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**PROBLEMS HINDERING EFFECTIVE TEACHING OF BIOLOGY IN RURAL SECONDARY SCHOOLS. A
CASE STUDY OF THREE RURAL SECONDARY SCHOOLS IN GWANDA NORTH DISTRICT.**

BY

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Release form

PROBLEMS HINDERING EFFECTIVE TEACHING OF BIOLOGY IN RURAL SECONDARY SCHOOLS. A CASE STUDY OF THREE RURAL SECONDARY SCHOOLS IN GWANDA NORTH DISTRICT.

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I NDLOVU PATRICIA , declare that is my original work that has not been submitted for any degree or examination in any other university and that all the sources I have used or quoted here have been indicated and acknowledged.

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This research work was undertaken under the supervision of

Signed:

A handwritten signature in blue ink, appearing to read 'D. Asher', is written over a yellow rectangular highlight. Below the signature is a solid black horizontal line.

Date:

20 July 2024

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DEDICATION

I would like to dedicate this project to my family, my sister Simeleni Dube, and Nkashe High Staff members and learners as well as my brothers Worship ,Godknows and Maxwell and also to all my friends who encourages me during the time of research.

ABBREVIATIONS AND ACRONYMS

O level - Ordinary level

A level - Advanced level

Zimsec - Zimbabwe School Examination Council

UNESCO **United Nations Education**

ABSTRACT

This study investigated the problems hindering effective teaching of Biology in rural secondary schools in Gwanda North District. A case study design was employed, involving three rural secondary schools. Data collection methods included questionnaires, interviews, and observations. Results revealed that inadequate resources, teacher shortages, poor infrastructure, and lack of community support were major obstacles to effective Biology teaching. Additionally, language barriers, inadequate teacher training, and a curriculum disconnected from rural students' needs further exacerbated the challenges. The study recommends strategies to address these challenges, including resource provision, teacher training, infrastructure development, and community engagement. The findings have implications for improving Biology education in rural areas, enhancing student learning outcomes, and promoting scientific literacy. Data generation, analysis, and discussion were grounded in a constructivism paradigm and qualitative approach. The researcher used document analysis and interviews in generating data. In this research study, ten learners were conveniently selected and four teachers were purposively selected to form the sample for this study. The generated data were analyzed according to themes derived from the formulated research questions. Findings of the study revealed strategies used by teachers in preparing learners for ordinary level biology examination and how these strategies are used by teachers as well as challenges encountered in trying to prepare learners for ordinary level biology examination. Possible solutions to the encountered challenges in trying to prepare learners for ordinary level biology examination using different strategies, had also to be suggested. Findings, analyzed data and interpreted data, the researcher had eventually concluded that the factors influencing learners performance are the teacher factor, learner factor, and external factor, and all these play a significant role in shaping learners performance in biology. The teacher subject matter, knowledge, learner motivation, availability of resources and parental support are other key factors that are crucial that determine learners performances. The researcher recommends that teachers should use a variety of educational technologies to cater to the learners' different learning styles and there is a need for staff development to teachers on the contemporary strategies that can be used in the preparation for ordinary level biology as well as teacher training and development programs at school or district level. The school should provide adequate resources to support biology instructions and involvement of parents in supporting learner's activities. Furthermore, government and various stakeholders are encouraged to assist by sponsoring these technologies in schools to supplement the available technological resources. .

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CHAPTER ONE

PROBLEM AND ITS SETTING

1.1 INTRODUCTION

In this first chapter, the issue under investigation will be put into perspective through the following: background to of study, statement of the problem, research questions, significance of the study, delimitation of the study, limitations of the study, definition of terms, chapters layout and chapter summary.

1.2 BACKGROUND TO THE STUDY

Education is considered a tool to be used for the integration of individuals into society to achieve self-realization, develop national consciousness, promote unity, and strive for social economic, political, scientific, cultural, and technological progress (Afe, 2018). According to Umamer (2017), education in Biology is the bedrock and an indispensable tool for the scientific technological, and economic advancement of any nation. The world at large is emphasizing the learning of Biology and related subjects from basic up to tertiary education (Ibrahim et al., 2019). Buabeng, et al (2012) argued that Biology learning has a vital role in understanding the world, and there are important contributions of Biology to nations' welfare as well as to their economic development. UNESCO (2020) reported that Education quality in Africa was rapidly declining due to an inadequate supply of key instructional materials and the decline in their utilization. It is therefore, advocated for the revitalization of strategies intended to provide learning resources to safeguard and improve education quality in Africa. Additionally, Gikunda (2016) reported that the provision of teaching and learning materials, especially books, was an effective way of improving learners' academic performance. However, in Zimbabwe, there has been a significant decline in learners' performance in ordinary level Biology (Franklin, 2014; Gudyanga & Kurup, 2017). In support of this notion, Zimbabwe School Examination Council (2022) reported that few learners were performing well in Ordinary Level Biology examinations. It is in this paper that this study sought to gain insights into problems hindering effective teaching of Biology in Gwanda North Ruralr School

1.3 STATEMENT OF THE PROBLEM

For the past four years learners' performance in Ordinary Level Biology examinations has been a cause for concern since the number of those performing well tends to be declining. Below is a table showing the percentage pass rate in the concerned subject in Gwanda North rural schools.

Table 1.1: Ordinary Level Biology results analysis (2019-2022)

Year(s)	Total candidature	Pass Rate (%)
2022	500	10
2021	495	7
2020	480	3
2019	500	5

The presented statistics prompted the researcher to explore this issue guided by the following main research question: What factors are hindering effective teaching of Biology in Rural Secondary Schools of Gwanda North District.

1.4 RESEARCH QUESTIONS

1. What are the problems hindering effective teaching of Biology in rural secondary schools in Gwanda North District?
2. What are the effects of inadequate resources on the teaching of Biology in rural secondary school in Gwanda North District?
3. How do teacher shortages affect the teaching of Biology in rural secondary schools in Gwanda North?
4. What strategies can be employed to improve the teaching of Biology in rural secondary schools in Gwanda North District?

Research Objectives

1. To identify the problems hindering effective teaching of Biology in rural secondary schools in Gwanda north district.
2. To examine the impact of inadequate resources on the teaching of Biology in rural secondary schools in Gwanda north district.
3. To investigate the effects of teacher shortages on the teaching of Biology in rural secondary schools in Gwanda north district.
4. To develop strategies for improving the teaching of Biology in rural secondary schools in Gwanda north district.

1.5 SIGNIFICANCE OF THE STUDY

1.5.1 Policymakers

The findings of the study may be useful to policymakers in the education sector to help put policies in place which will help them identify and resolve problems hindering effective teaching of Biology in Rural Secondary Schools of Gwanda North District.

1.5.2 Zimbabwe Schools Examination Council

They can utilize the findings of this research to solve the problems hindering effective teaching and learning of Biology. They can use the research as secondary data for other forms of research that are of interest to the organization.

1.5.3 Biology teachers

Teachers will be able to create an interesting, challenging, and motivating learning and teaching environment. The teachers will also acquire the knowledge and skills to solve problems hindering effective teaching of Biology at Ordinary Level.

1.5.4 Learners

The learners will be prepared to be equipped with the relevant skills and knowledge which will enable them to provide solutions to current and future problems. The learners will also be encouraged to be responsible for their learning and hence self-confidence will develop for future citizens.

1.5.5 Researcher

The study sharpens the research skills of the researcher around Biology as well as in other future study areas. It enables the researcher to fulfill the educational research requirement on the programme under study.

1.6 DELIMITATION OF THE STUDY

This study focus was on Nkashe High, Ngwidzi Secondary School and Stanmore Secondary Schools in Gwanda North Rural area. The schools offer basic education, that is, Forms 1 - 4 with an enrolment of about 2000 learners and has a curriculum comprised of sciences, commercials, and arts. This study was centered on exploring problems hindering effective teaching of Biology in Rural Secondary Schools in Gwanda North District.

1.7 LIMITATIONS OF THE STUDY

The result of this study has its weaknesses. It was conducted in one out of ten provinces in Zimbabwe which might compromise the obtained results and hence might not have enough evidence for generalisation. Exploring learners' performance in Biology at Ordinary Level also needs a deeper investigation if we need to explore it worldwide. Finally, the researcher should also have used a bigger sample. Future researchers might use tape-recorded material which is more reliable than field notes.

