends on the quantity of her well qualified teachers. The objectives of the education sector of any country cannot be attained when the students are taught by incompetent teachers. Such teachers would not be able to properly and adequately disseminate the concepts to the students. The professional qualities of a well-trained teacher according to Ajayi, (2012) include, mastery of the subject matter, sense of organisation, ability to clarify ideas, ability to motivate students, good imagination, ability to involve the students in meaningful activities throughout the period of teaching, management of the details of learning and frequent monitoring of students' progress through tests and examinations. In-service education and training is a continuous and ongoing process for teachers throughout their professional life. Science teachers are faced with the challenge of comprehending with new innovations in science. In-service training will ensure that teachers are well equipped to handle or deal with new developments hence their performance in delivery will improve and consequently thus improving the performance of learners in science subjects, (Okhiku, 2019).

2.2.3 Unavailability of teaching and learning materials

The necessary resources that should be available for teaching and learning include material resources, human resources such as teachers and support staff and, physical facilities such as laboratories, libraries and classrooms. Some of the factors contributing towards poor performance of learners are lack of resources and poor facilities in most schools, but especially in rural areas. The problem regarding unequal distribution of resources between provinces, rural and urban areas are still intact (Motala *et al.,* 2018). These resources include lack of chalks, electricity, teaching aids materials, tables, classrooms, books and poor learning environment. Text books are very few in some schools such that the only person who has a text book is the teacher, or a single text book is being shared among five students. Studies done in the past with regards to availability of teaching and learning material in education reveal that teaching resources are not always available in schools (Ozden, 2018). According to Lyons (2012) learning is a complex activity that involves interplay of students' motivation, physical facilities and enhances academic performance in the students.

Adequacy of instructional materials is the most cost-effective input affecting student performance. In this context adequate supply is usually assumed to be a minimum of one textbook per student, so that every child has the opportunity to read at least one book for every subject. Adequacy of teaching and learning materials determines an educational system's efficiency. For effective teaching and learning, textbook and resource materials are basic tools, their absence or inadequacy makes teachers handle subjects in an abstract manner, portraying the learning process as dry and non-exciting. Therefore, scarcity of textbooks, libraries and physical facilities according to Kyle (2014), will constraint educational system from responding more fully to new demands. In order to raise the quality of education, its efficiency and productivity, better learning materials, physical facilities and human resources are needed.

In his study Depar, (2019) concluded that material resources have a significant effect on student's achievement since they facilitate the learning of abstract concepts and ideas and discourage rote-learning. The influence of teaching aids and the availability of infrastructure in shaping students' attitudes was also discussed in three studies by Adegbola and Depar, (2019); Chepkorir *et al*., (2014) and Inye, (2011). They showed that the presence of teaching aids and availability of infrastructures such as laboratory equipment, computers, textbooks, among others, positively affect the attitudes of students towards sciences. Failure to use adequate instructional materials and to avail textbooks to both students and teachers negatively affects students' attitudes. Furthermore, they help teachers clarify some abstract concepts in chemistry and cause a deep understanding of chemistry concepts. Priyambodo and Wulaningrum, (2017) established similar results in their study, which used chemistry teaching aids based on local wisdom.

Hassan, (2015) discovered a very strong positive significant relationship between instructional resources and academic performance. According to Hassan, (2015) schools endowed with more materials performed better than schools that are less endowed. This corroborated the study by Nzekwe (2018) that private schools performed better than public schools because of the availability and adequacy of teaching and learning materials. Abdullah, (2018) also supports the notion that students' performance is affected by the quality and quantity of teaching and learning materials. The Ministry of Primary and Secondary Education, MoPSE (2015) explains the importance of ensuring that there are adequate and appropriate facilities for teaching and learning so that educational programmes could be implemented effectively. Matimbe, (2014) is of the view that lack of instructional materials negatively affects teaching. Even though the

pupils are taught by highly qualified teachers. This is also supported by Najumba (2013) who also discovered that schools which are well equipped with relevant educational facilities do much better in standardised examinations than those which do not have resources. However, Fernandez (2014) cautions that it is not only the collected sum of various inputs that account for levels of quality but also the management capacity of teachers and how well they use resources in the classroom. Many researchers argue that the availability of the textbooks appears to be the most consistent factor in predicting teacher effectiveness towards teaching in secondary schools. Could resources be the cause for mass failure at Nyamuroro High School in Gokwe North District?

2.2.4 The effect of Students attitude on performance in chemistry

Attitude can be said to be the emotional and mental entities that propel an individual to take any action towards an object or subject (Perloff, 2016). Attitude is also the way the mind is disposed of, feels, or conditioned toward an individual or subject (Khan and Ali, 2012). Attitude in chemistry is one's character or mentality toward the study of chemistry which can be a positive or negative feeling. How one looks at chemistry, be it difficult or simple is one of the most critical components of science education as students' attitudes significantly impact learning as postulated by Lovelace and Brickman, (2013).

Cheung (2015), Khan and Ali (2012), and Najdi (2018), have investigated the importance of developing a positive attitude towards learning of chemistry among secondary schools' students, and their findings showed that the attitude is directly linked to the academic achievement and the attitude is a predictor of behaviour. It has also been reported that students with a positive attitude try to excel in the subject being taught compared to those with a negative attitude. According to Ngila and Makewa (2014) who reveals that there is a positive correlation between students' achievement and their attitude towards science subjects. However, Morabe, (2016) states that an unfavourable attitude to a particular subject causes difficulty in learning as there is a lack of interest and confidence in the subject. The contents should also be well designed to inculcate the desirable attitude and values among the students. These helps shape their attitude, behaviours, and motivation, influencing their cognitive skills and active participation in the teaching and learning process.

