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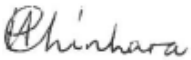

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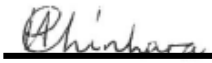

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Year of completion : 2025

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DECLARATION

I Loice T. Karembera, declare that **this project** is my original work that has not been submitted for any degree/diploma 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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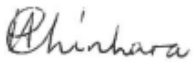
Signed:  Date: 16 June 2025

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DEDICATION

I would like to dedicate this project to my family as well as my brothers and also to all my friends who encourage me during the time of research.

Abstract

This study explored the strategies employed in teaching Chemistry at the Ordinary Level, using one secondary school in Harare as a case study. The research aimed to assess the effectiveness of various instructional methods such as traditional lectures, group work, inquiry-based learning, and hands-on laboratory experiments in enhancing student understanding and performance. A mixed-methods approach was adopted, combining quantitative data from student questionnaires with qualitative insights from teacher interviews and classroom observations. Findings revealed that while traditional lectures remain dominant, interactive methods like group work and laboratory experiments significantly enhance learner engagement and comprehension. However, limited resources and large class sizes were identified as barriers to the effective implementation of these student-centered strategies. The study recommends increased investment in laboratory infrastructure, ongoing teacher training, and the integration of modern teaching aids to improve the quality of Chemistry education at the Ordinary Level.

ABBREVIATIONS AND ACRONYMS

O level - Ordinary level

A level - Advanced level

Zimsec - Zimbabwe School Examination Council

UNESCO United Nations Education

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Table of Contents

CHAPTER ONE: PROBLEM AND ITS SETTING

1.0 Introduction

This chapter focuses on the background of study on strategies used to teach chemistry at ordinary level, problem statement, research objectives, research questions, significance of study, delimitations of study and limitations of study.

1.1 Background of study

Recent studies in China have shown that active learning strategies, such as collaborative group work and inquiry-based learning, significantly enhance students' understanding of Chemistry concepts. For instance, Zhang et al. (2020) found that students engaged in collaborative experiments demonstrated better problem-solving skills and retention of knowledge. Studies in South Africa have shown that inquiry-based learning significantly improves students' critical thinking and problem-solving skills in Chemistry. For instance, Mthethwa et al. (2019) found that students engaged in inquiry-based experiments demonstrated a deeper understanding of chemical principles and increased enthusiasm for the subject. In Zimbabwe, studies have shown that hands-on laboratory experiences significantly improve students' understanding of Chemistry concepts. For instance, Chikoko and Maphosa (2018) found that students who participated in practical experiments demonstrated higher levels of engagement and better performance in assessments.

The integration of technology in Chemistry education, including the use of simulations and online resources, has been increasingly adopted. Liu et al. (2021) in China reported that virtual labs and interactive software improved students' conceptual understanding and motivation, especially in remote learning contexts. Contextual learning strategies in South Africa, which relate Chemistry concepts to real-life situations, have been effective in enhancing student interest. Nkosi and Mkhize (2021) reported that students who learned Chemistry through context-based approaches showed improved motivation and retention of knowledge. Collaborative learning strategies, such as group work and peer teaching in Zimbabwe, have been effective in fostering a deeper understanding of Chemistry. Makoni and Mhlanga (2020) reported that students working in groups were more likely to develop critical thinking skills and improve their problem-solving abilities.

Curriculum reforms aimed at promoting critical thinking and practical skills have been implemented. Wang and Li (2022) in China noted that updated curricula that include real-world applications of Chemistry concepts have led to increased student interest and relevance in

learning. The incorporation of technology, such as simulations and digital resources, has been increasingly utilized in South African classrooms. According to Maphosa and Chikoko (2022), the use of virtual labs and online platforms has facilitated a more interactive learning environment, particularly during the COVID-19 pandemic. In Zimbabwe, contextualized learning that incorporates local examples and issues has been shown to enhance student interest and relevance in Chemistry. Ndlovu (2021) emphasized that relating Chemistry concepts to students' everyday lives made learning more meaningful and engaging.

Continuous professional development for teachers has been emphasized as essential for effective Chemistry teaching in China. Chen et al. (2023) highlighted that teachers who participated in workshops on innovative teaching strategies reported greater confidence and effectiveness in their teaching practices. Continuous professional development for teachers is critical for effective Chemistry instruction in South Africa. A study by Jansen et al. (2023) indicated that teachers who participated in ongoing training programs reported greater confidence in using diverse teaching strategies and improved student outcomes. In Zimbabwe, continuous professional development for teachers is crucial for effective Chemistry instruction. Gumbo et al. (2022) highlighted that teachers who engaged in training workshops focused on innovative teaching strategies reported improved confidence and effectiveness in their teaching practices.

Formative assessment techniques have gained traction in China, with studies showing that regular feedback and assessments help identify students' misconceptions and guide instructional strategies. Yang & Zhao (2024) found that formative assessments improved student performance and engagement. Formative assessment practices in South Africa have been emphasized as essential for monitoring student progress. According to Ramnarain and Schuster (2024), regular formative assessments help identify students' misconceptions and guide instructional adjustments, leading to better learning outcomes. In Zimbabwe, the use of formative assessment techniques has been emphasized as vital for monitoring student progress. According to Moyo and Chivhanga (2023), regular formative assessments help identify and address misconceptions, leading to improved student performance and understanding.

1.2 Problem statement

Over the years, there has been some concern over the poor performance of students in both internal and external examinations in chemistry. Akunyeni (2017) notes that, over the years there has been consistent awareness to the alarming declining rate of enrolment in chemistry as a subject. Many reasons have been attributed to the low enrolment and poor performance in chemistry. One major reason being the traditional lecture strategies being employed by Facilitators and educators. Therefore, when a facilitator chooses to use an alternative method or strategy of instruction, there is often concern about whether some portions of the syllabus content are sacrificed, Tenaw Y A(2014). This becomes the common concern, though it is the most impression that many faculties involved in the curriculum reform feel that the benefits provided by alternative instruction strategies outweigh the loss of syllabus content and this study supports that view.

1.3 Research objectives

i. To assess instructional strategies that are being used to teach secondary chemistry at ordinary level?
ii. To investigate the impact of gender on student engagement and performance in secondary Chemistry education.
iii. To identify the obstacles that teachers encounter when implementing effective teaching strategies in Chemistry at the secondary level.

1.4 Research questions

i. What instructional strategies are currently being used to teach secondary Chemistry at the Ordinary Level?
ii. How does gender influence student engagement and performance in secondary Chemistry education?
iii. What obstacles do teachers face when implementing effective teaching strategies in Chemistry at the secondary level?

1.5 Rationale

The rapid changes in educational trends world over has seen the need for changes in educational instructional strategies in school. Based on the complexity of most aspects of chemistry as a subject, the need to develop modern instruction methods is necessary. The significance of model-based teaching strategies in chemistry at secondary school level in Zimbabwe will be discussed in this research. The research will discuss effective strategies that are employed in teaching chemistry at secondary level.

1.6 Significance of Study

The following stakeholders will benefit from this research:

1.6.1 Students

Students at Sally Mugabe Secondary School will benefit directly from improved teaching strategies, leading to enhanced understanding and performance in Chemistry.