1.8 DEFINITION OF KEY TERMS

1.8.1 Learners: refers to a person who attends an educational institution. Webster (2018) refers to learners as people who study under a teacher.

1.8.2 Performance: is taken as how well or badly you do something or how well or badly something works (Anderson, 2019). It is also defined as the process of performing a task while performing means to work or function well. However, in this study performance means the level at which the goal has been attained.

1.8.3 Biology: refers to the institution of scientific education after completing Zimbabwe Junior Certificate (Deya, 2020).

1.8.4 Hindering in Learners' Performance refers to factors or influences that make it more difficult for students to learn effectively and achieve their full potential. These hindrances can come in various forms, such as mental health issues, lack of motivation, external distractions, or substance use, and they can significantly impact a student's ability to concentrate, learn, and perform well academically.

1.9 CHAPTERS LAYOUT

In chapter 1 the issue under investigation was put into context, chapter 2 exposed gaps in current literature, chapter 3 outlines the data generation, analysis, and interpretation strategy, chapter 4 focuses on the analysis and interpretation of the findings, and chapter 5 outlines the conclusion and recommendations.

1.10 CHAPTER SUMMARY

In this chapter, the problem under investigation was put into context through the discussion of the following: background to the study, statement of the problem, research questions, delimitation of the study, limitations of the study, definition of terms, and chapters layout. In the next chapter, the focus will be on a review of related literature.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

The focus of the previous chapter was an overview of the problem and its setting. This chapter is going to have an in-depth analysis of the literature related review of hindrances influencing effective teaching of Biology. According to Worth (2019) literature review is a critical and in-depth evaluation of previous research. It is a summary and synoptic of a particular area of research, allowing anybody reading the paper to establish why a person is pursuing a particular research programme (Shuttle 2009). Taylor (2004) views a literature review as an account of what has been published on a topic by accredited scholars and researchers. The purpose of the literature review according to Chikoko and Mhloyi (2016) is to assist the researchers in attacking research problems. Also, Chisi (2015) states that a literature review must be employed to support the research question, the design, and the procedures of the researcher. This chapter has several subtopics which include theoretical framework, approaches used in teaching and learning activities, the use of different approaches, challenges faced in implementing these approaches, strategies that can be used to reduce the impacts of the challenges and a chapter summary will be given.

2.2 THEORETICAL FRAMEWORK

The researcher found Bandura's social learning theory as most relevant to the study on hindrances influencing effective teaching of Biology in Rural Secondary Schools. Social learning theory is one of the most influential learning theories. It was formulated by Albert Bandura. Bandura (1977) states that most learners learn through observing and modelling the behaviours, attitudes, and emotional reactions of others. This means that learners in schools learn by observing or copying the attitudes of people around them such as peers, teachers, parents, and school authorities. According to Bandura and Walters (1963), social learning theory acknowledges that the environment affects our behaviour whilst at the same time recognizing the importance of human recognition. Social learning theory comprises basic components and processes underlying observations of learning such as attention, retention, reproduction, and motivation (Bandura, 1977). Sincero (2011) states that a student must pay attention for him or her to learn. According to Bandura (1977), retention is a process of remembering what a person has paid attention to. According to Bandura (1973), feeling motivated to repeat the same behavior is what a person needs to keep performing it. Mwesinga (2016) states that the practice of the behavior by repeatedly doing it is important for improvement.

2.3 APPROACHES USED IN BIOLOGY LEARNING ACTIVITIES

This section centers on the interrogation of the approaches that are used in Biology teaching-learning activities. These are mainly learner-centered and teacher-centered approaches.

2.3.1 Question and answer

Questions and answers are a process of passing instructions to learners by allowing the students to ask questions or to dominate sessions based on the topic or issue under review (Moss, 2017). This is an effective way for all students to participate whether they are introverts or extroverts. Mitchell et al (2015) state that lazy teachers and those who do not prepare well for their classes will resort to questioning to pass the time. (Benjamin and Wakhungu (2014; Ncube (2015) observe that with the change in our educational goals, from mere acquisition of facts and information to the development of reflective thinking and intelligent manipulation of materials, the method of questioning has become more challenging for the teacher. For this method to be effective and for the teacher to overcome the challenges such as learners asking irrelevant questions, he/she must be clear with the purpose for which he/she is going to ask questions and this shows that the questions must be prepared in advance (Eagly & Chaiken, 2017). Farson and Crichton (1996) summarize the purpose of questioning into four categories, thus, questioning for teaching; drilling; guidance, and evaluating.

2.3.2 Discussion

The discussion method is a teaching method that also refers to an open-ended teaching method where students and teachers share ideas (Benjamin & Wakhungu, 2018). It is one of many student-centered approaches where students are expected to dominate teachers and give the class session and feedback. This method enhances teaching significantly as it allows students to contribute although extrovert students tend to dominate the session, it gives even the introverted students a chance to be listened to (Mertens, 2020). The major disadvantage of the discussion method is that it consumes time 30 to 40 minutes given for a class activity might not cover a behavioral objective (Ngubele, et al., 2016).

2.3.3 Brainstorming

Brainstorming is a teaching strategy that allows students to think deeply to find a solution or analyze issues at hand. This method helps to develop skills that are often found when critical thinking is involved (Miles, 2015). Brainstorming method like the discussion method consumes a lot of time and if not well organized, managed, and maintained, students might end up learning nothing (Friesen, 2020). Therefore, for students to get it right there should be a lot of teacher's interventions to moderate

the cause of action. But its advantages are seen in the long run. In other words, it is not an immediate result-oriented strategy, but long time result-oriented strategy (Dorph & Schunn, 2018).

2.3.4 Presentation

The presentation teaching method is a teaching method where learners are given topics to do research on and find out the results by themselves and present it to the class (Ema, 2019). This method is effective because it encourages cooperation between different categories of learners in a class (Perera & Meedeniya, 2018). Often in class, there are slow and fast learners, the fast learners help the slow learners to understand the content and context before presentation time so that the group might not be affected negatively (Yildirim, 2007). Teachers often call any member of a group to present the work on behalf of the group not minding whether he is a slow or a fast learner (Miller, 2021). This method works sometimes because it encourages students to study hard after class against the time for their presentation. The main advantage of this method is it encourages teamwork (Brigg, 2019). However, the main disadvantage of this method is that it is time-consuming.

2.3.5 Seminar method

The seminar method of teaching is a teaching strategy that resembles the presentation method. Students are often grouped, and a topic or assignments are given to stimulate debate and discussion among learners before the seminar presentation (Schools, 2019). This method helps learners to comprehend and be able to evaluate the issues at hand (Miller, 2021). This method like the presentation method helps learners develop the skills of report writing. Although the method encourages learner participation, it put some learners under immense pressure especially the shy type of learners (Widener, et al., 2016). In addition, this method consumes time too as is its counterpart, the presentation method. Besides, extrovert learners might dominate the session even if their contribution is little or nothing during research and report writing (Tshabalala, 2019).

2.3.6 Field trip

Fieldwork is the teaching method that conveys students outside the four corners of the classroom, to expose them to various problems ranging from observation, identification, measurement, data collection and analysis, and interpretation of geographical phenomena (Meedeniya, 2018). This method is relevant in teaching Biology as learners may visit the plants in order to compare on the rate of photosynthesis or biodiversity in an area (Hinde, 2017).

2.3.7 Lecture

The lecture way method of teaching is dictatorial where a teacher speaks to students with little or no room for students' involvement or participation (Shumba, 2017). Some teachers read from their notes

without giving practical examples which is often difficult for students to learn. However, this method is a very effective way of covering a large area (Schunn, 2018). The method can be useful where contact session is minimized like during this period of the COVID-19 pandemic. Its main disadvantage is that individual differences are not given due consideration that every student is seen as a student not minding whether they are slow or fast learners (Moradeyo, 2015).