In his study Hacieminoglu, (2016) also discovered that learner's attitudes toward school were a determinant factor that predicts their academic achievement. The implication of the study,

therefore, is that a positive attitude gives rise to positive results while a negative attitude turns out a negative result. Facts about learners' attitudes with regards to chemistry education are enveloped in how easy or hard to do the intangible nature of some concepts, and the instructional technique and methods employed in class during teaching (Chua and Karpudewan, 2017). Expressions such as "chemistry is boring" or "The time for the chemistry class is too long" or "chemistry is very abstract" or I feel sick when it is time for chemistry class" are some of the phrases that prove that scholars have attitude towards chemistry. This aspect of affective domain expressed in words tend to show how the direction of the students' attitudes towards chemistry and the related careers. Those with a positive attitude are motivated to work hard and this is reflected in the good marks scored in the examination.

Asikhai (2012) argues that pedagogical approaches need to be well structured and systematic for effective learning to take place. This implies that teaching methods have a great bearing on the attitudes as well as performance of learners. With respect to teacher influence on learners' attitudes towards chemistry, Chemutai (2015) noted that, the amount of teacher pupil interaction revealed that long periods of excessive note taking may be desirable when pupils do not have their textbooks, but frequently the activity reflects inappropriate training and lack of imagination on the part of the teacher. He further postulated that, the teacher needs to vary the methods of teaching and be creative lest the learners lose interest in the subject. The researcher noted that teachers who only lecture find it hard to know whether learners understand whatever is being taught and to keep learners' attention. Thus, the use of learner centred approach guarantees better understanding of the concept being taught. If learners failed to understand the concept under discussion, their attitude towards the subject as well as the teacher will be affected (Bologun, 2012).

2.3 Chapter summary

In summary the chapter reviewed literatures about factors that affect learners leading to mass failure in chemistry education, the effect of teacher qualification on learners' performance, challenges in teaching and learning of chemistry. It also looked into factors such as the effect of students' attitude on performance in chemistry, unavailability of teaching resources. The next chapter will focus on the methodology of the study.

Chapter 3

3.1 Introduction

This chapter describes the methodology and the procedures that were followed in conducting this study. It begins by presenting the research design, followed by the presentation of the case study. Further, the research sample and the sampling criteria used to identify the participants of the study. The chapter winds up with the methods of data collection and analysis.

3.2 Research design

According to Vaus (2013) research design refers to the overall strategy that one chooses to integrate the different components of the study in a coherent and logical way, thereby ensuring that one will effectively address the research problem. It constitutes the blueprint for the collection, measurement and analysis of data. Therefore, this means that designing research involves the overall strategies that a researcher will choose to integrate different components of the study in a logical way. A research design constitutes a blueprint for the collection, measurement and analysis of data. Cohen (2018) says, research design is governed by fitness of purpose. This means that a research design should cover all the various aspects and objects which should be considered when carrying out the research. The research design must have a theoretical framework that will guide the study. It is very clear from the definitions that a researcher must carefully choose the research design so that the results, conclusions and recommendations made from the research may be valid and reliable to the reader since the method affects the results.

3.2.1 Research paradigm

A qualitative research design was used in this study. Descriptive research was appropriate in the designing of this study because it convey conditions or relationships that exist, practices that prevail, processes that are going on, attitudes that are held or trends that are developed (Myers, 2012). More so, descriptive survey according to Hopkins (2013) involves gathering data that describe events and then organises, tabulates, depicts and describes the data collection.

3.2.2 Research methodology

Descriptive method is suitable as it uses visual aids such as graphs and charts to aid the reader on in understanding the data distribution. In this study descriptive research was used when frequency tables, pie charts and graphs were used to present the data from the learners` questionnaires and making the data clearer to the reader. Again, there was use of words to present the response of the teachers from the interview hence the application of descriptive research. This research was both qualitative and quantitative in nature. This was done so as to try and minimise the weaknesses of using a single method hence improving the reliability and validity of the results. The research was qualitative in the sense that it was carried out in its natural setting and words were used in the description of the results. This means that greater detail of cause and effect was given. On the other hand, there was the use of numbers in the research which gave it its quantitative nature. The researcher started by making observations. The researcher used items such as professional documents to observe common teaching methods that are used by teachers. The teacher's inventory was also assessed to observe available teaching resources. The student teacher ratio was observed using the teacher's record of marks. After observations were made, the researcher interviewed the chemistry teachers. Finally, questionnaires were administered to the learners.

3.3 Research methods

Research methods are strategies, processes or techniques utilized in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic.

3.3.1 Population, sample and sampling technique

A sample size of two (2) teachers from a population of thirty- four (34) teachers was considered in this research. In this study, the population comprised of two chemistry teachers and the Head of Science Department The purposive sampling technique was used since it gives a detailed knowledge about a specific phenomenon rather than making statistical inferences, or where the population is very small and specific. From the population Chemistry teachers were chosen because they are the major agents in curriculum implementation as they receive, interpret and implement any chemistry curriculum package including assessing and evaluating the chemistry

curriculum and students' progress. The Head of Science Department is the one who capture data about all the science teachers and their professional records.

