

**BINDURA UNIVERSITY OF SCIENCE EDUCATION
FACULTY OF SCIENCE EDUCATION
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**AN INVESTIGATION OF THE CAUSES OF POOR PERFORMANCE IN
CHEMISTRY AT ADVANCED LEVEL. A CASE STUDY OF NJELELE HIGH
SCHOOL IN MIDLANDS PROVINCE.**

BY

CHIKWANDA CHARITY

REGISTRATION NUMBER: B1334881

SUPERVISOR: MR SHASHA

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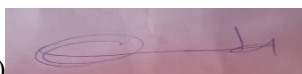
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APPROVAL FORM

The undersigned certify that they have supervised, read and recommend to the Bindura University of Science Education for the acceptance of a research dissertation entitled: AN INVESTIGATION OF THE CAUSES OF POOR PERFORMANCE IN CHEMISTRY AT ADVANCED LEVEL.A CASE STUDY OF NJELELE HIGH SCHOOL IN MIDLANDS PROVINCE.

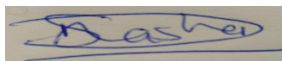
Submitted by Charity Chikwanda. In the partial fulfilment of the requirements for THE BACHELOR OF SCIENCE EDUCATION HONORS DEGREE IN EDUCATION CHEMISTRY (HBScEdCH).

(Signature of student)



Date: **01/05/22**

(Signature of Supervisor):



Date: **01/05/22**

DEPARTMENT CHAIRPERSON _____

DATE ____16/10/2024

DEDICATION



This work is dedicated to my dear family for the immense support and encouragement they accorded me during the trying times as I endeavoured make meaning of this work. To my dear husband Trevor, son Prince and daughter Makanaka; those lonely moments spent in solitude due to my absence did not all go in vain. Your support and understanding were priceless. Thank you very much for the sacrifice.

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ABSTRACT

The major objective of the study was to find out causes of poor performance in Advanced Level National examinations from 2018 to 2021 with reference to Njelele high school Gokwe South, Midlands Province. From 2018 to 2021 the overall National chemistry pass rate in Advanced Level were below 50%. The study wanted to find the pattern of the Form Six student's performance in the ZIMSEC examinations from 2018 to 2021, as well as, the teachers' opinions on that poor performance. The study used cross sectional research design to collect data from the population samples. It employed purposive sampling to select five chemistry teachers at Njelee high school. Data collection was done by using questionnaires, interviews and documentary review. Data from questionnaires were collected, edited, coded and summarized. Descriptive statistics such as frequencies and percentages were employed to show the patterns revealed from the findings. The major findings of the study show that teacher qualifications, teaching experience, and unavailability of teaching aids were among the major challenges which led to poor performance in the ZIMSEC examinations results. The study recommends to provide enough learning materials, as well as, enough motivated well trained and experienced chemistry teachers in high schools.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION TO THE CHAPTER

This chapter presents an overview of the research beginning with background to the study, purpose of the study, statement of the problem, research questions and objectives. It will also discuss briefly the significance of the study to learners, teachers and the nation at large. Limitations, delimitations experienced in the process of undertaking the research as well as definition of key words will also be presented. The chapter will be closed by the summary.

1.2 BACKGROUND OF THE STUDY

There has been wide cry each year when ZIMSEC releases their annual results as a result of students' poor performance especially in the Science subjects. Candidates' performance at Advanced level has consistently remained poor with Chemistry having one of the worst and poorest results over the years. Yet, chemistry is a prerequisite to all courses in medicine and related field, all engineering courses, pharmacy, and many others that are considered prestigious by the society. This means that there will be a low number of admissions in them, which will certainly affect the development of the country.

The continued poor performance in Chemistry have been attributed to a number of factors including students' attitude towards Chemistry, teachers' attitude towards students' abilities, inadequate teaching and learning resources, and poor teaching method, (Abuseji,2007). Studies have proposed various determinants of performance in sciences in general and Chemistry in particular. According to available research findings these factors include; poor teaching methodologies (Friedman, 2000), poor capital investment in terms of provision of science resources, low teacher morale, substandard internal evaluation, poor administration and leadership, inadequate supervision and inspection of schools (Chiriswa, 2002), lack of support from parents, insecure working relationship between head teachers and their staff and indiscipline (Fehintola, 2009) among others.

Due to poor performance in Chemistry at Njelele High School a comprehensive study to investigate the likely causes of this poor performance is needed. According to the school result analysis of 2018 the percentage pass rate of chemistry was 20% while biology was 40% and physics 35%. In the following years the pass rate of chemistry dropped from 20% to 12% while in biology the pass rate increased from

40% to 48% and in physics there was a gradual increase from 35% to 50,6%. The statistics clearly showed that the percentage performance in chemistry is lower to other science subjects. The aforementioned deviations motivate the interests for this research to scrutinise factors that impede the performance of Advanced level chemistry learners at Njelele high school.

1.3 PURPOSE OF THE STUDY

This research is meant to investigate the causes of poor performance in chemistry in high schools. The purpose of the study is to collect the empirical data in the performance of chemistry high schools. The research goes further to discuss the problems causing poor performance in chemistry paving a way for the possible solutions to the causes.

1.4 STATEMENT OF THE PROBLEM

The poor performance in chemistry continues to cast a bad outlook of Njelele high school in Midlands Province. To improve this there is an urgent need to identify possible solutions and a convenient starting point is to identify the causes behind the poor performance. This can be achieved by soliciting for views by different stake holders particularly teachers and the school administration as well as the learners.

1.5 RESEARCH QUESTION

- What are the effects of teachers' experience and academic qualifications on learners' performance in A' level chemistry?
- Does availability of facilities and equipment have any bearing in the performance of chemistry in high schools?
- How does the availability of teaching aids affect performance?