2.3.8 Demonstration

The demonstration teaching method is one of the most used secondary school strategies in Nigeria and the study area. It is a practical way of showing students how things are done (Chaw, 2016). This strategy is good because it is often used as a teaching aids to model or mimic reality. In a biology classroom, a demonstration could involve the teacher showcasing the process of mitosis using a microscope and prepared slides. When carefully explaining and visually presenting the stages of cell division, students can observe the actual event, which enhances their understanding of the concept. The teacher may point out key structures and describe the significance of each stage, allowing students to engage with the material in a more tangible and memorable way. This hands-on approach not only deepens students' comprehension of biological processes but also fosters a sense of curiosity and excitement about the subject. This method is also time-consuming but gives results immediately unlike others like brainstorming that require a teacher's moderation from time to time (Rosa, 2016). The disadvantage of this method is that teachers might dominate a class session (Moradeyo, 2015).

2.4 CHALLENGES ENCOUNTERED WHEN USING THESE APPROACHES IN BIOLOGY LEARNING ACTIVITIES

Mwesiga (2017) conducted a study on problems hindering the effective teaching of Biology in Rural Secondary Schools. According to Ramallah (2019), education does not exist in a vacuum but reflects the broad social, economic, and political structure of the country it services. Education and politics exist in a symbiotic relationship since education is always addressed within an environment of politics hence poor academic performance, especially in secondary schools is a reflection of social realities such as poverty, political, and socio-economic problem (Miles 2019). Poverty, according to Kirov (2002), is concentrated in provinces that have a high population and the poverty is due to their high illiteracy and unemployment levels. Walters and Soyibo (2000) stated that student performance is very much dependent on socioeconomic background. Adell (2012) argues that problems hindering effective teaching of Biology in Rural Secondary Schools is an international problem that has been linked to the low socio-economic background of the learners. Munn (2015) argues that the school environment

might also be the source of problems hindering effective teaching of Biology in Rural Secondary Schools, if learner support materials are not adequate.

The arguments concerning the lack of facilities and resources-based schools are always raised where there is serious underperformance at these schools (Karande & Kulkarni, 2008). Parents' occupation influences the students' achievement in academic work due to levels of their investments in their careers that determine their level of purchasing capacity (Chirisa, et al., 2018). As Ralenala (2012) observes schools often serve disadvantaged learners who are from families that are not educationally supportive. Okafor (2006); Otieno and Yara (2010) ascertain that learners from low-economic-status families tend to value domestic activities more than schooling. Such children are subjected to child labour and have little time for studies.

2.4.1 Lack of resources

Chisi (2020) states that while other schools had no Biology resource rooms, they lacked such teaching and learning resources as Biology textbooks, internet services, microscopes, photographs, globes, and laboratory apparatus. Other factors were poor mathematical and drawing skills, poor English background among students, and lack of motivation for teachers and learners (Ncube, 2019). The inadequacy of instructional materials in some schools affected the way teachers handled the subject (Ncube, 2016). Teachers hardly employed numerous instructional materials in their teaching activities as they were constrained by the high number of students per class with limited time to handle each of them appropriately (Chikunda, 2017).

2.4.2 Lack of parental support

Harris (2013) attributes the poor performance of secondary pupils to a lack of parental support. There is a correlation between parental support in learners' work activities and the performance of learners. Learners with parental support in homework achieved better than those without parental support even if those without parental support had a higher intelligence quotient (Shumba 2017). According to Haralambos and Holborn (2002), the school should be an extension of the home. There should not be difficulties in learners' transition from home to school.

2.4.3 Learning approaches

Saiduddin (2003) postulates that it is a convenient scapegoat to pass the blame and responsibility for low academic performance to factors such as socioeconomic status, family, culture, and the learner being less intelligent than others and not paying attention to the teaching and learning processes.

Chivore, et al (2018) adds that all learners can learn, and how the school is managed is the most critical factor in determining the quality of education for its learners. Bennell and Ncube (2009) state that the decline in performance in schools has been explained by the quality of education provided. Torfff and Sessions (2015), state that effective teaching is a balanced blend between pedagogical knowledge and content knowledge. However, most teachers have stuck to the traditional methods of lecturing to learners, where the teacher has all the knowledge and learners are just recipients.

2.3.4 Attitudes of learners

Veloo and Khalid (2015) claimed that attitude is the intermediary for all types of reactions which can be categorized into three main components namely emotion, cognition, and behavior. Tshibalo (2015) in their study revealed that a positive attitude stimulates students to put more effort and leads to high achievement in that subject while a negative attitude towards a certain subject makes learning more difficult. Godwin and Okoronka (2015) agreed with the assertion that a significant relationship exists between learners' attitude and their corresponding academic performance in Biology.

Avital (2016) asserts that the attitude of learners towards the school and its benefits negatively contributed to their commitment to schoolwork. A study by Ndebele (2008) in Plumtree district in western Zimbabwe found that most secondary learners in Rural Secondary Schools thought that it was better to cross either the Botswana or South African borders to come back in a few months driving good cars than concentrate on their education. This kind of negative attitude minimizes concentration and commitment to academic work (Berry, 2018). Burmaster (2019) found that where learners had no reason to be at school, they frequently absented themselves from lessons to do other things they thought would help them in life, like income-generating activities.

Mudzokere (2015) adds that hard-working teachers are let down by lazy students. When such hardworking teachers meet the class, they make clear the topics to be covered and the objectives to be achieved. What it would require then are learners who read in advance so that when the teacher comes for the lesson, the grey areas are made clear and this will bring about deeper understanding on the part of the learners (Ncube, 2015).

2.5 STRATEGIES THAT CAN BE USED TO REDUCE THE HINDRANCES ON EFFECTIVE TEACHING AND LEARNING IN BIOLOGY.

The study recommended that the Ministry of Primary and Secondary Education and the school administration should increase the budget for procuring such resources as textbooks, globes, Biology

resource centers, audiovisual materials, fieldwork resources, and laboratories among other things which the teachers would require to improve their performance (Mudavanhu & Chikunda, 2017). The study further recommended that principals and Biology teachers should sensitize parents and the community at large on the need for the provision of adequate learning resources like revision books for learners in secondary schools (Brandon & Friesen, 2020). Even though the study tried to provide the way forward to the government, especially in buying learning resources, it is worth noting that the government also had so many responsibilities and hence there was a need to involve other stakeholders to provide support in buying learning resources (Hooper, 2019).

Teachers should be provided with regular training to improve their subject knowledge and teaching methods. This can include workshops, conferences, and online courses to keep them updated on the new curriculum teaching and learning (Delialioglu & Yildirim, 2017). Schools can foster learner motivation by providing extracurricular activities related to Biology, such as field trips and competitions. Schools should ensure that the physical environment in which learning takes place is comfortable and conducive to learning. This can include proper lighting, ventilation, and seating arrangements (Miller, 2021). Teachers should use a variety of assessment methods that are aligned with the learning objectives. Continuous assessment and feedback can also help learners to identify areas of weakness and improve their performance over time (Peressini & Meymaris, 2021).

2.6 Problems hindering effective teaching of Biology in Rural Secondary Schools.

The scholarly literature reveals that the teaching of Biology in rural secondary schools is a global concern, with various countries facing similar challenges. In the United States, rural schools struggle with inadequate resources, teacher shortages, and lack of community support (Talanquer, 2016). Similarly, in Australia, rural schools face difficulties in attracting and retaining science teachers (Hobbs, 2015). In South Africa, rural schools contend with poor infrastructure, limited access to technology, and language barriers (Mudaly, 2017). While these studies highlight the challenges, they also offer solutions, such as professional development for teachers, community engagement, and technology integration. However, a review of the literature reveals a research gap in the context of Zimbabwean rural secondary schools, particularly in Gwanda North District. This study aims to fill this gap by investigating the specific challenges faced by Biology teachers in this region and exploring context-specific solutions. Through comparing the findings with international literature, this study seeks to contribute to the global discourse on improving Biology education in rural areas.