3.3.2 Population and Sampling

In this research, the population involved all students doing chemistry at 'O' level students and their teachers at Nyamuroro High School in Gokwe North District. There are six schools that are offering chemistry at 'O' level in the District, only one was selected for this study. The school was chosen for its close proximity to the researcher for easy communication and access. The number of students used per class was 30 bringing the total number of students used to 60. A single chemistry teacher per class was chosen and the total number of teachers used was three including the Head of Science Department.

3.3.3 Sampling

Purposive sampling technique was employed in this study. It involves the selection of the sample by the researcher based on the knowledge about the study. The sample was selected based on the needs of the study hence the name. It is a non-probability sampling technique. The major advantage of this method is that it makes it easier to make generalisations about the sample compared. Purposive sampling was used to select the school as well as the classes that were considered under the study. However, the selection of the participants in the chosen classes was done using random sampling. A random sample is a subset of a statistical population in which each member has an equal probability of being chosen. Some of the major advantages of random sampling are that it is meant to be an unbiased representation of a group. It is a fair way of selecting a sample. Another advantage is that it is easy to administer and use. In administering this method, all the names of the students of the chosen class were put in a hat and were randomly picked. First fifteen picked names were used in the research.

3.4 Data collection methods

Three research instruments were used to collect data. These were questionnaires, interviews and observations.

3.4.1 Questionnaire

A questionnaire according to Cross, (2012) is an instrument used to generate qualitative data. Gravetter (2011) contends with Cross, (2012) when he asserts that questionnaires are

instruments for gathering large amounts of information in which questions require written responses. A questionnaire involves giving respondents written questions which they will respond to and provide written answers. A questionnaire therefore allows one to have privacy when responding to questions hence increases chances of getting unbiased answers. Respondents give free responses in their own words and no clues are given. Questionnaires can be structured in two ways. There are closed-ended questionnaires and open-ended questionnaires. Closed-ended questionnaires require restricted answers such as yes or no. Closed ended questionnaires have the advantages that they are easy to structure, easy to fill as well as easy to analyse. Close-ended questionnaires were used in this study for their ease of administration to a large group. The questionnaires were used to check or ascertain the availability of resources, competences of teachers as seen by the learners in the selected school. The questionnaire was divided into four sections thus section A to D. Section A was an introductory note which informed the participants on the purpose of the research. This enabled learners to have clarity on what they were expected to do. Section B involved questions on the availability of the resources and teacher competences, Section C involved students' attitudes D was on effects of teachers' qualifications on students' performance. The questionnaires were administered in person by the researcher to the respondents. This enabled the researcher to gather information quickly as no time was wasted in waiting for the responses. Through visiting the school during the administration of the questionnaires, the researcher had an opportunity to make some observations that were necessary for the study.

3.4.2 Interview

Kumar, (2015) define an interview as an act of knowing people's reaction and feelings of issues they have experienced. Interviews are oral questionnaires that demand oral responses. Interviews take different forms, these vary from highly structured and formal to highly unstructured and informal. In situations where much emphasis is given to the respondent's account, the unstructured form is used. Cohen, (2011) says interviews involve all sensory channels, which are verbal and nonverbal. Interviews give immediate feedbacks. Flick *et al.*, (2018) claims that the researcher has an opportunity to listen very carefully to what the participant says and engage with them according to their individual personalities and styles. In relation to this Silverman, (2019) says as in individual interviews, the researcher probes to ensure issues are covered in depth. The aim is to clarify, go deeper and to cover all angles, rather than accepting an answer at its face value. A structured interview format was used in this

research. It takes a set format with fixed questions. This type of interviews allows for standardisation of results as a large number of respondents were used. This type was suitable as it is easy to administer and easy to answer on the side of respondents as closed answers were required. The structured interview covered areas such as the teacher qualification, length of teaching service, common methods the teacher uses in teaching chemistry as well as the common resources that are available for teaching chemistry.

3.5 Data Collection Procedures.

Triangulation method was used. Triangulation refers to the use of multiple methods to enhance probability that the hypothesis and interpretation are credible (Creswell 2015). The triangulation method is a powerful way of demonstrating concurrent and respondent validity particularly in qualitative research. Multiple sources of data concur the same fact or phenomena (Yin, 2019), triangulation help the researcher to investigate whether the data collected with one procedure or instrument is similar to that collected using another different method. This ensures high probability of the trustworthy of the obtained results. The results from the questionnaires and those from the interviews were triangulated. The researcher used items such as professional documents which included schemes of work to discern common teaching methods that are used by teachers. The teacher's inventory was also assessed to examine available teaching resources. The student teacher ratio was observed using the teacher's record of marks. After observations were made, the researcher interviewed the chemistry teachers. Finally, questionnaires were administered to the learners.

3.6 Data analysis techniques.

The obtained data was presented in the form of frequency tables, bar graphs and percentages. Qualitative data was presented in form of words thus the responses from the interview questions that were asked to the chemistry teachers were presented as they were said by the respondents, the results from the interviews were transcribed and the resultant data content was analysed to describe and interpret their meaning .

3.7 Reliability and Validity.

Validity refers to how authentic a test measures and what it is purported to measure. Validity covers the whole study concepts and establishes whether the results obtained meet all the requirements of the scientific research method. To test the reliability and validity of data the

same questionnaire was administered to two other selected schools outside the research area. The teachers and leaners filled the questionnaire and the results were compared to ensure that the results were replicable and reproducible if applied to a different set up. This was done to check consistency with the results if a similar methodology is used or applied somewhere.

3.8 Ethical issues

The researcher sought permission from Gokwe North Education office to do research at the school. At the school, permission was sought from the Head teacher before involving students and teachers.