1.6.2 Teachers

Chemistry teachers will gain insights into effective instructional strategies, enabling them to refine their teaching practices and better engage students.

1.6.3 School Administration

School administrators can utilize the findings to support professional development initiatives and allocate resources more effectively to improve Chemistry education.

1.6.4 Ministry of Primary and Secondary Education

Ministry of Primary and Secondary Education will benefit from understanding the effectiveness of current strategies, informing future curriculum design and instructional materials.

1.6.5 Parents

Parents will gain insights into the teaching methods used in Chemistry, helping them support their children's learning and academic progress.

1.6.6 Researchers

Other researchers in the field of education will find value in the study as it contributes to the broader body of knowledge regarding effective teaching strategies in Chemistry.

1.7 Delimitations of study

The research was conducted exclusively at Sally Mugabe Secondary School in Harare, Zimbabwe. Findings may not be generalizable to other schools or regions due to differing contexts and educational environments. The study focused specifically on secondary Chemistry teachers and students enrolled in the Ordinary Level Chemistry curriculum at Sally Mugabe Secondary School. Other stakeholders, such as parents, school administrators, and community members, were not included in this assessment. The study concentrated solely on Chemistry education at the Ordinary Level, excluding other subjects or educational levels. This focus allowed for a detailed examination of the specific strategies and challenges related to Chemistry instruction. While the study investigated the impact of gender on student engagement and performance, it did not explore other demographic factors such as socioeconomic status, ethnicity, or cultural background that may also influence educational outcomes. The research

utilized qualitative and quantitative methods to gather data, including questionnaires and interviews with teachers and students. Other research methods, such as experimental designs or longitudinal studies, were not be employed.

1.8 Limitations of study

Qualitative data collected through interviews and questionnaires could have introduced bias, as influenced by personal opinions and experiences but the researcher implemented a mixed-methods approach that included use of questionnaires and interviews. Additionally, the researcher ensured anonymity in responses to encourage honesty and reduce social desirability bias. Participants could have provided socially desirable responses, particularly regarding perceptions of teaching effectiveness and engagement. The researcher used anonymous surveys to reduce pressure on participants to provide favorable answers.

1.9 Definition of terms

1.9.1 Chemistry

Chemistry is the scientific discipline that studies the properties, composition, and structure of substances (matter), as well as the changes they undergo during chemical reactions. It involves understanding the interactions between atoms and molecules, which are the fundamental building blocks of matter

1.9.2 Strategy

Strategy refers to a plan of action designed to achieve a specific goal or objective. It encompasses the methods and approaches used to allocate resources effectively in order to navigate challenges and seize opportunities within a given context (Mintzberg, 2017).

1.9.3 Ordinary Level

Ordinary Level refers to a standardized examination typically taken by students at the end of their secondary education, usually around the age of 16. It is part of the education system in several countries, particularly those following the British educational framework. The O-Level serves as a qualification for further education or vocational training (Cambridge Assessment International Education, 2023).

1.10 Organisation of the Study

Chapter 1 introduced the study and an overview of what was to follow in Chapters 2 through to five. Chapter 2 focused on theoretical framework and literature review focusing on instructional strategies in secondary chemistry education, how gender affect student engagement and performance in chemistry and the obstacles teachers face in implementing effective chemistry teaching strategies. Chapter 3 discussed the research methodology in terms

research design, research approach, population, sample size, of data, research instruments, , data presentation, data analysis and research ethics. Chapter 4 covered data presentation, data analysis, interpretation and discussion.

Chapter 5 covered summary of the study, reflections on the methodology, substantive reflections on the outcomes of the study, and recommendations for future studies as it relates to policy, practice and further research.

1.11 Chapter summary

This chapter focuses on the background of study on strategies used to teach chemistry at ordinary level, problem statement, research objectives, research questions, significance of study, and delimitations of study and limitations of study. The next chapter focused on literature review

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter covers literature review on instructional strategies in secondary chemistry education, how gender affect student engagement and performance in chemistry and the obstacles teachers face in implementing effective chemistry teaching strategies. Theoretical framework is also covered.

2.2 Theoretical framework

Constructivist Learning Theory is one of the theories that is used to carry out this research. Constructivist Learning Theory posits that learners construct knowledge through their experiences and interactions with the environment. It emphasizes active participation in the learning process, where students build their understanding through exploration, inquiry, and reflection. Constructivist principles can be used to evaluate whether the instructional strategies encourage active learning, collaboration, and critical thinking among students. This theory can help analyze how different students (regardless of gender) engage with constructivist strategies, highlighting any disparities in engagement and performance linked to gender dynamics. Understanding the challenges teachers encounter in applying constructivist approaches can provide insights into the barriers to effective chemistry instruction (Vygotsky, 1978).

2.3 Instructional Strategies in Secondary Chemistry Education

Inquiry-Based Learning (IBL) encourages students to ask questions, conduct experiments, and derive conclusions based on their findings. Studies for researches done in China show that IBL enhances students' critical thinking and problem-solving skills, leading to improved understanding of chemical concepts (Zhang & Wang, 2018). A research by Adebayo (2017) in Nigeria indicates that IBL enhances students' understanding of chemistry concepts and promotes critical thinking skills. A research done by Mavhunga, (2016) in Zimbabwe shows similar results.

Collaborative Learning is one of the strategies that involves students working in groups to enhance their understanding of chemistry. Collaborative learning has been shown to improve student engagement and motivation, as well as facilitate deeper understanding of chemical concepts through peer interaction according to a research that was done by Li & Chen (2019) on the Effect of collaborative learning on Chemistry achievement in high school. A research by Adeyemi & Afolabi (2020) in Nigeria proves that collaborative learning improve students' understanding of complex chemical concepts and foster teamwork skills. Research by Chikoko,

& Kurebwa, (2018) in Zimbabwe shows that collaborative learning improves student performance and fosters a sense of community in the classroom, enhancing overall engagement.

Use of technology and multimedia is also another instructional strategy that is used to teach secondary chemistry at ordinary level. According to research findings done in China by Liu & Zhang (2020), the use of technology can significantly enhance students' conceptual understanding and retention of chemistry topics. Research by Nyoni & Moyo (2020) in Zimbabwe proves that the integration of technology has been found to enhance student engagement and facilitate better understanding of chemical principles, though access to technology remains a challenge.

Contextual teaching and learning is a strategy that is used to teach secondary chemistry at ordinary level. This approach connects chemistry concepts to real-world situations, making the subject more relevant to students. Research findings by Wang & Xu (2021) in China proves that contextual teaching helps students relate chemistry to everyday life, increasing interest and understanding. Eze & Nwankwo, (2022) did a similar research in Nigera and research findings proves that contextual teaching improves students' interest in chemistry and helps them see the practical applications of what they learn. Research Dube & Mavhunga,(2021) in Zimbabwe proves that contextual teaching to increase students' interest and motivation in chemistry by demonstrating its practical applications.