2.7 CHAPTER SUMMARY

In this chapter, the literature about factors that hindrances effective teaching and learning in Biology was highlighted. Approaches used in teaching and learning activities were presented including the use of these approaches, the challenges faced in implementing teaching and learning approaches, and strategies that can be used to reduce the impacts of the challenges. This summary concludes the chapter and the next chapter will focus on the research methodology.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

According to Kallat (2015), research methodology is the section that describes the rationale for the application of specific procedures or techniques used to identify, select, and analyze information applied to understand the research problem. Therefore, the researcher is going to look at subtopics such as research design, methods, sample and sampling procedure, data generation, data analysis procedure, the integrity of the study, and a chapter summary.

3.2 RESEARCH DESIGN

According to Leedy (2018), the research design is a plan that describes how, when, and where data is to be collected and analysed. Chisi (2020) also defines research design as a description of the format and theoretical structure under which the study will be carried out. This means that the research design gives the researcher direction on how to research hindrances on effective teaching and learning of Biology in Gwanda North District .In this study, a research design will be regarded as a conceptual structure within which an investigation is conducted (Leedy & Ormond, 2010). Moreover, a research design serves to plan, structure, and execute the research and to maximise the trustworthiness of its findings (Kothari, 2004). It is in this context that this study is guided by the qualitative approach in generating and analyzing data with the view to comprehending factors influencing effective teaching and learning of Biology.

The qualitative approach provides the researcher with the platform to capture and interpret the phenomenon from the participants' perspective (Leedy & Ormond, 2005). In support of this view,

Groswel (2007) advances the qualitative approach as a methodical way that can be used to describe participants' experiences stressing the uniqueness of each situation to give meaning. According to Lincoln (2020), qualitative research enables the researcher to understand the issue under study from its natural settings, attempting to make sense of or interpret, phenomena in terms of the meanings of the study.

Thus, the qualitative approach, in this case, was used to generate data, later to be analysed with the view to provide answers to questions raised in chapter one. In this regard, the researcher endeavours to comprehend the participants' experiences in factors influencing learners' performance in Biology learning activities at the three selected schools which are Nkashe Secondary, Ngwidzi Secondary and Stanmore Secondary and this was carried out in their natural environment. Hence, it ensures that the authentic voice of the participants is well represented because they are inductive and flexible (Shank, 2002). Therefore, the meaning of actions, manifestations, and interfaces will only be comprehended through the lenses of the actual participants. Further, Liamputtong and Ezzy (2005) highlighted that the use of the qualitative approach allows the participants to provide in their own words a thick, rich, and in-depth description of the issue under investigation (Domegan & Flemming, 2003).

3.3 METHODS

In this study, the researcher regards data as a raw form of words, and or facts that need to be processed. Since the sample size for this study will be small, the researcher intends to use data analysis and personal interviews in generating data.

3.3.1 Document analysis

Document analysis is a type of qualitative research in which documents are reviewed by a researcher to assess an appraisal theme (Rukuni, 2015). It is a form of qualitative research in which documents are interpreted by the researcher to give voice and meaning to an assessment topic (Leary, 2014). The researcher consulted several documents which include learners' enrolment records, policy circulars, teachers' record books, and many others. Document analysis was chosen because it provides a clear picture of issues under study without bias.

3.3.2 Interviews

According to Leedy (2018), a structured interview is a fixed format interview in which all questions are prepared beforehand and are put in the same order for each interviewee. This means that the structured interviews are conducted with a well-designed form that has already been established.

Forms are filled with researchers and not respondents. Interviews are important because they provide answers to research questions.

3.4 SAMPLE AND SAMPLING PROCEDURES

Banerjee and Chaudhury (2010) refer to the target population as the defined population from which the sample is to be properly selected by the researcher. According to Danzel and Lincoln (2011), the target population entails a set of elements with common characteristics that are of interest to the researcher defined by the sampling criteria. A sample in turn can be defined as a subset of the target population chosen to participate in the study (Fraenkel & Wallen, 2003). Mack (2018) defines a sample as the selected group of objects from the target population whose input is considered by the researcher.

According to Cohen and Manion (2010), sampling entails collecting, analyzing, and interpreting research data from a selected representative of the target population. In this study, purposive sampling was used because of resource constraints thus the researcher decided to find people who could and were willing to provide the needed information from their knowledge and experience (Tongco, 2007). Purposive sampling, also known as judgment sampling, involves the deliberate selection of participants due to the qualities the participant possesses (Etikan, 2016). Hence the sample for the study comprised 10 learners that is 3 learners from Stanmore Secondary ,3 from Ngwidzi Secondary and 4 from Nkashe Secondary where the researcher is teaching and the four teachers will be comprising of 1 teacher from Ngwidzi Secondary and Stanmore Secondary respectively and 2 teachers from Nkashe Secondary , who were purposively sampled to be the source of the needed answers to answer research questions raised in chapter one. The 10 learners and four teachers were interviewed. The four teachers teaching Biology for the past four or more years in Gwanda North District and the learners chosen were those who has at least 2 years learning Biology at these selected schools hence the researcher considered the four most informed (teachers) with regards to the topic under study.

3.5 DATA GENERATION PROCEDURE

According to Bells (2000), the data generation procedure refers to the steps one can take when gathering data from the above selected participants. Thus, this section talks of that stage of research when the researcher seeks entry into the field up to exit. In this regard, the researcher armed with an introductory letter from Bindura University Faculty of Science Education applied for permission to conduct a study in Gwanda rural schools which include Nkashe High, Ngwidzi Secondary School and

Stanmore Secondary Schools. These Schools were chosen in Gwanda North District because they are not far from each other ,which made it easy for the researcher to cut transport costs and also saves time for traveling.All these are Secondary Schools which offer Biology at O' level only hence the study of the researcher focused on the Form Fours and Form threes as Biology in these three selected Schools is offered only at O' level. Thus, the researcher ensured that all necessary paperwork is submitted in line with the Ministry of Primary and Secondary Education regulations to enter the selected schools. With the permission granted the researcher ensured that all the needed groundwork is completed before meeting participants. The researcher made it clear to the participants that the objective of the exercise as well as that privacy and confidentiality were guaranteed. Accordingly, participants were also informed that they were free to provide information without hesitation. Thereafter, the researcher asked participants to agree on a suitable time and venue within the stipulated time frame.

3.6 DATA ANALYSIS

Data analysis entails organizing, accounting for, and making sense of the data from the participant's perspective, taking note of themes, patterns, categories, and regularities (Matuku & Makonye, 2016). Data analysis entails reducing accumulated data to a manageable size creating summaries, identifying patterns, and applying statistical techniques (Stevens, 2021). The data generated through personal interviews were analysed according to themes derived from the research questions in chapter one. Thus, the researcher searched for trends and patterns that can be used to provide answers to the issue under investigation (Yin, 2003). After data retrieval, the researcher summarised key points from participants and checked for commonalities and inconsistencies in the data to ensure credibility and dependability. The researcher identified themes after judiciously going through descriptive responses to each question to come up with broad themes. Data on each theme was presented in the form of short quotations from participants followed by the analysis. The researcher was able to analyse data generated according to emerging themes (Stevens, 2021).

3.7 INTEGRITY OF THE STUDY

Research integrity speaks to the trustworthiness of the study and ethical issues which guided data generation, analysis, and discussion.

3.7.1 Trustworthiness of the study

According to Rule and John (2011), trustworthiness is providing a multidimensional comprehension of the issues relating factors which hinders effective teaching and learning of Biology. The researcher used personal interviews to extract valuable information on exploring problems which hinder effective teaching and learning of Biology on the selected schools in Gwanda North District. To minimise the issue of bias, trustworthiness was rooted in considering whether the findings answer the sub-research questions and ultimately the main research questions by reflecting on the credibility of the original data shared by the participants. For this reason, trustworthiness was assumed to be achieved thorough a narration and interpretations of data from the chosen source (Stake, 2005). In this setting, there is a need to trim down the influence of bias in data analysis and elucidation (Gunawan, 2015). This brought to light convergence within data, which makes it possible to robustly look at a study from perspectives centred on the integrity of the findings (Yin, 2006).

3.7.2 Ethical considerations

According to Delvin (2016), ethical considerations are norms or standards for conduct that distinguish between right and wrong. Leedy (2018) defines ethics as a branch of philosophy relating to the rightness or wrongness of certain actions, and the badness or goodness of the motives and ends of such actions. This means that ethical considerations help to guide the researcher so that he or she sticks to standards and avoids giving false information. May (2011) states examples of ethical considerations such as confidentiality consent of respondents, authenticity, anonymity, and privacy.