3.9 Chapter summary

This chapter has described the restructuring of the design and methods that were adapted for the study. It has looked at the research instruments used and how they enhanced the acquisition of information on factors that are associated to the mass failure of students in chemistry at Nyamuroro High School in Gokwe North District. Questionnaires and interviews are the research instruments used. The information that was obtained and how it was analyzed is explained in the next chapter.

Chapter 4

4.1 Introduction

This chapter looks at the presentation and analysis of the data obtained using the methods listed in chapter three. Chapter four presents the results of this study in line with the study's research questions. Section 4.2 is about, how teachers' qualifications influence academic performance while section 4.3 looks at how teaching and learning materials contribute to poor academic performance. Finally, section 4.4 is about, how students' attitudes affect performance. The data was collected from 30 'O' level students, boys and girls at the selected school and the students were aged between 15-17 years old. The researcher will present the data collected in form of frequency tables, pie charts and percentages. Qualitative data was presented in word form thus the responses from the interview questions that were asked to the chemistry teachers were presented as they were said by the respondents, the results from the interviews were transcribed and the resultant data content was analysed to describe and interpret their meaning.

4.2 Effect of teachers' qualifications influence academic performance.

In an attempt to answer this question, interviews were used as data sources in collecting views on the influence of teacher qualifications on learners academic performance. Three teachers were interviewed. Teachers 'voices about their views on the influence of teachers qualification on academic performance is scribbled below.

T1 " *Teacher qualification plays an important role on academic performance on the learners most teachers are teaching learners without the right qualifications. There are a lot of unemployed graduates with different degrees most of which are industry based and because of high unemployment rates they end up being employed as teachers yet they are not qualified for the subjects they teach. These graduates only know content but they do not know how to deliver or to unpack that knowledge to someone. They do not know which teaching methods to use and only know what their teachers used to teach. We have moved to the 21st century with different teaching methods which are modern, they teach learners rote learning yet learners need to be taught to be problem solvers, discovery learners as well as critical thinkers. The Zimbabwean government introduced the 5.0 Education system which advocates for learners to be equipped with skills that empower them to become innovative towards societal development through transformative science and technology*

knowledge application that delivers goods and services. This vision is only valid with the right teachers. These non-educationist teachers result in leaners having a lower pass rate and some attaining zero percent pass rate."

T2 **"***Teachers are the implementers of the curriculum and their qualifications matter so much in the learning process of the learners. We have witnessed the importance of qualifications at this school. For the past years the writing classes have been given under qualified teachers and the results were not pleasing at all. The pass rate has dropped tremendously in science because of teacher qualification. Subject matter knowledge is another variable that one might think could be related to teacher effectiveness. Quite a number of teachers are teaching without specialisation. For instance, myself I studied environmental chemistry but because of lack of employment I applied to the public service and I got employed. But I have realised that I don't know how to teach. The bad part of it is that I was given 'A' Level chemistry students because of shortage of science teachers in the District. I'm struggling, let me confess teaching qualifications are very important. Even though I have a degree I have failed to produce results."*

T3 *" Teaching qualifications are very important in performance of learners. When l came here the pass rate was better but suddenly the pass rate dropped. I realized that the teachers who transferred from here were a bit qualified than us. For instance, I am teaching 'A' level yet I am a diploma holder. Last year the pass rate was zero percent. Let me admit the stuff that is taught learners at 'A' level especially chemistry is a bit complicated and abstract sometimes I am stuck and give learners as homework so that they research. I feel pit for the learners but l have no choice because public service employed me. My colleague at a neighboring school she is doing a degree she is the one who help me now and then. With her learners you can figure out that she will produce results definitely''*

Table 4.1 Teachers' Areas of specialization

Area of specialization	Number of teachers	Specialized	Percentage %
Biology	3	0	0
Chemistry	2	1	50
Physics	2	0	0

Table 4.1 shows that only one teacher out of 7 teachers who are in the science department has a relevant area of specialization. Two of the science teachers are degree holders but the degrees are not related to science teaching. The majority are diploma holders. The teachers are teaching without an area of specialization. The other teacher has a diploma in physical education and that teacher is teaching chemistry this may contribute to the poor performance in chemistry leading to failure.

Table 4.2 Education levels of the teachers.

Educational level	No of teachers	Percentage %
Diploma in Education	5	71
Bachelors of Education	2	29
Total	7	100

The above table shows that 5 of the 7 teachers are diploma holders with no areas of specialization as far as sciences are concerned yet they are teaching sciences at advanced level. This is in contravention with the Ministry of Primary and Secondary Education's directive that only degreed teachers can teach up to 'A' level. The other two teachers are degree holders but these are non-teaching degrees which means that they have no teaching skills at all. This definitely is one of the reasons why there has been poor performance in science. This is in agreement with Zacharia (2012) who posited that without quality teachers the academic performance of learners is bound to fall. These findings are also in line with Kochung's (2011) assertion that inadequate trained professionals are an obstacle to implementation of science education.

4.3 Teachers' responses on the availability of teaching aids

The following responses were obtained from the three teachers interviewed and the interview questions were responded to as shown below.

Teacher A's responses

Q: Do you have laboratories at your school are the labs well equipped?

A: *We have two laboratories, one for junior learners and the other for senior students. The senior students' laboratory is divided into three labs i.e., chemistry, physics and biology labs.*

Basically, the labs can be used to conduct experiments though there are some challenges at times.