Differentiated instruction is also a strategy that is used to teach secondary chemistry at ordinary level. Chen & Gao (2022) researched on implementing differentiated instruction in secondary chemistry classes. Research findings proved that differentiated instruction has been effective in addressing varying student abilities and learning styles, leading to better academic performance in chemistry. Research by Okeke & Ibe (2023) in Nigeria proved that differentiated instruction has been effective in improving student outcomes by addressing individual learning styles and paces. According to a research by Ndlovu & Chikwature (2022) in Zimbabwe, differentiated instruction has been effective in improving student outcomes, particularly for those who struggle with traditional teaching methods.

Project-Based Learning (PBL) has proved to be a strategy that is used to teach secondary chemistry at ordinary level. PBL involves students working on a project over an extended period, which promotes deeper engagement with the material. Research findings indicates that PBL enhances students' motivation and understanding of chemistry through hands-on

experience according to Zhao & Liu (2023). According to a research done by Ojo & Akinwumi, (2019) in Nigeria, PBL increases student motivation and engagement, leading to better retention of knowledge.

While there has been significant research on instructional strategies in Zimbabwe, several gaps remain. Most studies are cross-sectional, providing a snapshot of current practices without examining long-term effects of instructional strategies on student learning. There is a lack of research on how teacher-training programs prepare educators to implement these strategies effectively in the classroom. More research is needed to explore how disparities in access to resources (e.g., technology, laboratory equipment) affect the implementation of innovative teaching strategies. Few studies have gathered comprehensive student feedback on the effectiveness of various instructional strategies, which could provide valuable insights for educators. There is a need for research that considers the cultural and socio-economic factors influencing the teaching and learning of chemistry in Zimbabwean schools (Mavhunga, 2016).

2.4 How gender affect student engagement and performance in chemistry

Research by Zhang & Wang, (2016) in China indicates that male students often demonstrate higher levels of engagement in chemistry classes compared to female students. This disparity can be attributed to social and cultural factors that influence interest in science subjects. Research by Mji, & Makgato (2016) in South Africa has shown that male students often outperform female students in chemistry assessments. Factors contributing to this gap include differences in confidence levels and societal expectations regarding gender roles in science. Studies in Zimbabwe indicate that female students often perform lower than their male counter parts in chemistry due to various socio-cultural factors and lack of encouragement in STEM subjects according to a research by Chikoko & Mafa (2017). A significant factor is the stereotype that associates science and mathematics with male capabilities.

Studies in China by Li & Chen (2018) have shown that while boys tend to outperform girls in chemistry assessments, the gap varies significantly depending on the teaching methods used. Inquiry-based and collaborative learning approaches have been found to minimize gender performance gaps. Engagement Levels. Research by Ndlovu & Mthembu (2017) in South Africa indicate that male students tend to exhibit higher levels of engagement in chemistry classes compared to female students. This engagement is influenced by classroom dynamics, teaching methods, and peer interactions. Research in Zimbabwe suggests that interactive and collaborative teaching methods can help improve engagement for both genders. However, these

methods are sometimes not implemented effectively, leading to persistent gender gaps. Gender-sensitive pedagogies have been recommended to foster a more inclusive environment. (Mhlanga, 2019).

Research by Huang & Zhang (2019) in China proves that the choice of teaching strategies significantly affects gender engagement and performance. Methods that promote active participation and collaboration tend to engage both genders equally, while traditional lecture-based approaches may disadvantage female students. Impact of Teaching Strategies. Research done by Mthembu & Ndlovu (2018) in South Africa proved that the choice of instructional strategies significantly affects gender engagement. Inquiry-based and collaborative learning approaches have been shown to enhance participation among female students, reducing the performance gap.

Wu & Liu (2020) concluded that gender differences in self-efficacy and interest in chemistry have been linked to performance outcomes in the research they carried out in China. Female students often report lower self-efficacy in science subjects, which negatively impacts their engagement and performance. Self-Efficacy and Confidence. Gender differences in self-efficacy and confidence in chemistry have been identified as significant factors affecting student performance. Female students often report lower self-efficacy, which correlates with reduced engagement and performance according to a research by Monyane & Ndlovu, (2019) in South Africa.

Socio-cultural expectations and stereotypes regarding gender roles in science influence students' engagement and performance in chemistry. Girls may face societal pressures that discourage them from pursuing science subjects (Li & Zhang, 2021). Socio-cultural factors play a crucial role in shaping students' attitudes towards chemistry. Gender stereotypes and societal expectations can discourage female students from pursuing chemistry and other STEM subjects according to a research by Mjoli & Dube (2020) in South Africa.

Research by Chen & Zhou (2022) proves that longitudinal studies indicate that while gender gaps in performance have narrowed over time, engagement levels still reflect traditional patterns, with boys showing more enthusiasm for chemistry-related activities. Longitudinal studies indicate that while the gender gap in performance has narrowed over time, engagement levels still reflect traditional patterns, with boys showing more enthusiasm for chemistry-related activities (Nkosi & Ramnarain, 2021).

Research suggests that targeted interventions, such as mentorship programs and gender-sensitive teaching practices, can enhance female students' engagement and performance in chemistry (Zhao & Xu, 2023). Research by Dlamini & Mthembu (2022) in South Africa suggests that targeted interventions, such as mentorship programs and gender-sensitive teaching practices, can improve female students' engagement and performance in chemistry.

Studies in Zimbabwe have proved that cultural norms and expectations regarding gender roles significantly influence student attitudes towards chemistry. In many cases, girls are discouraged from pursuing science due to traditional views. Programs aimed at increasing awareness and changing perceptions about gender roles in STEM have shown promise in improving female participation and performance (Ndlovu & Ngwenya, 2020).

2.5 Obstacles teachers face in implementing effective chemistry teaching strategies

Bennett & Holman, (2016) on their research in London proved that teachers often encounter rigid curricula that limit their flexibility in adopting innovative teaching strategies. The National Curriculum in England prescribes specific content that may not align with contemporary teaching methods, making it challenging for teachers to engage students effectively. Teachers in Ghana often encounter rigid curricula that do not allow for flexibility in teaching methods. The prescribed content can restrict educators from employing innovative and student-centered approaches in chemistry instruction (Adom & Agyemang, 2017). Teachers in Zimbabwe often face challenges due to a rigid curriculum that does not accommodate innovative teaching methods. The prescribed syllabus can limit teachers' ability to engage students effectively with contemporary chemistry concepts (Chikoko & Maphosa, 2016).

Insufficient laboratory equipment and teaching materials are significant barriers. Many schools in urban areas struggle to provide the necessary resources for effective hands-on chemistry instruction, leading to an over-reliance on theoretical teaching methods according to research findings by Jones & Taylor (2018) in London. A research by Osei & Boakye (2018) in Ghana also highlight that a significant barrier is the lack of adequate laboratory facilities and teaching materials. Many schools do not have the necessary equipment to conduct practical chemistry experiments, which are crucial for effective learning. Research by Nyoni & Chitiyo (2018) in Zimbabwe highlight that a significant barrier to effective chemistry teaching is the lack of adequate laboratory facilities and teaching materials. Many schools struggle with insufficient equipment, which is crucial for conducting practical experiments.