The subject has the right to have some of the information they provide being kept private. As a researcher, it is necessary to avoid unnecessary questions. It is also important to obtain consent for the children's participation from adults such as parents and teachers. The contents and the findings during and after the study should not be disseminated to everyone but those involved in the study only that is, the researcher and the supervisor as some issues may be sensitive.

Participants should be identified by numbers, and letters not by their names. Participants have the right to their identities not to be highlighted in the research. Participants should be explained as a random sample to represent the group in question. Research methods and data collection strategies should vary to safeguard the privacy of the participants under study.

3.8 CHAPTER SUMMARY

This chapter focused on the research process and the kinds of tools and procedures used to conduct the research data. The researcher used a qualitative approach to describe variables and examine the relationship among variables. Document analysis and interviews were the researcher's instruments to obtain information on factors which hindering effective teaching and learning of Biology in Gwanda rural Schools. The researcher also looked at subtopics such as sample and sampling procedures, data collection procedures, data analysis, and presentation procedures, integrity of the study, and a chapter summary. Up next is chapter 4 which is going to show data analysis , interpretation and discussion.

CHAPTER FOUR

DATA ANALYSIS , INTERPRETATION AND DISCUSSION

4.1 INTRODUCTION

The research can only be meaningful if the data collected is presented, analyzed, and interpreted well and all the research questions have been answered. Therefore, the researcher in this chapter is going to present the data gathered during the research study and analyze it so that the researcher can come up with some conclusions or recommendations based on the findings of the research study. In this chapter, the researcher is going to present gathered information on exploring factors influencing learners' performance in Ordinary Level Biology. The researcher used data analysis and interviews with both teachers and learners to gather the data.

4.2 CHARACTERISTICS OF THE PARTICIPANTS

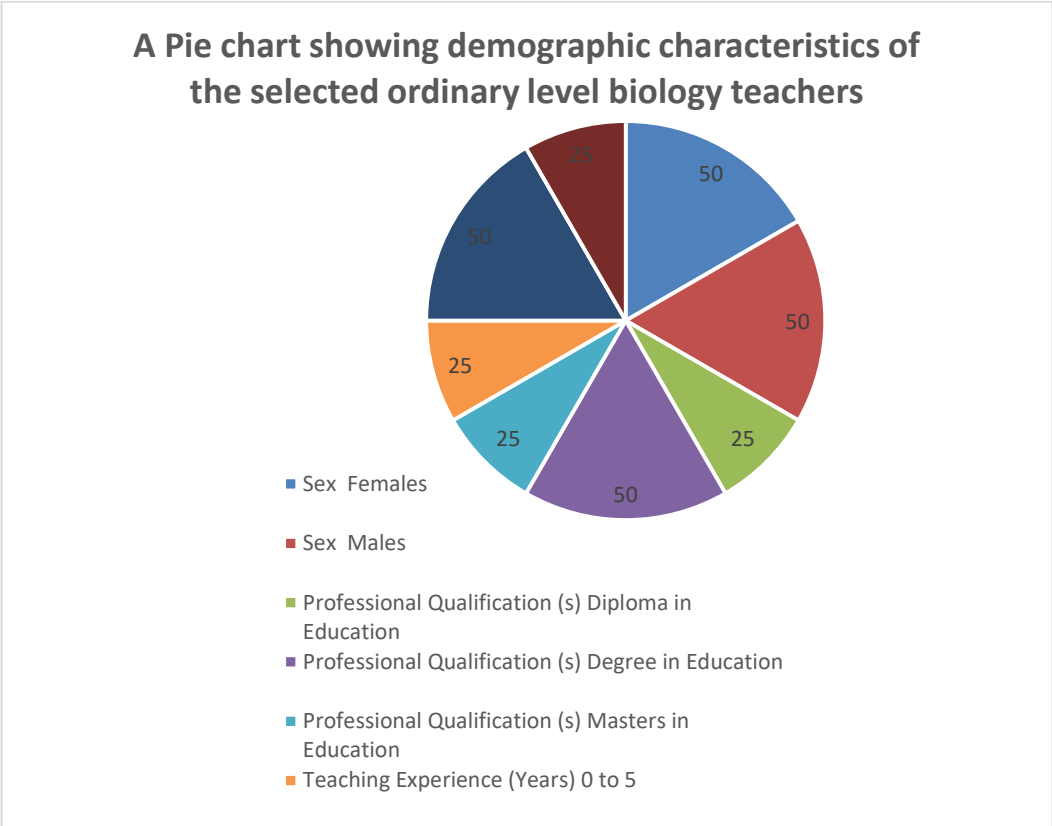
Analysis of generated data was performed using the thematic approach in which data was categorized according to sub-questions. This section focuses on the demographic characteristics of the participants, that is, the Ordinary Level Biology learners and teachers.

Table 4.1 Demographic characteristics of the selected Ordinary Level Biology teachers (n=4).

Attributes		(n)	(%)
Sex	Females	2	50
	Males	2	50
Professional Qualification(s)	Diploma in Education	1	25
	Degree in Education	2	50
	Masters in Education	1	25
Teaching Experience (Years)	0 - 5	1	25
	6 - 14	2	50
	15 - 20	1	25

The table presented above in Table 4.1 was presented in a pie chart below.

Figure: 4.1



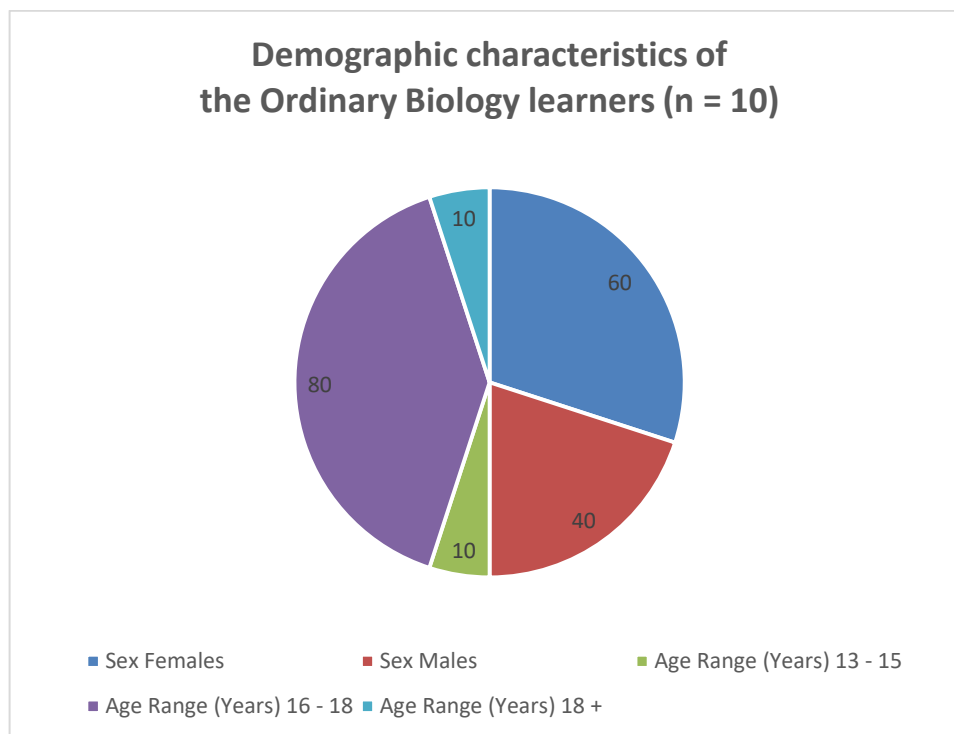
The researcher noted that among the four teachers, two were females (50%), and two males (50%). The researcher also noted that one teacher (25%) had a diploma in education(Ngwidzi Secondary), two teachers (50%) have a degree in education (Nkashe Secondary)and another teacher (25%) had a Masters in education (25%) (Stanmore Secondary). Furthermore, teaching experience ranged from (0 - 5) years (25%), (6 - 14) years (50%), and (15 - 20) years (25%). This makes the sample to be comprised of a diverse source of information for the study. In the table below the characteristics of the selected learners are presented.