1.6 OBJECTIVES

- To investigate the causes of poor performance by identifying the teachers' and administrators' views.
- To identify how teachers' experience and academic qualifications can affect learners' performance in chemistry.

-To investigate the availability of teaching materials and resources at the school.

-To analyse the availability of chemistry facilities and their bearing on performance of chemistry in secondary schools.

1.7 ASSUMPTIONS

The following assumptions were made for the purpose of this study:

- a) All examinations are reliable and valid and can therefore be used as a measure of academic achievements
- b) There is no variation in the chemistry curriculum between 2018 - 2021
- c) The teaching methods, apparatus and facilities remained the same between 2018 - 2021

1.8 SIGNIFICANCY OF THE STUDY

The findings of this research may assist:

- a) Learners to understand that chemistry is an important subject for qualification to a career in the sciences
- b) Teachers to understand the reasons for poor performance in chemistry as a subject
- c) School administrators and sponsors on their role to provide facilities and equipment for the teaching of chemistry.
- d) The ministry of primary and secondary education as well as the examination board for their role on making the curriculum and syllabuses for chemistry in high schools.

1.9 DELIMITATIONS

This study sought to identify some factors responsible for students' poor performance in Chemistry at Njelele high school. It involved Chemistry teachers, and the senior teachers in science subjects as well as the administrators of the school.

1.10 LIMITATIONS OF THE STUDY

The following number of limitations constrained the research

-Time was a major limiting factor due to lockdowns imposed by the Government so as to curb the spread of COVID -19, therefore the research only focuses on pupils at Njelele High School. This sample cannot be a true representative of all the Zimbabwean high schools.

-The study was limited by lack of financial resources to cater for transport costs, paper work as well as the actual printing of the final project. Therefore, out of the whole population at the school, this research only dealt with advanced level learners, chemistry teachers and the school administrators only.

1.11 ORGANISATION OF THE STUDY

Independent variables

-Teachers qualification, experience, motivation and commitment

-Appropriate teaching techniques

-Adequate instructional materials

-Learning situations

-Students' state, aspirations, attitudes and motivation

Intervening variable

-Effective learning

Dependent variable

-Students 'achievement in chemistry

1.12 DEFINATION OF TERMS

Chemistry: the branch of science that deals with the study of matter.

Chemistry curriculum: all the experiences a learner goes through in learning Chemistry. They include: content, practical work, project, group discussions, excursions and field work.

Curriculum: all the experiences a learner goes through in a learning institution. The experiences include time-tabled content (subject) and co-curricular activities.

Performance

Performance is the results or grades acquired in examinations

Variable

A variable is a concept which can take on different quantitative values such as number, weight, sex and income (Kothari, 2007).

1.13 CHAPTER SUMMARY

This chapter outlined the contextual background to the study. It also spelt out the statement of the problem. The chapter also stated the objectives, research questions, significance of the study to the teacher, learner and the school. Limitations and delimitations were also highlighted in this chapter.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

This chapter, seeks to discuss the literature on issues related to the research problem: what is the effect of teacher's academic qualifications in chemistry towards learner's performance; the effect of teacher experience in chemistry towards learner's academic performance; does lack of apparatus and instructional resources affect learner's academic performance. The researcher will explore what other authors have written about the causes of poor performance in chemistry at advanced level and give the relevance of all literature to the problem. The gaps left by earlier researchers and a clear outline of how will the gaps be filled will be established.

2.2 EFFECTS OF TEACHER ACADEMIC QUALIFICATION ON LEARNER PERFORMANCE

The teacher has the responsibility of imparting the concepts considered fundamental, through the teaching of these basic concepts in the secondary schools. Okafo, (1996), in his study on the relationship between educational resources and learners' academic performance concludes that teachers' qualification is a key variable that determines positive learners' academic performance. Hussain et al (2011) examines the ways in which teacher qualifications and other school inputs are related to student achievement across the United States of America, by using data from a 50-state survey of policies, state case study analysis, the 1993-1994 Schools and Staffing Surveys (SASS), and the National Assessment of Educational Progress (NAEP). Among his evidence-based findings for the effects of teacher quality on student outcomes are that, teacher quality characteristics such as certification status and degree in the field to be taught are very significantly and positively correlated with student outcomes. The relationship between two independent variables of teacher quality and instructional strategy on learners' performance in secondary school Chemistry found that students taught by professional trained Chemistry teachers performed significantly better than those learners who were taught by the non-professional Chemistry teachers on the objective achievement test. Samoff (2005) examines the effect of teacher's qualification on the performance of Senior Secondary School students in Chemistry in Obe state. The author found out that there is a positive relationship between teacher qualification and students' academic performance. A document prepared by Policy Studies Association (P.S.A) reviewed in 2014 in Washington D.C indicated that students' performance is more heavily influenced by teacher quality. The research on policy showed that, the most significant gains in learner's performance are likely to be realized when learners receive instructions from Chemistry teachers over consecutive years. The study suggested that students perform poorly when being taught by teachers who have no educational qualifications (P.S.A, 2005).

Fisher (2003) did a study in Los Angeles, California on the relationship between teacher qualifications and student performance in schools. They found out that there is a positive contribution between teachers' qualifications and academic student performance. Friedman, (2000) postulates that one important variable that determines the success of pupils in public examinations and academic performance in general is the teachers' qualification. Shizha and Kariwo, (2011) cited by Muyambo (2016) revealed that the quality of education is impacted by lack of untrained teachers in secondary schools. Thomas and George and Kaplan (1998) argued that if there are no well-trained and qualified teachers, there is no achievement of desired goals. They further explained that teachers' qualification is very significant and positively correlated with students' academic performance in Chemistry. In the same vein, Ibe and Maduabam (2001), articulated that causes of high poor pass rate in South African rural secondary schools is attributed to shortage of trained and qualified teachers. The success of candidates in public examinations and academic performance is determined by teachers' qualifications (Kwale,2007).