Ongoing professional development is crucial for teachers to stay updated with modern pedagogical strategies. However, many teachers report that professional development opportunities are limited and often not tailored to their specific needs in teaching chemistry (Smith & Brown, 2020). Teachers often report a lack of ongoing professional development opportunities. Many educators feel unprepared to implement modern teaching strategies due to insufficient training in pedagogical practices (Mensah & Oduro, 2019). Professional development opportunities for teachers are often inadequate. Many educators report feeling unprepared to implement modern teaching strategies due to a lack of training and support according to the research findings in Zimbabwe by Mupinga & Chigangaidze (2019).

Research by Harrison & Treagust (2017) in London proves that managing diverse classrooms with varying levels of student engagement can pose significant challenges. Teachers often struggle with maintaining discipline and interest, particularly when dealing with complex chemistry concepts. Research findings by Aidoo & Koomson (2020) in Ghana highlight that managing diverse classrooms presents challenges, especially in maintaining student engagement and discipline. Teachers often struggle to keep students motivated, particularly when teaching complex chemistry concepts. Managing diverse classrooms presents significant challenges for teachers in Zimbabwe. Issues such as maintaining student interest and discipline can hinder effective teaching, particularly in complex subjects like chemistry (Mapfumo & Mavhunga, 2020).

High-stakes testing creates pressure on teachers to focus primarily on exam preparation rather than fostering a deeper understanding of chemistry. This often results in a narrowed curriculum and limits the use of innovative teaching strategies (Williams & Smith, 2021). Owusu-Acheaw & Tabi (2021) in Ghana also highlight the same sentiments as those of Williams & Smith, (2021).According to Owusu-Acheaw & Tabi (2021) , high-stakes examinations create pressure on teachers to focus on rote learning and exam preparation rather than fostering a deeper understanding of chemistry concepts. This often leads to a narrowed curriculum. Research findings in Zimbabwe by Moyo & Moyo (2021) also highlights that high-stakes assessments create pressure on teachers to focus on rote learning and exam preparation rather than fostering a deep understanding of chemistry concepts. This often leads to a narrowed curriculum.

Research by Green & Davis (2022) in London highlight that negative student attitudes towards chemistry can hinder effective teaching. Many students perceive chemistry as difficult, which affects their motivation and engagement in the subject. Negative attitudes towards chemistry

among students can hinder effective teaching. Many students perceive chemistry as difficult, which affects their motivation and engagement in the subject (Amponsah & Osei, 2022). Research findings in Zimbabwe also highlights same sentiments as those found in London and Nigeria .According to Ndlovu & Moyo (2022) in Zimbabwe, negative student attitudes towards chemistry can significantly affect teaching effectiveness. Many students perceive chemistry as challenging, which affects their motivation and engagement in the subject.

Research findings by Taylor & Evans (2023) in London highlight that lack of collaboration among teachers can limit the sharing of effective practices and strategies. Support from school leadership is critical for teachers to implement new teaching methods successfully. Limited collaboration among teachers can restrict the sharing of effective practices and strategies. Support from school leadership is crucial for implementing innovative teaching methods (Agyemang & Adom, 2023).

2.6 Chapter Summary

This chapter covered literature review on instructional strategies in secondary chemistry education, how gender affect student engagement and performance in chemistry and the obstacles teachers face in implementing effective chemistry teaching strategies. Theoretical framework is also covered. The next chapter covered research methodology.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter covered research methodology focusing on research design, research approach, population, sample size, research instruments, data presentation, data analysis and ethical consideration.

3.2 Research Design

This research used a case study research design to collect data for this research. Case study provided a comprehensive and detailed exploration of the specific context, allowing for a deep understanding of the instructional strategies, gender dynamics, and obstacles faced by teachers (Stake, 2018). The researcher also used a case study research design in this study as case study focused on a particular setting, which helped in understanding the unique characteristics and challenges of the specific school environment in Harare, making findings more relevant and applicable (Merriam & Tisdell, 2016). Case study allowed for multiple methods of data collection providing a richer and more nuanced understanding of the research questions (Yin, 2018).

3.3 Research Approach

This research employed a mixed-methods research approach, which combined quantitative and qualitative research methods. By combining quantitative and qualitative methods, the researcher obtained a more holistic view of the instructional strategies employed in teaching chemistry, the impact of gender on student engagement and performance, and the obstacles teachers face (Creswell & Plano Clark, 2017). The mixed-methods approach allowed for triangulation, where findings from quantitative data was validated or enriched by qualitative data. This enhanced the credibility and reliability of the research results (Denzin, 2017). A mixed-methods design also provided flexibility in addressing research questions. The researcher adapted their data collection strategies based on emerging findings, allowing for a more responsive research process (Johnson & Onwuegbuzie, 2018).

3.4 Population

In research, the term population refers to the entire group of individuals or elements that share specific characteristics and are the focus of a study. This group can be defined based on various criteria, including demographic factors, geographic location, or specific attributes relevant to the research question. The population serves as the basis for sampling, where researchers select a subset of individuals to gather data and draw conclusions about the larger group (Creswell, J

& Creswell, 2017). This study focused on teachers and learners at Sally Mugabe secondary school in Harare as its population.

3.5 Sample Size

Sample size refers to the number of individuals or observations included in a study. It is a critical aspect of research design, as it directly affects the reliability and validity of the study's findings. A well-determined sample size can ensure that the results are statistically significant and representative of the larger population from which the sample is drawn (Cohen, 2019). A sample size of three chemistry teachers was selected using purposive sampling method in this research. A stratified random sampling method was used to select a sample size of 30 learners to participate in this research.

3.6 Research Instruments

Interviews and questionnaire were used as research instruments in this study. The interview was done with three teachers while and the questionnaire was administered to learners.

3.6.1 Interviews

Semi-structured interviews were be conducted with chemistry teachers to gather qualitative data on their experiences and challenges in implementing effective teaching strategies. All selected chemistry teachers were interviewed. The interview guide covered instructional strategies used, gender dynamics in the classroom, and obstacles faced. The researcher used an interview guide in this research as it allowed the researcher to ask specific questions regarding the instructional strategies used by teachers. This structured approach ensured that all relevant areas were covered while still allowing for follow-up questions based on the teachers' responses (Kallio et al., 2016). An interview guide facilitated discussions about gender dynamics in the classroom. By asking targeted questions, the researcher explored teachers' observations and experiences regarding gender differences in learner engagement and performance (Leathwood, & Read, 2016). The interview guide also allowed for an open dialogue about challenges faced by teachers. By including questions about obstacles, the researcher gathered rich qualitative data that provided insight into the barriers to effective teaching (Hammersley & Atkinson, 2019).

3.6.2 Questionnaire

The researcher used a questionnaire in this research for learners as a research a questionnaire included specific questions about the instructional strategies that learners experienced in their chemistry classes. This allowed the researcher to gather quantitative data on the prevalence of various teaching methods (McLeod, 2019).

Questionnaires was designed to include demographic questions, such as gender, along with items that measure engagement and performance in chemistry. This quantitative approach allowed for statistical analysis of gender differences in learners responses (Wang & Degol, 2017). The researcher also used questionnaire as it included items that asked learners about their perceptions of obstacles encountered in their chemistry-learning environment. This provided insights into barriers that affect teaching effectiveness (Gibbons & Borders, 2020).