Table 4.2 Demographic characteristics of the Ordinary Level Biology learners (n = 10)

Attributes		(n)	(%)
Sex	Females	6	60
	Males	4	40
Age Range (Years)	13 - 15	1	10
	16 - 18	8	80
	Above 18	1	10
Form	4	10	100

The researcher noted that among the 10 learners, six were females (60%), and four were males (40%). Additionally, one learner was between the age range 13 - 15 years (10%), eight learners were between (16 - 18) years (80%) and only one learner was above 18 years (10%). All the learners were from four students. The sample comprised of purposively selected 10 Ordinary Level Biology learners with ages ranging from 13 - 18 years at the school. The data shown on the above Table 4.2 was also presented on a pie chart.

Fig: 4.2



4.3 APPROACHES USED IN BIOLOGY LEARNING ACTIVITIES

In this section data generated from Ordinary Level Biology learners and teachers is presented, analyzed, and interpreted with the view to provide an answer to research question one raised in chapter one. During the interview one of the participants had the following to say about teaching and learning strategies used at this school:

The mostly used teaching and learning strategies are questions and answers, and lecturing. The pure participatory method is difficult to apply due to a lack of teaching and learning materials, for example, the department has only 10 new curriculum textbooks for form four with a total of five hundred learners. Also, the syllabus is overloaded, there are so many topics to be taught within a year. For this situation, how can I teach by using small group discussion for example (Teacher 1)

A similar answer was given by another teacher who said that:

To be frank, almost all the Biology teachers in our school use teacher-centered method, in which lecturing is highly dominating. The reason for this is due to lack of teaching and learning materials. Apart from overcrowding of the syllabus, it is also difficult to teach some practical-oriented topics such as "Anatomy and Physiology" because the school has no relevant equipment (Teacher 3)

In addition, another participant noted that:

My preferred teaching method is learner centered approach but due to the pressing need to cover the syllabus with resources constraint I find myself forced to employ teacher-centered approach more often than my desired approaches such as problem-solving (Teacher 4)

Further to this, a participant highlighted that:

I dislike Biology subject because most of the time the teacher enters the class and gives us many notes without detailed explanations on them, we are also not given enough exercises, and teaching and learning materials are so limited (Learner 8)

The responses from the two participants resonate well with Eggen and Kauchak (2017) who stated that the teacher-centered approach is still dominant because of the relatively few resources required during preparation as well as conducting the lessons.

The same was observed during document analysis, the teacher had his lesson, and the teaching activities were lecturing, and questions and answers approaches. The researcher noted that the lesson plan had no media meaning the teacher was going to use teaching notes and the chalkboard only. In a

document analysis, Chivore et al (2018) noted that teachers had the scheme of work but it was not evaluated for the past three weeks. Written work was given frequently but some of the work was not marked and the teacher was still to prepare a record book for tests and exercises. During the interview with the head of the department of the sampled school, it was discovered that the kind of study tours done were not effective. The head of the department of the selected school gave the following story:

As a school we do not have funds for educational tours, as a result, learners themselves under the supervision of their subject teachers do organize the tours which involve all the learners who can contribute the agreed amount of money regardless of their class level. So, you may find a trip consist some form one, two, three, and four learners (Teacher 4)

In the same vein, another participant highlighted that:

Also, from my experience below 10% of each respective class can contribute to a trip. Hence, the majority who are unable to pay never go for the trip. Also, it becomes difficult for teachers to set objectives as the trips involve different academic levels of learners. Therefore, they end with a "tour" instead of a study tutor (Teacher 2)

The findings are in line with Rupia (2017), in her poor learners' performance in Biology examinations, an inquiry into the possible role of the teaching methods in selected Ordinary Level secondary schools. It can be acknowledged that there was a deficiency in the application of teaching methods, little supply and use of teaching and learning resources, weakness in instructional planning, and poor involvement of learners in independent project work things which led to poor learners' performance in Ordinary Level Biology examinations.

Emphasizing participatory, Dewey (1938) and Vygotsky (1978) say that classroom interaction is one of the important aspects of effective and meaningful classroom practices, hence effective learning. Also, D'Angelo et al. add that constructivist pedagogy proposes that instruction must take students' prior ideas, experiences, and knowledge into account while providing opportunities for learners to construct new understanding. Based on the findings it could mean that learners were performing poorly in Biology due to the teaching method and strategies applied by teachers as the dominant teaching method was teacher centered.

4.4 CHALLENGES ENCOUNTERED IN ORDINARY LEVEL BIOLOGY LEARNING ACTIVITIES

In this section, the researcher is interested in the challenges faced by both learners and teachers in using different approaches in the teaching and learning of Biology. In this context, during the interview, one participant highlighted the following:

Local resource materials to be used as teaching aids for Biology subjects are almost everywhere within and outside of the school compound. The challenge for us apart from individual readiness is where to keep the resources safely after being collected. The school has no Biology resource room, and our staffroom which of course is a partitioned classroom as you see how it is overcrowded. I remember one day I collected some skeletal samples and put them beside my table in the staffroom, after a month I found nothing. I did not blame anybody because they were not kept in a proper place. Therefore, I can say if the school could have a Biology resource room most Biology teachers could be motivated to collect local instructional resources and keep them in the room ready to be used as teaching aids (Teacher 1)

The same views were noted by another participant, but she had the following to add:

Apart from other reasons, I personally dislike Biology because I am poor in Mathematics, and the subject has some topics which require the application of mathematics skills (Learner 4)

The effect of mathematics skills on Biology subject performance was also supported by one of the participants who said that:

Learners are performing poorly in Biology as a subject because they lack mathematical and drawing skills. For example, the number of learners who play truancy in Biology subject is high in form three compared to other classes, because in form three there are topics like application of simple statistics and physical Biology which demand mathematical and drawing skills respectively. Hence, learners start to lose interest in the subject (Teacher 3)

In support, one of the participants acknowledged that:

Nowadays learners are not ready to learn. We try our level best to involve them when teaching but most of them are passive, they never ask even questions. Also, when you organize remedial classes,

they never turn up, that is the kind of learners we have. So, I can generally say that they are not cooperative (Teacher 4)

On the issue of teachers being motivated to teach another participant commented:

To be open I am not motivated to teach the subject effectively. I am a diploma and degree holder, but my salary is low contrary to my education level, and teaching resources for Biology subject are limited. Dear researcher, in this situation how can I keep busy preparing teaching aids; it is difficult, I perform what is necessary; I do enter the classroom and teach according to the available resource (Teacher 2)

Emphasizing the good relationship between teachers and learners one of the participants had the following to tell:

Some Biology teachers use harsh language when teaching, this makes learners avoid asking questions. Some are not ready to help, for example, ignoring making corrections after a certain examination (Learner 5)

In the same vein, one of the participants noted:

The school administration should ask teachers to speak in simple English language when teaching. Some teachers tend to use difficult vocabulary when teaching, and at the end of the day, they get negative feedback from learners. I propose sometimes they should use both English and Shona (Learner 10)

Moreover, one of the participants had the following to suggest:

To, I suggest that teachers should motivate us to enjoy Biology subject. I suggest this because some of the exercises we are given are not marked and the good performers in the subject examinations are not awarded. That is why some learners escape Biology periods (Learner 6)

One challenge in using different approaches in Ordinary Level Biology is that learners may struggle to understand the connections between the different methods. For example, if a teacher uses both quantitative and qualitative research methods to study a particular topic, learners may have difficulty understanding how the two methods complement each other and contribute to a more comprehensive understanding of the issue. Another challenge is that some learners may prefer one type of approach

over another (Goudie, 2015). For example, some learners may feel more comfortable with quantitative methods and struggle with qualitative methods, or vice versa. This can lead to a lack of engagement and motivation in the classroom, as learners may feel that they are not able to fully participate in certain activities (Johnston & Sidaway, 2014). There is the challenge of selecting appropriate approaches for different topics and learning objectives. Teachers need to be able to assess the strengths and weaknesses of different methods and determine which ones are best suited for a particular task (McDowell & Sharp, 2018). This requires a deep understanding of both the content and the methodology of Biology, as well as the ability to adapt teaching strategies to meet the needs of individual learners and classes.