Teacher B's responses

A: *We have two laboratories, The labs are not well equipped and most of the chemicals have long since expired. It was equipped by the UNICEF consignments which sustained us for a very long time. The school only buys reagents towards examinations only. For practice with the learners, we use those that are left during exams and once used up we struggle to conduct experiments. Even if you want to improvise how far can a teacher improvise yet the government is not paying them enough. Can you imagine this whole big school has only four burettes and five retort stands. The stands are also used by the biology and physics teachers.*

Teacher C's responses

A*: We have two laboratories, which are partially equipped. We always face challenges of sharing those labs with other teachers who are teaching biology and physics and combined science. At times the whole week the lab will be occupied and l find myself not doing practicals and teaching alternative to practicals. But definitely I know that learners will not benefit and they will face challenges come the final exam where they have to do the real practicals.*

Discussion

The responses obtained from teachers showed that the school has adequate laboratories as two laboratories are available and the labs are enough to cater for both junior and senior students. The availability of laboratories at the school goes a long way in presenting opportunities to use the hands-on approach which promote understanding. The collected data indicates that the school under study lacks laboratory equipment which are essential for teaching and learning of chemistry. This is in line with Collins, (2013) who says teachers encountered difficulties during teaching science subjects especially practical work in absence of well-equipped science laboratory. For example, difficulties in facilitating Inquiry that enables students to construct scientific concepts. This is due to the fact that inquiry requires identification of assumption use of critical and logical thinking and consideration of alternative explanations. It is widely accepted that science is better taught using the discovery method or experimental approach. For example, Piaget, (1969) encouraged children to discover for themselves through spontaneous interaction with environment.Therefore, it can be concluded that the poor performance in chemistry at the school could be caused by lack of unequipped labs which are

essential for teaching and learning of chemistry. The lack of apparatus and reagents could have caused poor performance in chemistry because positive academic performance is likely to be realized when experiments are done profoundly.

Q: What is the textbook situation like in the school?

Teacher A's responses

A*: they are very few textbooks available one text book for 'O' level and one textbook for 'A' level generally the student textbook ratio is around 1:30. But honestly speaking that one book is shared among the teachers normally that books is not given to the learners.*

Teacher B's responses

A*:Textbooks are a scarce resource here. Giving learners homework is a big challenge they have nowhere to reference . I only have a copy with the other teacher, so I cannot lend it to learners. Lately I had given then soft copies to use but now the phones are not allowed in the school yard. But not all the learners have phones. Those with phones it's just a fraction that is negligible above all.*

Teachers C's responses

A*:We don't have text books here. The donors who are donating books are not donating science textbooks. We have presented the case to the Administration but the response is in vain. The admin told me that it is financially crippled because parents are no paying practical fees. We have a textbook which we share. I have resorted to soft copies but it becomes a challenge when there is no electricity.*

Discussion

Shortage of books make it impossible for the syllabi to be completed in time. Accordingly, it can be concluded that textbooks have a great influence on the achievement of the curriculum goals. Textbooks continue to remain the educational material that is matched with the mandatory curriculum. Teachers consider textbook the basic tool in the teaching process. It functions as a teaching or learning tool, providing learning activities for students to understand better and have clear clarity to concepts. Furthermore, it functions both as an informative as well as a formative tool, as it provides knowledge and simultaneously enables the development of competence, skills and values. The textbook is a teaching tool that facilitates both effective teaching as well as independent learning. The teacher can integrate the textbook into all stages

of the teaching process. Simultaneously, the textbook also serves as a tool for students' independent learning. The data collected clearly showed that teachers were relying on one reference book. However, their student-textbook ratio is lower, this could be the cause of failure in chemistry, this is in conjunction with Kukanja, 2015 who made it clear that the shortage of textbooks leads to poor performance in learners.

Q: Do you have ICT tools for teaching and learning of chemistry at your school?

Teacher A's response.

A: No ICT tools, in the science department but there is a computer lab at the school. The department does not have a projector or a laptop

Teacher B's responses

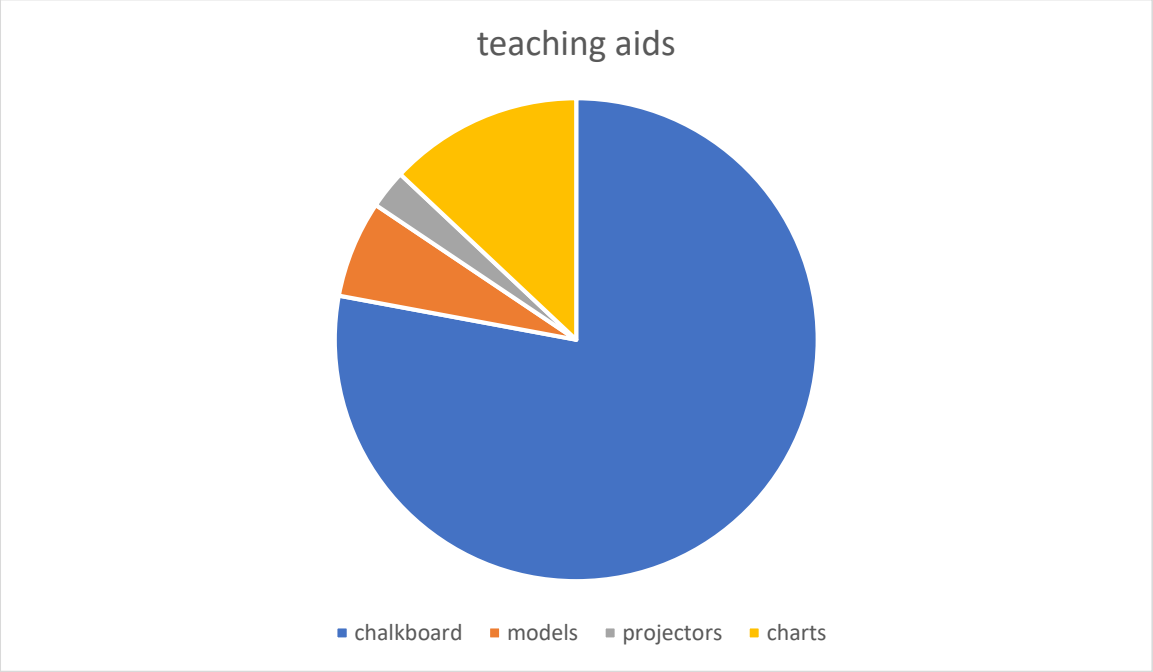
A: We don't have those kinds of interactive white boards to use in the department. Let alone tablets to use during lessons. The department does not have a printer so that we can print notes from text books to give the learners.