Questionnaires allowed the researcher to collect data from a larger number of respondents in a shorter time frame compared to interviews or focus groups(Fink, 2017). Questionnaires provided a level of anonymity that encouraged honest responses from learners, particularly on sensitive topics like gender and engagement (Babbie, 2016).

3.7 Data Presentation

Data from interviews was presented in quotes and that from questionnaires was presented in tables and bar graphs.

3.8 Data Analysis

Data from the questionnaires was analysed using Excel. Data from interview was transcribed and analysed thematically. Thematic analysis identified key themes related to instructional strategies, gender effects, and obstacles faced by teachers (Bryman, 2016).

3.9 Ethical consideration

The following research ethics were considered in this research:

3.9.1. Informed Consent:

The researcher obtained voluntary and informed consent from participants, ensuring they understand the purpose of the study, their role, potential risks, and their right to withdraw at any time (World Medical Association., 2016)

3.9.2 Confidentiality

The researcher safeguarded participant confidentiality by anonymizing data and ensuring that sensitive information remains private and secure (World Medical Association., 2016)

3.9.3 Protection of Participants

The researcher minimized harm to participants by avoiding intrusive questioning and ensuring their well-being throughout the study (American Psychological Association, 2020).

3.9.4 Avoiding Coercion

The researcher ensured that participation was voluntary and free from coercion, particularly when involving teachers and learners at Sally Mugabe secondary school (American Psychological Association, 2020).

3.9.5 Legal Implications:

3.9.5.1 Compliance with Regulations

The researcher adhered to relevant national and international regulations governing research involving human participants, such as data protection laws and ethical guidelines (National Institutes of Health, 2018).

3.9.5. 2 Permissions and Approvals

The researcher obtained necessary approvals from Sally Mugabe secondary school to conduct the research, on the challenges the organisation was facing on an assessment of strategies used to teach chemistry at ordinary level at one government secondary school in Harare, (National Institutes of Health, 2018).

3.9.5. 3 Data Protection

The researcher ensured compliance with data protection laws to safeguard participant information, particularly when collecting and storing sensitive data from teachers and learners at Sally Mugabe secondary school (National Institutes of Health, 2018).

3.9.5. 4 Intellectual Property

The researcher clarified ownership of research outputs and intellectual property rights, since the research involved proprietary information or organizational data of teachers and learners at Sally Mugabe secondary school (American Psychological Association, 2020).

3.9.5. 5 Conflict of Interest

The researcher disclosed any potential conflicts of interest that influenced the research process or outcomes (American Psychological Association, 2020).

3.10 Chapter Summary

This chapter covered research methodology focusing on research design, research approach, population, sample size, research instruments, data presentation, data analysis and ethical consideration. The next chapter covered data presentation, analysis and discussion

CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the data collected from teachers and students at Sally Mugabe Secondary School regarding the strategies used to teach Chemistry at the Ordinary Level. It includes an analysis of the response rates, demographic data, instructional strategies employed, the impact of gender on student engagement and performance, and the obstacles teachers face in implementing effective teaching strategies. The findings were be discussed in relation to existing literature to provide a deeper understanding of the challenges and opportunities in Chemistry education.

4.2 Response Rate of Participants

The study achieved a response rate of 100% from the 3 chemistry teachers interviewed, and 30 students who participated in the questionnaire. This high response rate ensured that the data collected was representative and reliable for drawing conclusions about the instructional strategies and challenges faced in teaching Chemistry at the school. This information is shown on table 4.1

Table 1: Response Rate of Participants

Participant Group	Target Participants	Actual Participants	Response Rate
Teachers	3	3	100%
Students	3	30	100%

As shown in Table 1, the study achieved a 100% response rate from both teachers and students. This full participation suggests a high level of interest and relevance of the research topic among the participants.

Qualitative responses from teachers indicated that they were eager to contribute due to the study's alignment with current challenges in classroom management. One teacher noted, *"This topic speaks directly to what we face daily. It's refreshing to be asked for input."*

Students, on the other hand, appeared motivated by the opportunity to express their views anonymously. Several students expressed appreciation for being heard, with one stating, *"No one usually asks what we think, but this felt different."*

The high response rate, therefore, not only reflects logistical success but also underlines the perceived importance of the study from the participants' perspectives.

Demographic Data of Participants

Table 4.2 shows the demographic data of teachers. From this table all three teachers were females. From the same table, the teachers had varying levels of experience with one teacher being between 0-5 years of teaching, the other teacher was between 6-10 and the last one was 10 years and above. From the same table, one teacher had a diploma, two had a degree as level of education, and none had masters.

Table 4.2 Demographic data of teachers

Participants	**Gender**		**Teaching Experience(years)**			**Educational Qualification**		
Teachers	Male	Female	0-5	6-10	10+	Diploma	Degree	Masters
	0	3	1	1	1	1	2	0
Total	3		3			3		

Table 4.3 below shows the demographic data of students who participated in this research. According to this table, 15 females participated and 15 males participated indicating 50% participation for females and 50% participation for males. On form level, five participants were from form 1, and the same was for form 2 and form 4. Also from the same table, 10 participants were in form three and three participants were from form 5 and the last two participants were from form 6. From the table one notices that since form 3s have the highest number of participants, interventions or support programs could focus on this group while still monitoring and encouraging participation in the other forms.

Table 4.3 Demographic data of Students

Participants	**Gender**		**Form level**					
Students	Male	Female	1	2	3	4	5	6
	15	15	5	5	10	5	3	2
Total			30					

This demographic data provides insight into the perspectives shared by both teachers and students, highlighting gender balance among students and a diverse range of teaching experiences among teachers. It can be noted that the demographic data shows balanced gender participation among students, which should be maintained in future research. However, lower

representation from higher forms suggests the need to encourage more involvement from those levels. The diverse teaching experience provides opportunities for peer learning, while promoting further qualifications for teachers could enhance instructional quality. Tailoring interventions based on these demographics will improve their effectiveness. Expanding sample sizes in future studies is also recommended for more comprehensive insights.

4.4 Data Presentation

4.4.1 Instructional Strategies Used to Teach Secondary Chemistry at Ordinary Level

Data collected from teachers through the interview revealed five themes as instructional strategies used to teach secondary chemistry at ordinary level and these themes were traditional lectures, hands-on laboratory experiments and use of technology.

4.4.1.1 *Traditional Lectures*

Traditional lectures surfaced as an instructional strategy employed in teaching Chemistry at Sally Mugabe Secondary school as all teachers reported using traditional lectures as a foundational method, though they acknowledged its limitations in engaging students. The following responses highlight this:

T1: "I also consider traditional lectures to be a key part of my teaching approach for Chemistry. However, I find that while they provide essential information, they often fail to capture students' interest and can lead to disengagement. I try to balance them with more interactive methods."

T2: "Traditional lectures serve as a solid foundation for delivering content in Chemistry, but I have noticed that they don't always promote active learning. I recognize that students often need more hands-on experiences to truly grasp the concepts we cover in class."