The findings revealed that apart from its uniqueness, Ordinary Level Biology was less promoted. There was no in-service training programme for Biology teachers, the teachers were not aware of the modern ways of teaching, and some of them were skipping some topics since they seemed to be difficult for them to teach; they were teaching according to their experiences (Silverman, 2016). Therefore, the subject should be given priority by establishing sustainable in-service training programs for Biology teachers and making Biology resources for Biology teachers. The school had no Biology resource rooms; this led to minimizing the possibility of learners learning by doing. The study revealed that the use of a less participatory approach such as lecturing to Ordinary Level Biology learners has a more negative effect on the performance of the learners (Mwangiru & Njue, 2015).

Also, the findings on teachers' professional development are supported by Sumra and Rajani (2016) who conclude that Zimbabwean teachers when in the classroom teach using rote techniques-requiring learners to copy and repeat notes on the board. Yet these same schools have many teachers that appear qualified on paper and may pass school inspections that fail to capture these sorts of concerns (Singh, 2017). Therefore, there is an urgent need to strengthen the standards of teaching in secondary schools and bring back the respect of the profession. Teacher training, both pre-service and in-service, needs to be focused on the sort of teacher competence. The lack of effective study tours and other guided practical-oriented teaching and learning strategies in the sampled school was noted to be contrary to what Vygotsky (1978) suggests through his concept of ZPD that in organizing classroom activities, instruction should be planned to provide practice in the zone of proximal development for individual learners or groups of learners.

4.5 STRATEGIES THAT CAN BE PUT IN PLACE TO OVERCOME ENCOUNTERED CHALLENGES

Based on the findings from participants, this section provides answers to the last research question raised in chapter one. The respondents were asked to make suggestions on challenges encountered in the teaching and learning of Ordinary Level Biology and the strategies that can be implemented were presented below:

As I have said before on the importance of Biology subject, I suggest that in order improve performance special attention should be put on the subject from the national level to the school level. By doing so, all things such as supply of relevant books and provision of in-service training among Biology teachers will be possible. I am sure of this; taking the example of science subjects, there are enough text and reference books, and science subject teachers attend several in-service pieces of training. This is because the subjects have special care from the policy marker officials in cooperation with the Government at large (Teacher 3)

During an interview with one of the participants, the following was suggested:

For the case of teaching and learning materials, I suggest that the Government should have a budget for education that will allow the provision of adequate teaching and learning materials, especially books (Learner 7)

On the other hand, one of the participants during the interview suggested that:

For better performance in Biology subject, the provision of teaching and learning materials is unavoidable. Hence, apart from the Government, parents also should be educated on the importance of buying learning material for their children. This is because the Government itself cannot afford this (Learner 1)

Parental involvement in their children's education has a direct bearing on their children's performance (Webb et al., 2015). Learners who fail to get assistance with their schoolwork at home get frustrated with the subject as they perceive themselves to be no-hopers (Jekesa, 2014). It is from this belief that the lack of home support has a significant bearing on learners' poor performance in ordinary Level Biology. Other schools of thought blame teachers as the main cause of the high failure rate in Biology. The backgrounds relating to the availability of educational resources such as books, educational television channels, computers, study desks and chairs as well as tranquil study environments and

general support from home are crucial to the success of the learners (Benjamin & Wakhungu, 2014). Learners having access to teaching and learning materials are thus able to study on their own and are less reliant on the teacher and the other few resources available in most schools (Jekesa, 2014).

The findings revealed that for better performance in Biology, there should be motivation mechanisms for both geography teachers and learners. Motivation mechanisms for Biology teachers can be things like the provision of transport allowances, awarding systems for the best Biology teachers, and offering them relevant seminars, workshops, and other related in-service training. Also, for learners they suggested that they should be motivated through the establishment of Biology clubs, provision of awards or prizes to the good performers, encouraging them to study the subject effectively. This is in line with Omari (2011) who suggests that learners are highly motivated to learn when they are given choices, become absorbed in challenges that match their skills, and receive rewards that have informational value.

It implies that for good academic performance, learners should be motivated by not only introducing a reward system for them but also being given a chance to practice prior knowledge and skills to overcome academic challenges. In other words, teaching and learning should be learner-centered as it is suggested by constructivists. Also, the involvement of parents and the community in school affairs should be enhanced to create a motivating learning environment for the learners. The study revealed that there should be the provision of enough relevant teaching and learning materials for enabling learners to perform well in Biology subject. To achieve this, they suggested that the Government should come up with an education budget that can allow the provision of adequate teaching and learning materials (Ng'eno, 2015). Parents were also suggested to be directly involved in ensuring the availability of teaching and learning materials.

4.6 Factors and solutions to improve learners performance in Biology

"Most of our students lack basic knowledge of Biology concepts, making it difficult for them to understand complex topics." (Teacher 1)

This quote highlights the challenge of students' limited prior knowledge, which hinders their ability to grasp advanced Biology concepts.

"We don't have enough textbooks, and the ones we have are outdated, making it hard for us to teach effectively." (Teacher 2)

This statement emphasizes the impact of inadequate resources on teaching and learning.

"Some students don't take Biology seriously, thinking it's a difficult subject." (Learner 1)

This quote suggests that learners' attitudes towards Biology contribute to poor performance.

"Teachers don't have enough time to cover the syllabus, leading to rushed lessons and poor understanding."
(Learner 5)

This statement highlights the issue of inadequate instructional time and its impact on learning.

"We need more training and workshops to improve our teaching methods and content knowledge." (Teacher 3)

This quote emphasizes the need for teacher professional development to enhance teaching effectiveness.

"If we had more resources, like computers and internet, we could use online resources to supplement our learning." (Learner 8)

This statement suggests that increased access to technology could enhance learning.

"Teachers should make Biology more practical and engaging, like using experiments and field trips." (Learner 9)

This quote highlights the importance of hands-on learning experiences to enhance understanding and interest in Biology.

From the above study findings, the causes of poor performance in Biology can be attributed to a combination of factors, including students' limited prior knowledge, inadequate resources, and ineffective teaching methods. Teacher 1 highlights the challenge of students lacking basic knowledge of Biology concepts, making it difficult for them to understand complex topics. This suggests that students may not have a solid foundation in Biology, hindering their ability to grasp advanced concepts. Additionally, Teacher 2 emphasizes the impact of inadequate resources, including outdated textbooks, which can limit teachers' ability to teach effectively.

Learners' attitudes towards Biology also play a significant role in poor performance. Learner 1 suggests that some students don't take Biology seriously, thinking it's a difficult subject, which can lead to a lack of motivation and engagement. Furthermore, Learner 5 highlights the issue of inadequate instructional time, leading to rushed lessons and poor understanding. This suggests that teachers may not have sufficient time to cover the syllabus, resulting in a superficial understanding of Biology concepts.

To improve performance in Biology, solutions such as providing more resources, professional development for teachers, and incorporating practical learning experiences are essential. Teacher 3 emphasizes the need for more training and workshops to improve teaching methods and content knowledge. This suggests that teachers require ongoing support to enhance their teaching effectiveness. Learner 8 suggests that increased access to technology, such as computers and internet, could supplement learning and enhance understanding. Moreover, Learner 9 highlights the importance of hands-on learning experiences, such as experiments and field trips, to make Biology more engaging and practical. Through addressing the causes of poor performance in Biology requires a multifaceted approach that includes providing adequate resources, supporting teacher professional development, and promoting practical learning experiences. By doing so, teachers would create a more effective learning environment that fosters students' understanding and interest in Biology.

4.7 CHAPTER SUMMARY

In this chapter, findings were presented, analyzed, and discussed. Chapter five which follows gives a summary of the research study, conclusion, and recommendations of the study.

CHAPTER FIVE

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter presented, analysed, and interpreted findings in responding to the research questions indicated in the first chapter. The current chapter now summarises the study highlighting the conclusion and recommendations together with proposing further areas of research and chapter summary.