Teacher C's responses

A: The computer department has ICT tools but it's very hard to go and borrow every time when you want to conduct lessons, because mostly they will be making use of the tools. The science department does not have ICT tools.

Discussion

Fig 4.1: Shows teaching aids available



4.6 Discussion from Interviews.

It was noted that the school does not have enough ICT tools to use during lessons. From the interviews it can be concluded that there is acute shortage of ICT tools. Teachers could not organize virtual practicals due to lack of ICT tools that can be used to conduct experiments for example the virtual laboratory. The HOD as one of teacher interviewed agreed the school was handicapped financially and could not provide adequate teaching resources, most of the parents were not paying practical fees. This definitely is one of the reasons why there has been poor performance in chemistry. this is in agreement with Lyons (2012) who posited that learning is a complex activity that involves interplay of students' motivation, physical facilities, teaching resources, and skills of teaching and curriculum demands. Availability of resources such as ICT tools therefore enhances the effectiveness of schools as they are the basic resources that bring about good academic performance in the students. Adeogun (2013) discovered a very strong positive significant relationship between instructional resources and academic performance. This collaborated with the study by Babayomi, (2010) who supports that students' performance is affected by the quality and quantity of teaching and learning materials.

Therefore, poor performance could be attributed to inadequate teaching and learning materials and equipment.

4.4 Students' data presentation from questionnaires.

	Yes	No	Total
Chemistry text books	0	30	30
Computers	0	30	30
Internet	0	30	30
Chemistry charts	4	26	30
Do learners attend chemistry seminars	0	30	30
Electricity available to learners	0	30	30

Table 4.3 Unavailable resources

In Table 4.3, all students pointed out that they had no chemistry textbooks for the new curriculum, a fact also pointed out by the teachers. 100 % pointed that they had a library but the library has no books. The students also pointed out that even though there is electricity at the school, it is of no benefit to them because it is never used for learning purposes and they are not even allowed to come to the school with phones. 100 % pointed out that the school had computers but they are not used by the general students but only used by those doing computer science. This, according to the students contributed to their poor performance in chemistry. This is in agreement with the findings of Moodley, (2015) and Asikhai, (2013) who asserted that lack of resources lead to poor performance.

Discussion

26 out of 30 learners indicated that they were facing some challenges in the learning of chemistry. The most commonly mentioned challenge was that of text books. The students lamented that chemistry text books were supposed to be included when there were donations of textbooks in other subjects from the education transition fund. The other challenge was that of accessing ICT tools where the students said these if available will enable them to access up to date information. Besides the above-mentioned challenges, students mentioned that there was a high teacher mobility which greatly affects their learning of chemistry as qualified chemistry teachers are hard to find a lot of them are migrating outside the country. High teacher mobility affected them as they at times spend some long periods of time without a teacher

making the completion of the chemistry syllabus difficult. Learners also said they do not often have seminars with their peers where they can exchange notes. Lack of materials posed as the great threat to students. This is mostly the factor that cause poor performance in chemistry. Kamau, (2002) presuppose that when instructional material is inadequate the learning process is compromised and this inevitably is reflected in low academic achievement, high dropout rates, and unmet educational goals. In addition, inadequate ICT tools mean that the students are not exposed to e-learning and therefore cannot access the vast electronic library and their sources reading materials are restricted thereby affecting the performance of learners in chemistry. These findings are in agreement with Motala, (2018) who propound that learning becomes a difficult process without resources.

4.5 Students attitude towards chemistry

Table 4.4 Frequency distributions of learners' attitude towards science (n= 30)

	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
Teaching methods make you like chemistry	12	9	3	3	3
Availability of resources makes learning interesting	12	5	6	5	2
Do you learners perceive your teachers in a positive way	12	10	3	2	3
Chemistry is important in life	11	9	5	2	3
Chemistry concepts are easy to understand	11	8	6	3	2
Teaching methods used by teachers motivates learners	12	8	6	2	2

Table 4.4 gives the results pertaining to learner's attitude towards chemistry. The results shows that the learners' attitude towards chemistry is more on the negative side due to the number that agrees to the positives of the subject. In each case they do not go beyond 12 of the 30

learners involved in the study. Meanwhile those who neither agree nor disagree can easily fall on disagree side if we are to base on the poor results in the school over the years. Hughes (2014) is of the view that learners' performance in any subject is influenced by the perceptions of the teacher. This is supported by Overiani and Brickman (2014) where they say that if learners perceive their teachers positively, they also acquire a positive attitude towards the subject. Results from Table 4.4 show that very few students believe in their teacher's methods of teaching hence the negative attitude and poor results. Most of the learners do not view chemistry as important a relevant and necessary subject in their day to day lives which may be an indicator of poor career guidance. Learners do not seem to be motivated to study chemistry. It can be concluded that negative attitude towards chemistry is a factor causing failure. This is in agreement with Khan and Ali (2012), who postulated that the attitude is directly linked to the academic achievement and the attitude is a predictor of behaviour and academic success.