Obadara (2008) did a study on student performance in chemistry which correlates the qualifications of teachers in higher secondary schools of Jammu and Kashmir which dovetails to the findings of Omwenga (2005). The authors found out that the role of professional qualified teachers is an important quality which enhances student academic performance in Chemistry. Orodho (1996) conducted his research in Ekiti state in Kenya. The results revealed that students taught by teachers with higher qualifications performed better in examination than students taught by teacher who do not have teaching qualifications. Nnaka and Anaekwe (2013) concurs with the view above and said that qualification of teachers is important in ensuring that the students achieve better results.

Musvosvi (1998), on their study, Factors influencing advanced level students' academic achievement, asserts that the ability of a teacher to teach effectively depends on the teacher's knowledge of the subject and the teacher's effectiveness is inhibited if the teacher is not knowledgeable of their content. This is so because of the way students perceive the teachers in terms of their knowledge of the subject and it may significantly affect students' academic performance. These were in the view that what matters is the teacher's knowledge on the subject and qualifications have nothing to do with students' academic performance.

2.3 TEACHER EXPERIENCE IN CHEMISTRY AND HOW IT RELATES TO ACADEMIC PERFORMANCE OF LEARNERS.

Teacher experience refers to the number of years that a teacher has worked as a classroom teacher. Mullei (1987), defined teacher experience as all activities undertaken by the teacher in pre and post training

activities, it also includes participation in professional development activities geared towards equipping teacher for better service delivery, Oduor (2009) carried out a study teachers' teaching experience and students' learning outcomes on the secondary schools in Ondo state in Nigeria. The study findings revealed that teachers' teaching experience was significant with students' learning outcomes as measured by their performance in the secondary school certificate examinations. Schools having more teachers with five years and above teaching experience achieved better results than schools having more teachers with less than five years teaching experience. Conversely, inexperience is shown to have a strong negative effect on student performance. Also, their findings were supported by those of a comprehensive analysis by Orod, (2009) who examined data from 60 studies in California and found a positive relationship between years of teacher experience and student test scores. Similarly, the Texas Schools Project data showed that students of experienced teachers attained significantly higher levels of achievement than of students of new teachers (those with one to three years of experience).

Oduor (2009) shows that teachers experience has positive and negative impact to student academic performance. Nderitu (2009), notes that teachers have strong influence on learners' academic performance. He further says one of the teacher characteristics that determine learners' achievement is teachers' teaching experience. This was in agreement with the work of Gibbon et al (2009), in their research on "Teacher qualification and student performance in Urban Elementary Schools in the United States of America" they noted that student academic performance increases with the teacher experience. In support of that view, Douglas and Tim (2011) cited by Muyambo (2016), found that productivity of teachers in secondary schools increase with the experience of the teacher. These findings were in agreement with those of Gwambombo (2013), who found that teacher productivity improved with experience. The findings agreed with Ajagun (2000), indicating that many students perform poorly in examination in topics where teachers found it difficult to teach as result of inexperience, teaching methodology and content. Supporting this point, Adams (1993), remarked that teaching of students by unqualified teachers who are inexperienced in teaching methodology are among other reasons why many students find it difficult to pass their examination.

Aramu and Sokan (2017), found a positive correlation between teacher experience and student's outcomes. Some studies revealed that these teachers with more years of experience in the profession, especially in subjects they are specialized on, turned out students with higher academic performance. This is due to the teachers' experience in instructional technology and pedagogy. On the other hand, Bassey et al (2011) found that there is no significant difference between teacher experience and their efficacy which determines student academic performance. The findings were however, in contrast with the findings made by Best and

Khanu (1993), who found that teaching experience had no significant standardized partial and had no contribution to students' academic performance.

2.4 OF INSTRUCTIONAL RESOURCES ON LEARNER PERFORMANCE.

Chigora and Mutenheri (2007), said that problem confronting teaching and learning of Chemistry in Nigeria is unavailability of instructional resources. In contribution of that, Chiriswa (2002) in his study of the importance of instructional materials to teaching and learning stressed that the primary purpose of instructional materials is to make learning more effective and facilitate it. He further averaged that teachers would not be able to do much where these materials are inadequate. Instructional materials are confirmed to be very important to the success of Chemistry in the classroom, if adequate materials are available and used by teachers in teaching and learning process, positive results are obtained. Inadequate of instructional resources such as textbooks, physical infrastructure, and laboratory has made learners lose interest in chemistry and other science subjects hence poor academic performance (Edmwonyi-out and Avaa, 2011). Therefore, this means that schools with inadequate teaching materials perform poorly in Chemistry and other science subjects.

Poor capital investment in terms of provision of science learning resources to students contribute to low level of academic performance (Oloruntegbe and Oluwatele, 2010). A similar study has been carried out in Nigeria by Salman et al (2012) where the performance of science subjects was very poor in secondary schools and he said that, one of the factors contributing to poor academic performance was inadequate of learning facilities in secondary schools which includes equipment and laboratories. In Malawi, poor performance in Chemistry and other science subjects has been poor due to lack of science equipment and quality textbooks Kwale (2006). Serin and Mohammadzader, (2008) in their study assessed the adequacy of school inputs and learning process. They found out that there were no enough teaching and learning materials, teaching and learning processes were poor. Rughubir (2007) in their research found out that poor academic performance in Chemistry were due to lack of well stocked libraries and laboratories among others. Salman et al (2012) found out that inadequacy of learning materials is one of the common reasons that leads to poor academic performance of science subjects. In his study, Orodho (1996) the relationship between availability of teaching/ learning materials and performance in secondary school science subjects found that there was higher performance in schools with availability of textbooks laboratory equipment and chemicals and then to schools which are not fully equipped there was low academic performance.