5.2 SUMMARY OF THE PROJECT

Chapter one lays the foundation for the research study by defining the research problem, background to the study, statement of the problem, research questions, significance of the study, delimitation of the study, limitations, key terms definition, and the layout of chapters. Chapter two was dedicated to the literature review which opened knowledge gaps and brought the theoretical framework for the study. The third chapter zeroed in on research methodology which ushered the approach that was to be used in data gathering, presentation, analysis, and interpretation. Chapter four then gave an outline of the following major findings:

It was noted that there are a lot of teaching and learning approaches that can be used in the classroom.

It was revealed that in the Ordinary Level Biology teaching and learning activities teachers were employing more teacher-centred and a learner-centred approach was used to a smaller extent.

The participants highlighted that the following challenges were encountered in the Ordinary Level Biology teaching and learning activities when using different approaches such as lack of resources such as textbooks and resource room, poor teacher-learner interaction, lack of funds, and lack of motivation among teachers and learners.

The participants revealed that the following strategies can be employed to reduce the impact of the encountered challenges such as the need for parents to buy personal learning materials for learners, parents should support the school activities by paying school fees on time and there was a need for The Ministry of Primary and Secondary Education to contact teacher development programs to update teachers on the new trends in the subject content.

5.3 CONCLUSION

From the findings, it was noted that different approaches can be used in Biology teaching and learning activities. Unfortunately, the most used teaching approach in the Ordinary Level Biology teaching and learning activities was teacher centered and this led to challenges to be encountered in the process. It is in this context that this study concludes that Ordinary Level Biology learning activities were influenced by various factors.

5.4 RECOMMENDATIONS

Based on the findings the researcher made the following recommendations:

- . Provide adequate resources: Ensure that schools have sufficient textbooks, laboratory equipment, and technology to support Biology teaching.
- . Teacher training: Offer regular professional development opportunities for Biology teachers to enhance their subject matter expertise and pedagogical skills.
- . Infrastructure development: Improve school infrastructure, including laboratories and classrooms, to create a conducive learning environment.
- . Address teacher shortages: Deploy qualified Biology teachers to rural schools and incentivize them to stay.
- . Encourage community involvement: Engage local communities in promoting the importance of Biology education and supporting schools.
- . Curriculum review: Review the Biology curriculum to ensure relevance and contextualization to rural students' needs.
- . Collaborations and partnerships: Foster partnerships between schools, universities, and organizations to provide resources and expertise.
- . Student support: Provide additional support to students, such as tutoring and mentoring, to enhance their understanding and interest in Biology.

. Address language barriers: Develop strategies to overcome language barriers, such as using local languages or bilingual resources.

. Monitoring and evaluation: Regularly assess and evaluate the effectiveness of interventions to address the identified challenges.

Teachers should adhere to teaching ethics when performing their duties. This includes preparation and use of essential teaching materials, consistent and thorough completion of the subject syllabus, and creating positive relationships with their learners. This will encourage meaningful teaching and learning, hence good performance in Biology subjects.

Lack of teaching and learning resources such as Biology textbooks and reference books and other resources like laboratory apparatus such as vernier callipers, photographs, models of skeletal systems, beaker apparatus, and models, affected Biology learning activities in sampled schools. Therefore, the Government at large in cooperation with parents should ensure the availability of adequate teaching and learning resources for Biology in the schools. This will promote creativity through more practice among learners.

5.5 AREAS FOR FURTHER RESEARCH

Given that schools accommodate learners from different backgrounds, the researcher proposes that a similar study be conducted in all districts nationwide so that a comprehensive solution that helps the nation at large can be found.

5.6 CHAPTER SUMMARY

This chapter gave a summary of the project, the conclusion to the project, and outlined recommendations and areas for further study.

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APPENDICES

Appendix 1: Introductory letter from Bindura University

P Bag 1020
BINDURA
ZIMBABWE

Tel: 0271 - 7531 ext 1038
Fax: 263 - 71 - 7616

SAMED


BINDURA UNIVERSITY OF SCIENCE EDUCATION

Date:

TO WHOM IT MAY CONCERN

NAME: REGISTRATION NUMBER:

PROGRAMME: PART:

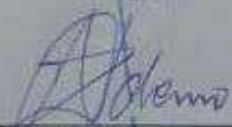
This memo serves to confirm that the above is a bona fide student at Bindura University of Science Education in the Faculty of Science Education.

The student has to undertake research and thereafter present a Research Project in partial fulfillment of the programme. The research topic is:

In this regard, the department kindly requests your permission to allow the student to carry out his/her research in your institutions.

Your co-operation and assistance is greatly appreciated.

Thank you


Z. Ndemo (Dr.)
CHAIRPERSON - SAMED

BINDURA UNIVERSITY OF SCIENCE EDUCATION
DEPARTMENT OF EDUCATIONAL FOUNDATIONS
9 APR. 2024
P. BAG 1020
BINDURA

APPENDIX 2: INTERVIEW GUIDE FOR SELECTED TEACHERS

Thank you for accepting the interview request. The study focuses on **Problems hindering effective teaching of Biology in Rural Secondary Schools.A case study of three Rural Secondary Schools in Gwanda North District.**

Based on your qualification and experience I hope to get a significant contribution to gaining insight into the issue under study. Most importantly feel free to express your thoughts and answer the questions to the best of your ability and no personal information will be included in the final report.

1. Briefly highlight the following: professional qualifications and teaching experience
2. At what level do you teach Biology?
3. How have been students performing in your subject at Ordinary Level examinations?
4. In your Ordinary Level Biology teaching and learning activities kindly highlight the methods you use (Why do you prefer to use the highlighted methods?)
5. What challenges do you encounter in the teaching and learning of Biology in Rural Secondary Schools ?
6. What strategies would you recommend as solutions to the challenges you raised and what areas do you think need improvement?
7. Are the learners motivated or eager to learn during the teaching and learning of Biology?
8. How would you describe the socio- economic background of your learners? Do you think it has an impact in effective teaching and learning of Biology.?
9. How many learners do you have in your class? Does the number of learners in your class affect the effective teaching and learning of Biology in Rural Secondary Schools?
10. Do you have any challenges in doing Biology practicals? If yes what do you do to overcome those challenges?
11. If the Curriculum has to change what will you recommend to be done to Science subjects like Biology?

13. How is the attitude of learners towards teaching and learning of Biology in Rural Secondary Schools?

14. Do you have any kind of relationship with the parents of your students? If yes how does it affect Biology teaching and learning? If no does it have an impact in effective teaching of Biology?

15. Do you know your entire learners' abilities? How do you assist learners who struggle to do better in Biology?

I would like to appreciate your participation in this interview.

APPENDIX 3: INTERVIEW GUIDE FOR SELECTED LEARNERS

Thank you for accepting the interview request. The study focuses on **Problems hindering effective teaching of Biology in Rural Secondary Schools.A case study of three Rural Secondary Schools in Gwanda North District.**

A case of selected schools in Gwanda. I hope to get a significant contribution to gaining insight into the issue under study. Most importantly feel free to express your thoughts and answer the questions to the best of your ability and no personal information will be included in the final report.

Briefly let me know about yourself

1.Would you agree whether teachers use the teaching methods that engage you in the Ordinary Level Biology teaching and learning?

2.Which methods does your teacher usually use in the teaching and learning of Biology?

3.What challenges do you encounter when using the above methods in your Ordinary Level Biology teaching and learning activities?

4.What strategies would you recommend as solutions to the challenges you raised and what areas do you think need improvement?

5.How is your performance in Biology? What do you think can be the challenges of poor performance in Biology?

6.Hiw would you describe your family state? What are the challenges that come with living in such family in relation to your Biology learning.

7.Do you do practicals at your school.?If yes are they beneficial to your understanding of the concept.? If no what can be the challenges of not doing the practicals?

8.Do you help your parents after school at home?If you do do are you able to balance school work and household chores?

9.How far do you stay from school? Do you think this can affect your Biology learning and even concentration at school.?

10.In your opinion as a learner what can be done to solve problems hindering effective teaching of Biology in Rural Secondary Schools.

- 11.What do you use to help you study at home ,like do you have assess to proper lighting and internet services like data and wifi?
- 12.

Thank you for your contribution to this interview.