T3: "I agree that traditional lectures are important for laying the groundwork in Chemistry education. Still, I am aware of their limitations, especially in fostering student participation. I've been exploring ways to incorporate more collaborative activities to enhance engagement during lessons."

4.4.1.2 Hands-On Laboratory Experiments

Hands-on laboratory experiments was also a theme of this research as all teachers utilized practical lab sessions, which students reported as highly effective in understanding Chemistry concepts. The following responses from teachers highlighted this:

T1: "Hands-on laboratory experiments are a cornerstone of my Chemistry teaching approach. I find that when students can physically engage with the materials and conduct experiments themselves, they grasp the concepts much better. The feedback from students has been overwhelmingly positive; they often say that these practical sessions make the subject much more interesting and relatable."

T2: "I strongly believe that practical lab sessions are essential for understanding Chemistry. They provide students with the opportunity to apply theoretical knowledge in real-world scenarios. I have noticed that students are more enthusiastic and retain information better after conducting experiments. It's rewarding to see their excitement when they see the results of their work first hand."

T3: "Incorporating hands-on laboratory experiments into our Chemistry curriculum has proven to be highly effective. Students often report that these practical experiences help clarify complex concepts and encourage deeper learning. I try to include as many lab sessions as possible, as I believe they are crucial for fostering a genuine interest in science."

4.4.1.3 Use of Technology

All teachers mentioned the integration of technology, such as simulations and online resources, during the interview although its implementation was limited by resource availability as an instructional strategy that was used to teach chemistry at Sally Mugabe Secondary School. Teachers gave the following responses during the interview:

T1: "We do try to integrate technology into our Chemistry lessons, particularly through simulations and online resources. These tools can make complex concepts more accessible for students. However, our implementation is often hampered by limited access to computers and reliable internet. If we had better resources, I believe we could enhance student engagement significantly."

T2: "Using technology like interactive simulations has been beneficial in teaching Chemistry, especially for visualizing chemical reactions and processes. Unfortunately, we face challenges with resource availability, such as outdated equipment and insufficient internet connectivity. This limits our ability to fully utilize these tools in the classroom."

T3: "I recognize the importance of integrating technology, such as online platforms and simulations, in our Chemistry curriculum. They can greatly enhance student understanding and interest. However, due to the lack of adequate resources, we often resort to traditional methods, which can be less effective in engaging students with the subject matter."

4.4.1.4 Student Responses

Responses from students through the questionnaire on effectiveness of strategies used to teach Chemistry at Sally Mugabe Secondary School indicated that students rated hands-on laboratory experiments (4.7/5) and group work (4.5/5) as the most effective strategies for enhancing their understanding of Chemistry. Traditional lectures received the lowest rating (2.3/5) as shown on table 4.4 below:

Table 4.4: Student Ratings of Instructional Strategies

Instructional Strategy	**Average Rating (1-5)**
Traditional Lectures	2.3
Group Work	4.5
Inquiry-Based Learning	4.1
Hands-On Laboratory Experiments	4.7
Use of Technology	3.8

The student ratings of instructional strategies reveal a clear preference for more interactive and engaging methods. Hands-on laboratory experiments received the highest average rating (4.7), followed closely by group work (4.5) and inquiry-based learning (4.1). Traditional lectures scored the lowest (2.3), indicating that students find them less effective. Based on these findings, it is recommended that educators increase the use of practical, collaborative, and inquiry-driven activities in their teaching. Additionally, integrating technology more effectively could further enhance student engagement and learning outcomes.

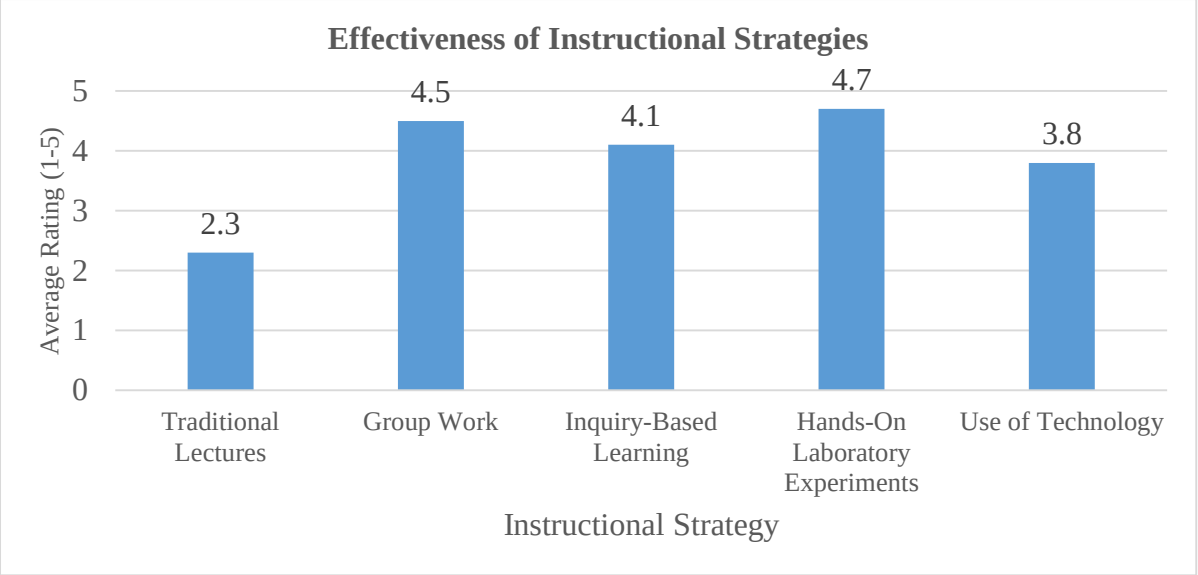

Figure 4.1: Effectiveness of Instructional Strategies

Figure 4.1 shows the average ratings of various instructional strategies as perceived by students. Hands-on laboratory experiments were rated highest, indicating a strong preference for experiential learning.

4.4.2 The Impact of Gender on Student Engagement and Performance in Secondary Chemistry Education

The data collected through the questionnaire from students indicated notable differences in engagement and performance based on gender. According to the data collected on engagement levels, male students reported higher engagement levels, with 70% indicating they were often or always engaged compared to 50% of female students. According to data collected on performance ratings of students 60% of male students rated themselves as "Good," while 40% of female students rated themselves as "Average." This information is shown on table 4.5 below:

Table 4.5: Student Engagement and Performance by Gender

Gender	Engagement Level (%)	Performance Rating (%)
Male	70	60
Female	50	40

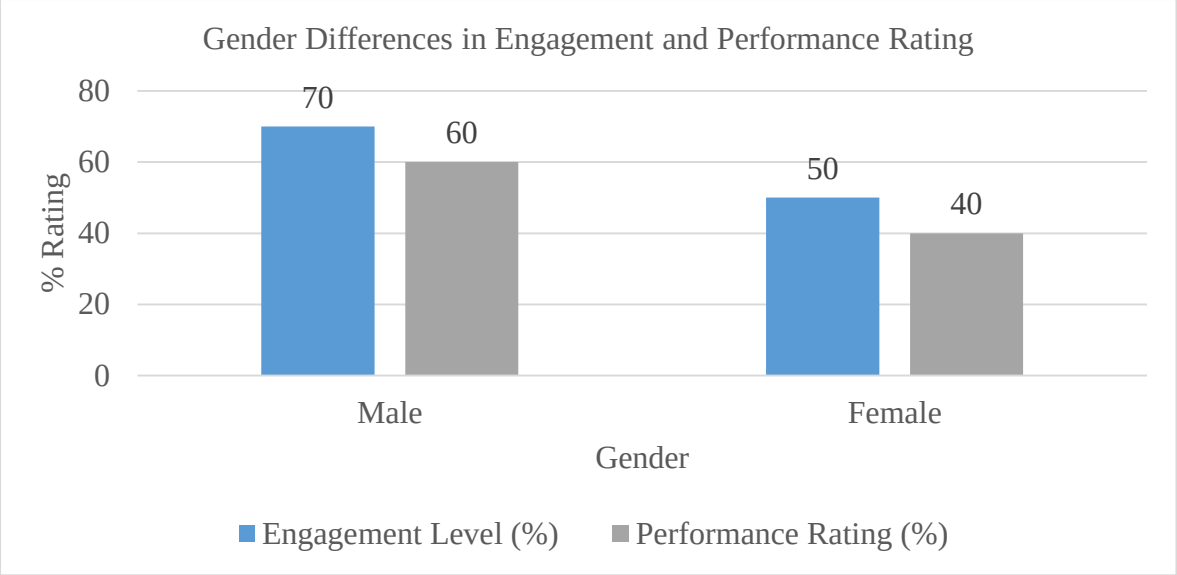

Figure 4.2: Gender Differences in Engagement and Performance

Figure 4.2 illustrates the disparities in engagement and performance between male and female students, highlighting the need for targeted interventions to improve female student participation and confidence in Chemistry.

Teachers observed that female students often participated less in discussions and group activities, attributing this to societal expectations and a lack of confidence in their abilities in Science, Technology, Engineering, and Mathematics (STEM) subjects.

4.4.3 The Obstacles that Teachers Encounter When Implementing Effective Teaching Strategies in Chemistry at Secondary Level

Lack of resources, rigid curriculum, professional development and classroom management were the themes of this research on the obstacles that teachers encountered while implementing effective teaching strategies in Chemistry at secondary Level.

4.4.3.1 Lack of Resources

During the interview, all teachers reported insufficient laboratory equipment and teaching materials as significant barriers to effective Chemistry instruction at Sally Mugabe Secondary School. The following responses from teachers highlighted this:

T1: "One of the biggest challenges we face in teaching Chemistry is the lack of sufficient laboratory equipment. Many experiments require specific tools and materials that we simply

do not have. This limits our ability to provide students with the hands-on experiences that are crucial for their understanding of the subject."

T2: "I find that inadequate teaching materials and laboratory resources significantly hinder our Chemistry instruction. For example, we often have to improvise with outdated equipment or even skip certain experiments altogether. This not only affects student engagement but also their overall comprehension of key concepts."

T3: "Insufficient laboratory equipment is a major barrier to effective Chemistry teaching in our school. While I want to conduct more practical sessions, the reality is that we do not have enough resources to do so safely and effectively. This situation makes it difficult for students to fully grasp the practical applications of what they learn in theory."

4.4.3.2 Rigid Curriculum

All the three teachers who participated in this research through the interview highlighted that the prescribed curriculum limits flexibility in teaching methods, making it difficult to incorporate innovative strategies in teaching Chemistry at secondary level.

T1: "The prescribed curriculum really restricts our ability to adapt our teaching methods. While I would love to incorporate more innovative strategies, such as project-based learning or interactive simulations, the need to strictly follow the curriculum often leaves little room for flexibility. This can make it difficult to engage students in a way that truly enhances their understanding of Chemistry."

T2: "I feel that the rigidity of the prescribed curriculum limits our creativity as educators. We often have to stick to a set syllabus, which does not allow us to explore new teaching methods or technologies that could make learning Chemistry more exciting and effective. It's frustrating because I know there are better ways to connect with my students."

T3: "The curriculum we have to follow is quite prescriptive, which makes it challenging to incorporate innovative teaching strategies. I believe that flexibility in our teaching methods is essential for effective learning, especially in a subject like Chemistry. However, the constraints of the curriculum often force us to rely on traditional lecture-based approaches, which may not be as effective in engaging students."

4.4.3.3 Professional Development

Teachers expressed a need for ongoing training in modern pedagogical approaches, noting that current professional development opportunities were inadequate to meet the requirements of

teaching Chemistry at Secondary level. The following were the responses from three teachers who participated in this research:

T1: "I believe that ongoing training in modern pedagogical approaches is crucial for us as Chemistry teachers. Unfortunately, the current professional development opportunities are often not tailored to our specific needs. We need more workshops and training sessions that focus on innovative teaching strategies to keep up with the evolving educational landscape."

T 2: "There is a significant gap in the professional development we receive. While I appreciate the training we do get, it often lacks relevance to the challenges we face in teaching Chemistry. We need more comprehensive and ongoing training that equips us with modern teaching methods and tools that can enhance our effectiveness in the classroom."

Teacher 3 Response: "The need for continuous professional development in modern pedagogical approaches is something all of us feel strongly about. The current offerings do not adequately address the complexities of teaching Chemistry at the secondary level. I think investing in targeted training would help us implement more effective teaching strategies and ultimately benefit our students."

4.4.3.4 Classroom Management

Managing diverse classrooms with varying levels of student engagement posed challenges, particularly in maintaining interest during complex topics in Chemistry subject at secondary school level. The following were the responses from teachers:

Teacher 1 Response: "One of the biggest challenges I face is managing a classroom where students have varying levels of engagement and understanding. During complex topics in Chemistry, it can be difficult to maintain interest among all students. Some grasp the concepts quickly, while others struggle, and finding a balance to engage everyone effectively is a constant challenge."

Teacher 2 Response: "In my experience, teaching Chemistry to a diverse group of students can be quite challenging, especially when we dive into more complex subjects. Keeping all students engaged is tough; while some are eager to learn, others may lose interest quickly. I often find myself trying to adapt my teaching methods on the fly to cater to different learning styles and levels of enthusiasm."

Teacher 3 Response: "Managing a diverse classroom in Chemistry presents unique challenges, particularly when discussing intricate topics. I notice that maintaining student interest is

difficult, as some students become disengaged when they do not immediately understand the material. It's essential for me to find creative ways to present these concepts to keep all students involved and motivated."

4.5 Discussion of Findings

4.5.1 Instructional Strategies Used to Teach Secondary Chemistry at Ordinary Level

The findings of this research on instructional strategies used to teach secondary chemistry at ordinary level align with existing literature that emphasizes the effectiveness of active learning strategies, such as hands-on experiments and group work, in enhancing student understanding (Zhang et al., 2020; Chikoko & Maphosa, 2018). The reliance on traditional lectures, however, reflects a common challenge in many educational settings, where educators may feel constrained by curriculum demands (Akunyeni, 2017). The preference for hands-on learning as shown in the student ratings supports the need for more interactive teaching methods.