In a study conducted by Oliver and Herrington (1995), the study revealed that adequacy of resources in most cases correlated positively with pupil performance. In other study by Tshabalala and Ncube (2013), in the Nkayi district in Matebeleland North on the teacher's perspective on possible causes of performance at Advanced level found out that low pass rate at advanced level was mainly attributed to lack and

inadequacy of material resources among other factors. Kithuka (2016) established that most schools do not have laboratories and the lack of adequate resources and materials in Chemistry is a significant factor contributing to academic poor performance. In a study by Hussain and Kama (2015) on attitudes of secondary school students' attitude towards Chemistry revealed that provisions of inadequate teaching aids made students perform poorly in Chemistry. Therefore, recommend that there is need for provision of adequate teaching materials in order to improve students' academic performance in Chemistry and other science subjects.

Chiriswa (2002), asserted that non availability and inadequacy of instructional materials are the major cause of the ineffectiveness of the school system and poor academic performance in secondary schools in Chemistry and other science subjects. Availability of instructional resources according to studies has proved to be essential instruments to facilitate learning habits. Marcus (2016), in his study, Availability of basic technical learning materials, the author posits that, "nature, condition and adequacy of learning materials definitely have positive impact on learning engagement and students' academic performance". George and Kaplan (2000), cited by Mgani (2017) in his study, measuring the students' attitudes towards science subject over time. The study revealed that the inadequacies of furniture, equipment in the classrooms and laboratories where teaching and learning of science took place might contribute to misconceptions and alternative conceptions'. The author was of the view that proper adequacy teaching and learning materials promote positive academic students' performance.

2.5 CHAPTER SUMMARY

From the literature it is evident that, teacher academic experience may have bearing on learner performance, so does teachers academic qualification similarly the teaching aids also can determine learner performance. However, this requires further research. The next chapter will focus on research methodology.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION TO THE CHAPTER

This chapter discusses the methodology and procedure that will be deployed in sampling, collecting and analyzing data. It also focuses on how the sample size was selected and the instruments used in data collection as well as the data analysis procedure and ethical considerations.

3.2 RESEARCH DESIGN

Qualitative research design was considered suitable for this research study as it enables an in-depth understanding of factors behind learner performance. Bhagwan (2005) posits that qualitative research design refers to a systematic process of generating data and logically analyse it in the form of words. It also provides the research with vast range of options and opportunities for exploring diverse issues affecting learner performance in chemistry. This enabled the researcher to understand the phenomena from a holistic viewpoint to assess activities, events and relationships in their whole content. The design also provided flexible ways of generating, analysing and interpreting data and information.

3.3 POPULATION, SAMPLE AND SAMPLING TECHNIQUE

A sample size of five (5) teachers from a population of thirty- four (34) teachers was considered in this research. In this study, the population comprised of four 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 Chemistry 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 department is the one who capture data about all the science teachers including the former teachers.

3.3.1 SAMPLE

The research sample for this study were former chemistry teachers of Njelele High school whose examination records in physics for external examinations for the years 2018, 2019, 2020 and 2021 are available. Two former teachers were considered in the study. The other respondents in the study were other two physics teachers posted in the physics department. These respondents filled a questionnaire, which

requested for the details of the teachers, which include academic qualification, teaching experience, age group, gender, and year joined the school. The respondents were selected because they are the ones who selected, admitted and taught the students in question. They also keep the students' records required for the research so they were better placed under fundamental for the data of the study.

3.4 RESEARCH INSTRUMENTS

A written questionnaire was administered to the teachers of physics department to collect data from primary source which could not have been possible to obtain from secondary sources especially descriptive data and some quantitative data. In this study, the researcher used open ended questions which are simple and straight forward where by respondent used a tick for the appropriate response. Close ended questions were also used to avoid silly and funny questions and responses from the participants. Some questions in the questionnaire used Likert scale responses. That is, strongly disagree, disagree, neutral, agree and strongly agree, and open-ended responses to avoid the researchers' guided responses. Some of the questions asked in the questioner include the following:

- Does teacher experience and academic qualifications in physics have an effect towards learner's performance?
- How does the availability of teaching aids affect performance?
- What are other factors that can cause poor performance in chemistry?

Questionnaires gave a room for the researcher to analyse collected data objectively than any other form of research instruments. Ray noted that questionnaire is cheap in terms of money and time. The results of questionnaires can be quickly identified. Beck and Earl (2002) believes that questionnaires are notorious for their low response rates that people fail to return them, which could leave the researcher with limited data to analyse. He also added another disadvantage if the respondents do not understand a question, there is no opportunity for them to have a clarified. Best and Khan (2008) found that most studies using structured questionnaires lack specific information on question wording and phrasing. The results of questionnaires are based only on the type of question being asked. Broman et al. (2011) alluded that if the questions are poorly worded or biased in nature, then the result analysed will also be of the same nature. Questionnaires can also give the respondents freedom to lie, hence resulting in vague answers or opinions that is distant from the main issue.

3.5 DATA COLLECTION PROCEDURES

This study required both secondary and primary data. The secondary data was obtained from the ministry of education district office on the analysis of quality of performance of all school candidates in the basic science subjects. The primary data was obtained from the sample population after they answered the questionnaires. The researcher informed the school head and the head of science department about the intended study. She also requested for the permission to carry out the research and also requested for necessary assistance required. The researcher then proceeded and administered the questionnaires to each respondent; the nature of the questionnaires was explained.