4.6 Chapter summary

The chapter looked at the presentation of the findings as well as their analysis. It also looked at the link between the findings and the reviewed literature. The chapter finally closed by a summary.

Chapter 5

5.1 Introduction

The chapter give summary of the whole research and give conclusion of the research and also gives discussions on findings in chapter 4. The chapter will also give possible solutions as well as recommendations that highlight what the researcher think can be done to address the noted problems.

5.2 Summary of study

Chapter 1 introduced this study that sought to explore factors that influence mass failure in chemistry. It discussed the background of the study, stated the statement of the problem, purpose of study, research questions, objectives. Furthermore, the chapter provided limitations and delimitations under which the study was conducted.

In chapter 2, literature relevant to factors that influence mass failure in chemistry was discussed as informed by Labaree's (2019), description of the purpose of a literature review as to place each work in the context of its contribution to knowledge and to facilitate understanding of the research problem being studied. The studies previously undertaken related to factors that affect mass failure in chemistry. The research questions and objectives that emerged and were discussed are (1) how do teacher qualification affect learners performance, (2) how do the unavailability of teaching and learning affect performance and (3) how do students attitude affect their performance.

Chapter three discussed the case study from a qualitative and quantitative research methodology that was adopted in this study. The chapter is organized in methodology elements that is research paradigm, design, context, research participation, ethical consideration, methods and procedures of data generation as well as the analysis of data into findings. After the data was collected, the triangulation method was used to analyse the data. Lincoln (2017) asserts that the system of triangulation at the source of data collection level and interpretation of each question can enhance the credibility, transferability and dependability aspects of a research. The major findings obtained show that the school has inadequate instructional material ,the school indicated that laboratories and textbooks were not enough. Again, the school has few qualified science teachers as some of the interviewed teachers were not science specialists. To add on to the above findings, it was also noted that the participants were thirty

‘0’ level students the chapter also highlights how findings are presented and discussed in chapter four. Chapter four present and discusses the findings of this study. These findings which are the answers to the research questions. The study ends with this Chapter five which summarizes, concludes and make recommendations. The data obtained was presented and analysed using frequency tables in chapter four. The last chapter which is chapter five looked at the summary of all the chapters, the conclusions that were made from the findings as well as the recommendations made by the researcher following the findings obtained.

5.3 Conclusions

The research was carried out at Nyamuroro High School in Gokwe North District and this constitutes about 10% of all the secondary schools in the district. Therefore, the school represented the district and it is one of the best schools in the district, the results from the findings can be generalised. The researcher concluded that several challenges are affecting the teaching and learning of Chemistry at ‘O’ level and leading the challenges list is the issue of instructional materials. The researcher concluded that most schools in Gokwe north district are poor and does not have enough instructional material. The researcher also concluded that shortage of materials demotivates both learners and teachers leading to high drop outs in the subject as well as poor performance of the enrolled students. The researcher also concluded that most of the teaching methods that are commonly employed by teachers promote rote learning which reduces the retention of learnt concepts by students. As noted by the researcher the use of the lecture method was due to two main reasons. One of the reasons why the lecture method dominates the teaching methods is due lack of teaching resources. If resources are not permitting teachers tend to resort to this simplest method which does not demand too many instructional materials. The other reason is that some teachers who are manning the departments are not science specialists hence they do not improvise as they are not equipped to teach the subject. Most teachers resort to traditional methods of teaching which does not involve active participation of learners leading to low performance and leading to learners in having negative attitudes.

The researcher also noted from the analysis made that the student teacher ratio was too high in form four classes hence the availability of more trained teachers also helps to reduce the load hence improving performance of the teachers and the learners as well.

5.4 Possible solutions.

A closer look into the challenges demands a holistic approach where all the stakeholders join hands and try to address each of the problems. Most learners indicated from their questionnaires that there is need for the school to procure all the necessary instructional materials. The learners expressed that chemistry was supposed to be given its portion in the allocation of the education fund in future so that if textbooks are disbursed the subject gets its share and this will go a long way in addressing the shortage of textbooks. The learners also said this can be only achieved when there is a partnership between the responsible authorities and the corporate world so that textbooks are made available.

On the issue of laboratory equipment most learners applauded the donation they received from UNICEF but expressed the feeling that the donations should be done on a yearly basis until the school is almost fully furnished. Learners also pointed on the need for the construction of more laboratories at the school especially other schools out of the research in the remote areas especially those without any laboratory. They said this can be achieved through awareness campaigns in the communities so that parents play their role in school fees payment and other duties as may be demanded by the school. Parents should pay practical fees for science subjects. This fee can help in the procurement of reagents as well as building more laboratories.

On the issue of shortage of qualified teachers, most teachers who were interviewed highlighted that they were impressed by the government's teacher capacity development program and said if the program continues more skilled teachers will be made available at the school leading to reduced teacher mobility and increased pass rates as the available skilled teachers will make necessary improvisations in situations where resources are lacking. Teachers also highlighted on the need for the administration of the school to value the impact of science subjects to the welfare of people hence encouraged the stakeholders to channel more resources towards the science subjects.