4.5.2 The Impact of Gender on Student Engagement and Performance in Secondary Chemistry Education

The gender disparities observed in engagement and performance in this research on the impact of gender on student engagement and performance in secondary Chemistry education are consistent with previous studies indicating that male students often outperform female students in STEM subjects due to societal expectations and confidence levels (Mji & Makgato, 2016; Chikoko & Mafa, 2017). The need for gender-sensitive pedagogies to enhance female engagement is highlighted by the findings, suggesting that implementing collaborative and inquiry-based learning could help bridge the gap (Ndlovu & Mthembu, 2017).

4.5.3 The Obstacles that Teachers Encounter When Implementing Effective Teaching Strategies in Chemistry at the Secondary Level

The barriers identified by teachers, including resource limitations and rigid curricula, are well-documented in educational research (Chikoko & Maphosa, 2016; Smith & Brown, 2020). The findings underscore the necessity for systemic changes in educational policy to support innovative teaching practices and provide adequate resources for effective Chemistry instruction. Addressing these challenges is crucial for improving both teacher efficacy and student outcomes.

4.6 Chapter Summary

This chapter presented and analysed the data collected from teachers and students regarding the strategies used to teach Chemistry at Sally Mugabe Secondary School. The findings revealed a reliance on traditional teaching methods, significant gender disparities in engagement and performance, and various obstacles faced by teachers in implementing effective strategies. The discussion contextualized these findings within existing literature, highlighting the need for innovative approaches and systemic support to enhance Chemistry education. The next chapter provided a summary of the study, conclusions and recommendations.

CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter provides a summary of the research findings, draws conclusions based on the data collected, and offers recommendations for improving Chemistry instruction at Sally Mugabe Secondary School. It also suggests areas for further research to enhance understanding and practice in Chemistry education.

Summary of Research

The study assessed the strategies used to teach Chemistry at the Ordinary Level at Sally Mugabe Secondary School, focusing on instructional methods, the impact of gender on student engagement and performance, and the obstacles teachers face in implementing effective teaching strategies. Through this research, it was established that teachers predominantly relied on traditional lectures, complemented by hands-on laboratory experiments and limited use of technology. While traditional lectures provided foundational knowledge, they often failed to engage students effectively. Through findings, the research revealed significant gender disparities in student engagement and performance, with male students generally reporting higher levels of engagement and better performance than their female counterparts do. This disparity was attributed to societal expectations and varying confidence levels in STEM subjects. Through the research, teachers identified several barriers to effective Chemistry instruction, including insufficient laboratory equipment, a rigid curriculum that limited flexibility in teaching methods, inadequate professional development opportunities, and challenges in managing diverse classrooms with varying levels of student engagement.

5.3 Conclusions

The study concludes that while traditional teaching methods are still prevalent in Chemistry instruction, there is a critical need for innovative strategies that foster active learning and engagement among students. The significant gender disparities in engagement and performance highlight the necessity for targeted interventions to support female students and promote a more inclusive learning environment. Additionally, addressing the obstacles faced by teachers, such as resource limitations and curriculum rigidity, is essential for enhancing the quality of Chemistry education at the secondary level.

5.4 Recommendations

Based on the findings and conclusions of this research, the following recommendations were proposed by the researcher:

- Ministry of Primary and Secondary Education should provide ongoing professional development opportunities tailored to the specific needs of Chemistry teachers, focusing on modern pedagogical approaches and innovative teaching strategies.
- Schools in Zimbabwe should improve on availability of laboratory equipment and teaching materials to facilitate hands-on learning experiences. Schools should prioritize acquiring necessary resources to conduct practical experiments effectively.
- The researcher advocate for curriculum flexibility. This would enable teachers to incorporate innovative strategies, such as project-based and inquiry-based learning, which can enhance student engagement.
- The researcher recommends implementing gender-sensitive teaching practices at secondary school level that teaches Chemistry to encourage participation from all students, particularly female learners. Strategies such as collaborative learning and mentorship programs could help bridge the engagement gap.
- The researcher also recommends engagement of parents and the community in supporting Chemistry education. Workshops and informational sessions can help raise awareness about the importance of STEM subjects and encourage a supportive environment for students.

5.5 Recommendations for Further Studies

Future research should explore the following areas to deepen understanding and improve Chemistry education:

- Longitudinal Studies- Conduct longitudinal studies to assess the long-term effects of various instructional strategies on student performance and engagement in Chemistry.
- Broader Contexts-Expand research to include multiple schools and regions to identify common challenges and effective practices in Chemistry instruction across different educational contexts.
- Influence of Socio-Cultural Factors- Investigate how socio-cultural factors influence student attitudes and performance in Chemistry, particularly among female students.

- Technology Integration- Examine the effectiveness of integrating technology in Chemistry education, focusing on how different tools and resources can enhance student learning and engagement.

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Appendix

Interview Guide for Chemistry Teachers

Introduction:

Thank you for participating in this interview. The purpose of this study is to assess the strategies used to teach Chemistry at the Ordinary Level at Sally Mugabe Secondary School. Your insights will help improve teaching practices.

Section 1: Research Questions

1. What instructional strategies do you currently use to teach Chemistry?
2. In your experience, how does gender influence student engagement in your Chemistry classes?
3. What strategies do you use to ensure that both male and female students are equally engaged in the learning process?
4. What challenges do you face when implementing effective teaching strategies in your Chemistry classes?
5. Can you describe any specific obstacles related to resources, student behaviour, or curriculum constraints?
6. How do you address these challenges in your teaching practice?

Thank You

Questionnaire for Students

Introduction:

This questionnaire aims to gather information about your experiences and perceptions regarding the teaching of Chemistry at Sally Mugabe Secondary School. Your responses will remain anonymous.

Section 1: Demographics Data

1. What is your gender?

Male ☐ Female ☐

2. What is your level of learning?

Form 1 ☐

Form 2 ☐

Form 3 ☐

Form 4 ☐

Form 5 ☐

Form 6 ☐

Section 2: Research Questions

1. Which of the following instructional strategies have you experienced in your Chemistry classes? (Select all that apply)

Traditional lectures ☐

Group work ☐

Inquiry-based learning ☐

Hands-on laboratory experiments ☐

Use of technology ☐

2. How effective do you find the following strategies in helping you understand Chemistry concepts? (Rate on a scale of 1-5, where 1 = Not Effective and 5 = Very Effective)

Traditional lectures: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Group work: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Inquiry-based learning: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Hands-on laboratory experiments: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

Use of technology: 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐

3. How often do you feel engaged during Chemistry lessons?

Always ☐

Often ☐

Sometimes ☐

Rarely ☐

Never ☐

4. How would you rate your overall performance in Chemistry?

Excellent ☐

Good ☐

Average ☐

Poor ☐

5. What obstacles do you face in your Chemistry learning environment? (Select all that apply)

Lack of resources (e.g., textbooks, lab equipment) ☐

Difficulty understanding concepts ☐

Limited teacher support ☐

Gender-related issues (e.g., feeling less confident in class) ☐

Thank you for your time and insights. Your feedback is invaluable in understanding and improving Chemistry education at Sally Mugabe Secondary School.