3.6 DATA ANALYSIS TECHNIQUE

Data analysis is a process of inspecting, transforming and modelling data with the goal of discovering useful information suggestions and conclusions Best and Khani (1992). In other words, it is the process of interpreting information generated and make meaning out of it. This research generated qualitative data, therefore qualitative data analysis was used to analyse data collected. The data was first organised into categories and descriptive explanation and narrative were used to analyse data.

3.7 ETHICAL CONSIDERATIONS

Ethical considerations are the principles that guide and govern the researcher in carrying out a research study, Fisher (2003). The researcher found important to take into account ethical issues in order to avoid misunderstanding with respondents. Therefore, the researcher considered the rules and regulations during the process of preparations, conducting research in the field and reporting the information collected. In this manner, the following considerations were taken into account.

3.8 INFORMED CONSENT

The researcher has sought permission from the respondents to carry out the research with them. The researcher also informed participants verbally that their participation is voluntary. This ensured that the participants are participating voluntarily. Locke (2006) ascertain that the research should be as far as possible be based on participants volunteered inform consent. Therefore, the research respected participants' autonomy and freedom.

3.9 CONFIDENTIALITY

This study ensured that all information collected was kept private and stored in a safe manner for the purpose of this study only to avoid unauthorised person to access them. Questionnaires for each respondent was labelled with identification numbers to ensure maximum confidentiality between researcher who collected information and the respondent who provided the information.

3.10 CHAPTER SUMMARY

The chapter has described the research methodology used in the study. The research study adopted a qualitative research design which enabled the researcher to get an in-depth understanding of factors causing poor pass rate in Chemistry at Advanced level. The population of this study consisted of head of science department, Chemistry teachers. Data was generated using structured questionnaires. The data generated was analysed using descriptive and narrative analysis.

CHAPTER 4

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

This chapter presents data, analyse and discuss the findings of the study on factors that contribute to poor performance in chemistry. It contains the responses from the teachers on what they perceived as the contributing factors to the poor performance in chemistry at Njelele High School.

4.2 DATA PRESENTATION AND ANALYSIS

This section is concerned about presentation and analysis of data about the research questions. The findings are presented on the basis of the research questions. The findings are presented in a descriptive manner aided by some descriptive statistics.

Table 4.2.1 Percentage pass rate for sciences from year 2018 to 2021

Year	Subject	Percentage pass rate
2018	Biology	40%
	Chemistry	20%
	Physics	35%
2019	Biology	35%
	Chemistry	18%
	Physics	28%
2020	Biology	45%
	Chemistry	16%
	Physics	30,5%

2021	Biology	33,5%
	Chemistry	15%
	Physics	30%

Statistics for the performance of the three science subjects was recorded in table 4.2.1.

Figure 4.2.1 Percentage passrate for Biology, Chemistry and Physics

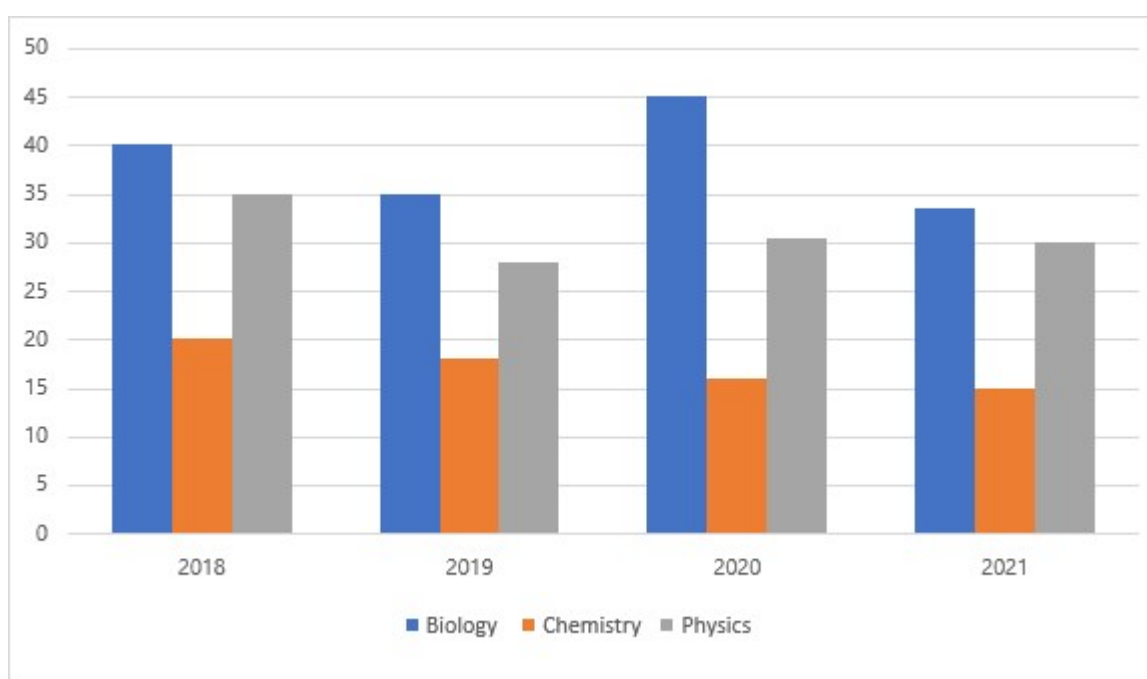
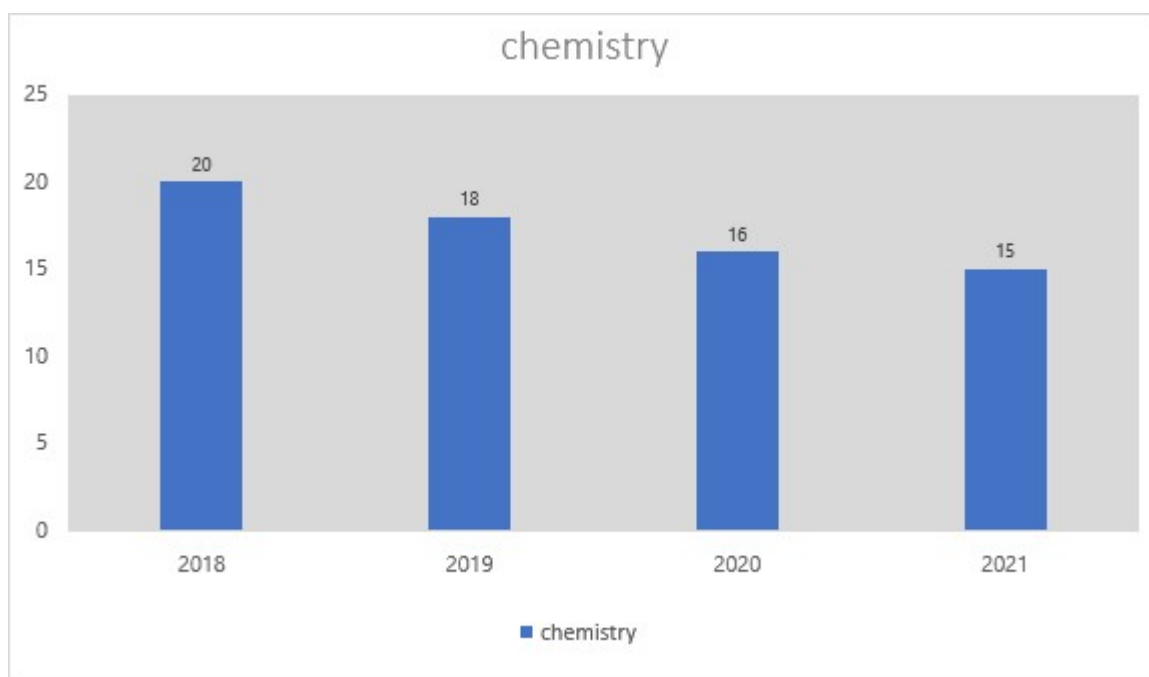