5.5 Recommendations

- In view of the research findings, the analysis and conclusions, the following recommendations can be put forward for improvement:
- At all school level, various measures can be used to harmonize positive attitudes and interests of students taking science subjects. These include; stocking and or equipping laboratories with all the necessary materials that could foster learning and enquiry of knowledge.

- Additionally, there is urgent need for special guidance of students in different areas of specialization. The guidance could be based on the importance of taking sciences including chemistry its importance in their daily life and their future job opportunities, together with the details of their possible courses at higher learning institutions. Such efforts would encourage students to like chemistry and other sciences.
- The Ministry of Education, through the curriculum designing section should revise again the language curriculum section especially in secondary level, immediate change is needed in this area.
- The Ministry also should endeavour to organize seminars, workshops for chemistry teachers on strategies of teaching the subject to make them relevant to students and accommodate it in the stipulated teaching duration together with developing attitude and interests of their learners in the field. Most of the teachers trained in the old curriculum that pose to be a great challenge they are archaic in the teaching methods advocated by the new curriculum.
- Ministry also should design different programs for upgrading chemistry teachers such as service program that can be used outside the teaching periods. This could be incorporated in evening programs, long distance learning programs and others. The field in which the research was carried out was too wide and the researchers could not explore every aspect due to time factor and financial constraints. Therefore, there is still room for other researchers interested in the same topic or topics related to this to carry out research.
- The researcher also recommends the massive training of science teachers in universities and colleges so that more qualified teachers will be available. From the findings from the teachers' interviews, the researcher noted that only one out of three teachers interviewed is a holder of diploma in education majoring in science, the other two teachers were not science trained hence their performance in the subject is compromised. Having qualified teachers enable them to use various teaching methods that are at their disposal. Qualified teachers will be able to improvise as they have some depth in their subject matter. Besides having qualified teachers manning the chemistry department; the teachers are also recommended to attend seminars, workshops and conferences so that they update their knowledge on scientific processes and the ever-changing technology.

- Lab technicians should be available at the school to help teachers to conduct practicals. Teacher's work is too much because of huge loads. That's why they fail to conduct experiments but if technicians are available they will be assisted.

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APPENDICES

APPENDIX 1 TEACHERS' INTERVIEW QUESTIONS

Section A: Introductory note My name is Nyamande Tendai. I am an HBScEdCH student at Bindura University. I am carrying out an investigation on factors that are associated with mass failure at Nyamuroro High School in Gokwe North District. I am appealing for your collaboration in making this research a success by honestly responding to this questionnaire. The research is purely for study purposes. Thank you in advance for your cooperation. Information given is confidential.

Section B: Teacher information

1. What is your level of educational qualification?

2. What are your area(s) of specialisation?

Section C: Physical facilities and learning resources

1. Do you have enough laboratories at your school, are the labs equipped?

2. What is the student –text book ratio in chemistry?

3. What are the most common teaching methods that you use in your teaching?

4. Do you have ICT tools for teaching and learning of chemistry at your school?

APPENDIX 2 TEACHER'S QUESTIONNAIRE

My name is Nyamande Tendai. I am currently studying for a Bachelor of Science Education Honours degree in Chemistry with Bindura University of Science Education, Department of Science education. My research topic is factors associated with mass failure in chemistry at Nyamuroro High School in Gokwe North District. The information you will provide is confidential and will be used only for the purpose of this study. Therefore, feel free to share all relevant information. Your participation in this study is voluntary.

Questionnaire identification

A. Demographic details

A1. Gender: Male female (tick where appropriate)

A2. Age of the teacher:

20-30 30-40, 40-50 above 50 (tick where appropriate)

A.3 Marital status of the teacher

Single married widowed divorced (tick where applicable)

A.4 what is the highest educational level completed by the teacher?

Diploma in Science Education	Bachelor of science (BSc)	Bachelor of Science Education (BScEd)	Bachelor of Science Education in Chemistry(BScEdCh)	Master of Science (MSc)

B. Use of teaching aids

B.1 indicate the teaching aid you use during the teaching learning of chemistry.

Audio aids Visual aids audio-visual aids

C. Factors contributing to poor performance in chemistry

C1. What are the factors that contribute to poor performance in 'O' level chemistry at Nyamuroro
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D. Identify strategies that can be employed to improve the performance of learners in chemistry.……

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APPENDIX 3 LEARNERS' QUESTIONNAIRE

SECTION A---INTRODUCTORY NOTE

My name is Nyamande Tendai I am a student at Bindura University of Science Education doing HBScEdCh. I am carrying out research on factors that are associated with mass failure in the teaching and learning of chemistry at 'O' level. I am kindly asking for your collaboration in the research by answering the following questionnaire. The research is purely for study purposes. Thank you in advance for your cooperation.

SECTION B : LEARNING RESOURCES

	Yes	No
Chemistry text books		
Computers		
Internet		
Chemistry charts		
Do learners attend chemistry seminars		
Electricity available to learners		

Section C learners' attitudes

	Strongly disagree	Disagree	Not sure	Agree	Strongly agree
Teaching methods make you like chemistry					
Availability of resources makes learning interesting					
Do you learners perceive your teachers in a positive way					
Chemistry is important in life					

Chemistry concepts are easy to understand					
Teaching methods used by teachers motivates learners					