Figure 4.2.1 represents the percentage performance of the three-science subject, biology, chemistry and physics pass rate for the school from 2018 to 2021. As indicated, chemistry pass rate was the only subject with performance which was low compared to other science subjects. There was a general decrease of the percentage pass rate of all the science subject in 2019 as compared to that of 2018. In 2020 percentage pass rate in Biology and Physics rose whilst that of Chemistry was low as compared to previous year.

Figure 4.2.2 Percentage pass rate for Chemistry from 2018 to 2021



The graph shows the percentage pass rate of physics from 2018 up until 2021. In 2018, the percentage was 20% which then started to decrease until it reaches 15% in 2021. This indicates how the performance of physics has gradually dropped.

Table 4:2.2 Teacher profiling

Teacher background	Teacher A	Teacher B	Teacher C	Teacher D	Teacher E
Gender	Female	Male	Female	Male	Female
Age group	41-50	41-50	21-30	31-40	21-30
Qualification	Bachelor of Science Honours Degree in Education (chem)	Bachelor of Science Honours Degree in Education (chem)	Bachelor of Science Honours Degree (chem)	Bachelor of Science Honours Degree in Education (chem)	Diploma in Science Education (chem)
Teaching experience	5-10 years	5-10 years	2-3 years	2 years	1 year
Year with exam class	2018	2019	2020	2021	2021

Table 4.2.2 above shows that the majority of the respondents (80%) had professional qualifications. However, a significant number of the respondents (20%) had diploma in science education, 20% had honours in chemistry without education and another 60% were holders of honours degree in chemistry education. The table 4.2.2 also, shows that the majority of respondents had less than five years of teaching experience (60%). Those who had over five years of teaching experience constituted 40% of the respondents.

4.3 DISCUSSION

4.3.1 Teacher experience and academic qualifications

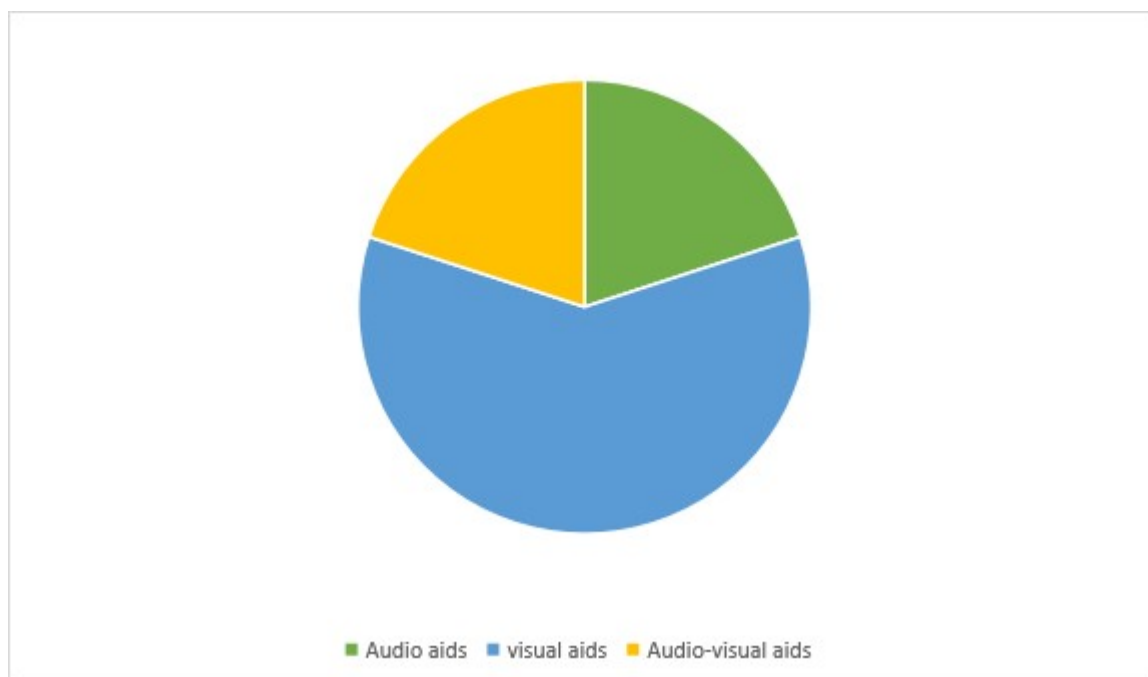
The results of this finding revealed that teachers' experience and academic qualification has impact on learners' performance at Njelele High School. This is in agreement with the results from the table 4.2.2, in that table it is observed that the teacher who taught in 2018 to 2019 had the highest qualification in physics and has the teaching experience of 5-10 years and the results were better compared to those produced by other teachers with little teaching experience. It is also evident that teacher experience and qualification has an impact on learner performance as the results revealed that in 2021 there was a very low performance in chemistry since the teacher had only one year teaching experience and hold a diploma in science education.

The finding also showed that professional teachers affect the learners' performance positively more than the unprofessional teachers. The professional teachers' background training in education is the bane behind this clear cut difference. No wonder, Nderitu (2009) in his study, remarked that the success of any educational enterprise depends largely on the availability of professional teachers. This is possible because the trained teachers have been taught the technical knowhow for effective learning to take place in the learners. Scholars are of the opinion that students respond to a particular subject in relative to the kind of teaching. It is also evident from the outcome of the finding that learners' performance in physics is unaffected by the teachers' gender but by their skilfulness on the prescribed field of study. This is in line with the finding of Orodo (2008) that gender has nothing to do with academic ability. So, since the teachers (both male and female) are professional teachers, there is no difference in their ability to impart knowledge in the students. The result of this finding also showed that experience counts in the efficiency of the teachers. The teachers

with long years of teaching experience were able to impact more on the students than teachers with short years of teaching experience. The lack of experience has caused poor pass rate because teachers do not have the skills that are required to deliver Chemistry concepts to the learners and also effectiveness of the teacher improves with experience.

4:3.2 Availability of teaching aids

Figure 4:3.2 Teaching aids used by teachers



4.3.2 Discussion

The collected data indicates that the school under study lacks teaching aids which are essential for teaching and learning of chemistry. Therefore, it can be concluded that the poor performance in chemistry at the school could be caused by lack of teaching aids which are essential for teaching and learning of chemistry.

The lack of teaching aids could have caused poor performance in chemistry because positive academic performance is likely to be realised when teaching aids are available and are effectively used as asserted by Rughbir (2007). Teacher performance and effectiveness is also improved when teaching aids are used in the teaching and learning process because they help the teacher to convey and deliver message to the learners which in turn improves learners' academic performance. Teaching aids in the teaching and learning process of chemistry they facilitate the proper understanding to learners which discourage cramming. It also makes the classroom live and active. Teaching aids help learners to incorporate all

senses for example hearing and sight, this in turn helps to create and provoke interest to learn and motivation to learners.

4.3.3 Other factors that may lead to poor performance in chemistry

In the questionnaire, respondents were asked to write down other factors that may contribute poor performance in chemistry. The following factors were listed, lack of resources such as text books, apparatus, availability of a well-equipped laboratory, lack of ICT tools and teaching methods.

The above factors have a negative impact towards performance of learners, Laboratory equipment provides students with an opportunity to see and make observation of what they are taught (Kithuka, 2016) he also added that learning takes place best through discovery exploration and interaction with the internal external environment. Chiriswa (2002), observes that when instructional material is inadequate the teaching and learning process is compromised and this inevitably is reflected in low academic achievement, high dropout rates, problem behaviours, poor teacher motivation and unmet educational goals. In addition, inadequate ICT tools mean that the students and their teachers are not exposed to e-learning and therefore cannot access the vast electronic library and their sources of teaching and reading materials are restricted thereby affecting the performance of learners in chemistry.

4.4 SUMMARY

In this chapter, the researcher discussed the findings from the research instruments used to collect data. The research results were presented in tables and graphs, analysed, and discussed through the use of narrative discussions. The researcher also linked discussions in this chapter with literature in chapter 2 for any similarities and differences.

CHAPTER 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS.

5.1 INTRODUCTION

The chapter aims at giving a summary of the whole research and then gives the conclusion basing on the research findings, analysis and discussion done in chapter four. The chapter will also look at the recommendations that highlight what the researcher think can be done to address the noted challenges.

5.2 SUMMURRY OF THE STUDY

This research was necessitated by poor performance in chemistry which lead to the decrease in school's overall pass rate. The study set out to investigate the probable causes of poor performance in chemistry at Njelele high school in Gokwe South. The first chapter looked at the background of the study, statement of the problem, research questions, significance of the study to the learner, teacher and the nation at large. The chapter continued by looking at limitations and delimitations of the study. Numerous literatures written by other scholars on the causes of poor performance in physics was reviewed in the light of each research question, the literature showed that teacher experience and academic qualification contribute to learner's performance in physics. In attempting to identify the causes questionnaires, were used to collect data, five questionnaires were designed for physics teachers.

Purposive sampling technique was used in choosing the sample of teachers to deal with. All teachers who were given the questionnaires gave their views on the reason why there was poor performance at Njelele High School. The results obtained from the questionnaire were recorded, presented in tables and bar graphs, interpreted and analysed in chapter four. The major findings obtained show that the some of the teachers have less than 5 years of teaching experience and some are holders of diploma in science education. 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 she obtained.

5.3 CONCLUSION

The researcher realized that, teacher experience and qualification contribute to the poor performance in physics this was evidenced by low percentage pass rate for those learners taught by teachers with less than five years teaching experience as well as those with diploma in science education which contributed 20% of the sample, for example in 2020 the teacher who was teaching the exam class was a holder of diploma in science education and yielded 15% pass rate. 20% had honours in chemistry without education while 60% were holders of honours degree in chemistry education. The study also reviewed that, lack of teaching aids also contributed to poor performance as the teachers responded that they are not making use of several teaching aids. They indicated that poor performance in chemistry is due to a number of factors which include, lack of resources, unavailability of a well-equipped laboratory as well as teaching aids.

5.4 RECOMMENDATIONS

The following are suggested recommendations:

- For effective teaching and learning teachers with highest qualification in chemistry are the one who should teach pure science subjects at Advanced level and let the diploma holders teach chemistry up to ordinary level and combined science subject.
- Teachers should make use of teaching aids during their teaching process so as to make learning more interesting.
- Learners need to be motivated, they should be provided with the required learning materials for effective teaching and learning of chemistry.
- The school can source funds through civic days, funny day and other activities to help them to buy apparatus which are recommended for experiments.
- Parents should provide their children with adequate support, guidance and attention. They should assist their children by paying practical fees and other requirements which are needed for chemistry learning.
- Teachers should be encouraged to make use of experiments in explaining concepts to pupils so that the pupils will be able to actively participate in classroom lessons.

- The researcher recommends the procurement of the necessary ICT tools such as computers and projectors so that teaching and learning of Chemistry becomes interesting hence more learners are likely to enrol for physics leading to increased enrolments as well as improvement of performance. The researcher also recommends the massive training of science teachers in universities and colleges so that more qualified teachers will be available.
- The researcher also urges the responsible authorities to collaborate with the corporate world so that instructional materials can be made available in required quantities. The researcher also applauds the government's STEM initiative and recommends that the program should continue so that more learners are motivated to take the subject and the learners will get opportunities to receive learning material such as computers which in turn fosters understanding.
- Research may be carried out on other science subjects, that is, Biology, Physics and Geography to find out whether there is any correlation with the findings contained in this research.

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APPENDICES

QUESTIONNAIRE FOR CHEMISTRY TEACHERS

You have been selected to participate in this research which focuses on the causes of poor performance in chemistry at advanced level ZIMSEC examinations results from 2018 to 2021 at Njelele high school in Midlands Province. Your inputs are very important for meeting the objectives of this research.

The following statements are intended to obtain factors that contribute to students 'performance in chemistry in your school. The statements in section A are open- ended. Statements from section B onwards are both open-ended and closed. Please respond to all of them accordingly. All the information given is confidential and will be used for the purposes of this study only. Thanks in advance for accepting to participate in this study. Your cooperation is highly appreciated.

Section A: Background characteristics.

1. What is your gender? (*Tick the most appropriate*) Male [] Female []
2. What is your age? 21 -30 years [] 31 -40 years [] 41-50 years []
3. What is your level of education? (*Tick one*) Certificate [] Diploma [] Dip. In Education [] Untrained Graduate [] Trained Graduate [] Trained Post Graduate []
4. Besides academic qualifications, are there any refresher courses you have attended?
Yes [] No [] If yes, please specify _____
5. Term of service. (*Tick one*) Temporary [] Contract [] Permanent []
6. How long have you been teaching Chemistry? _____
7. Work load in terms of number of lessons per week _____

8. How many Chemistry teachers are there in your current station? _____

9. Apart from teaching, do you have any administrative responsibilities? (*Tick one*)

Yes [] No [] If yes, please specify _____

10. What is the total number of students in your present form five and six classes/streams?

[*Choose one*]. 0 – 10 [] 11 – 20 [] 21- 30 [] 31- 40 [] 41and above []

Section B

11. How do you classify the performance of your students in Chemistry examination particularly in ZIMSEC? Poor [] Average [] Good [] V. Good []

12. Are you happy with the performance of your students in Chemistry examination particularly in ZIMSEC? (*Please explain your answer.*)

13. What influences your choice of a teaching and learning technique?

14. In your opinion, what contributes to poor performance in Chemistry?

15. (a) In your opinion, what is the ability of your students?

Very Brilliant [] Above Average [] Average [] Below Average []

16. Using 1 for most important and 5 for least important, rate the following according to their importance in influencing students' performance of Chemistry in your school.

FACTOR	RATING
Teaching techniques/methods	
Teacher's qualification ,commitment and experience	
Instructional resources and facilities	
Nature of chemistry curriculum	
Mode and frequency of assessment	
Student's behaviour	

Against the following statement in this section are abbreviations **SA –Strongly Agree, A – Agree, NS – Not sure, D- Disagree, and SD –Strongly Disagree**. Please respond to all of the statement by ticking against the box you feel is the most suitable as per your opinion.

17. In terms of facilities respond to the following

STATEMENT	SA	A	NS	D	SD
i.The school has adequate resources for teaching chemistry.					
ii.There is a separate Chemistry laboratory in the school.					
iii.Chemistry apparatus and chemicals are adequate for chemistry practical lessons.					
iv.The administration involves Chemistry teacher in acquisition of apparatus and chemicals.					

18.I work as a team with other Chemistry teachers in my school.

SA [] A [] NS [] D [] SD []

19.The school has a committed and supportive laboratory technician.

20.To help improve the performance of Chemistry in your institution, what do you consider to be the role of the following?

i. Your Chemistry students _____

ii. Your fellow Chemistry teacher(s) _____

iii. The School administration _____

iv. Yourself _____

v. The laboratory technician. _____

Thank you

END