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INVESTIGATING THE EFFECTS OF FIELD TRIPS ON BIOLOGY STUDENTS' ACADEMIC ACHIEVEMENT AT CHABATA HIGH SCHOOL IN BUHERA SOUTH, ZIMBABWE.

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APPROVAL FORM

I, Mr W Munakandafa undersigned, certify that I have read this project titled Investigation Effects of Field Trips on Biology Students' Academic Achievement at Chabata High School in Buhera. A case Study of Selected School in Buhera Conducted by Mazhara Tsitsi and Marikopa Noah in Partial Fulfillment of The Honor's Bachelor Degree in Biology. I further approve its submission and recommended Bindura University of Science Education for it to be examined.

Name of Supervisor

Signature of the Supervisor

Date Signed

DECLARATION

We Mazhara Tsitsi and Marikopa Noah, registered numbers B225755B and B225844A declare that this research project, “Investigating the effects of field trips on biology students’ academic achievement,” is our original work and has not been submitted elsewhere for any academic purpose. We confirm that the study was conducted in accordance with the principles of academic integrity and honesty.

We do hereby declare that this research project is our original work and we are fully responsible for its content.

Signatures:  _____
 _____

Date: ____10/12/2024_____

Dedication

We dedicate this project to our spouses and children.

Acknowledgements

We would like to thank our supervisor, Mr. Munakandafa for supervising our work tirelessly. His thoughtful guidance and support have greatly contributed to our professional development. We would also like to thank science teachers of Chabata High School and biology students for kindly responding to our interviews and questionnaires. Completing this study would have been difficulty without biology students and science teachers. We must also express our gratitude to our spouses for their continued support and encouragements.

Abstract

The study was carried out to determine the effects of field trips on biology students' academic achievement. The research design used in this study is descriptive design, utilizing questionnaire method to obtain information from the respondents for this study. A total of 22 that is 20 students and 2 science teachers were selected for this study. Data was collected using questionnaire and interviews. The hypothesis tested showed that field trips field trips has significance effect on biology achievement at Chabata High in Buhera South, Manicaland. The study will be beneficial to the government by enabling them recruit and also train effective biology teachers. Also, the government will be able to fund field excursions for students to learn from and as biology is a more practical topic than theory, the study will be very helpful to the field of study as a whole. Based on findings, it was recommended that Government in conjunction with other professional bodies should sponsor further research on the use of field trips teaching method. Also, regular field trips should be organized for biology students so as to give them the needed exposure.

CHAPTER 1: INTRODUCTION

Topic: Investigating the effects of field trips on biology students' academic achievement at Chabata High School in Buhera South.

1.0. Background to the study

Field trips are rich in educational possibilities as students learn from actual hands-on experience, rather than simply reading or hearing about something. Field trips have long been a staple of educational experiences, providing students with hands-on, real-world learning opportunities that complement traditional classroom instruction. In the field of biology, field trips offer a unique chance for students to explore and interact with the natural world, observe complex concepts in action, and develop a deeper understanding of biological principles.

Field trips continue to be an essential component of science education, providing students with experiential learning opportunities that enhance their understanding of biological concepts (Ballantyne & Packer, 2015). Research has shown that field trips can have a positive impact on student learning outcomes, including increased motivation (Knapp, 2015), improved understanding (Anderson & Thomas, 2015), and enhanced retention of biological concepts (Orion & Hofstein, 2015). Field trips provide students with opportunities to engage with real-world environments, enhancing their understanding of theoretical concepts taught in the classroom. Taking students on a field trip makes learning more effective as they will be able to gain vast ideas on the topic.

In recent years, there has been a growing recognition of the importance of outdoor learning experiences in science education (Rickinson et al., 2015). Field trips offer a unique opportunity for students to engage in hands-on, inquiry-based learning, which is critical for developing a deep understanding of biological concepts and principles (National Research Council, 2015). A field trip is a visit to a place outside the regular classroom which is designed to achieve certain objectives which cannot be achieved as well by using other means. A biology field trip is seen as a supplement to successful teaching, not as a focal point. Field trips may result in life-changing

choices. It may assist in broadening horizons, both physically and educationally and provides an excellent opportunity for personal growth including the development of independence, self-esteem, self-confidence and teamwork.

Zimbabwe's educational system has increasingly emphasized the importance of practical learning experiences. However, many schools such as Chabata High face challenges such as organization and implementation. Logistical and financial constraints can limit access to field trips, potentially creating unequal learning opportunities among students. Additionally, the effectiveness of field trips can depend on various factors, including the quality of the experience, student engagement, and teacher facilitation (Tal & Steiner, 2015). With this in mind, the research will investigate the effects of field trips on biology students' achievement at Chabata High School in Buhera.

1.1. Statement of the problem

Using traditional teaching methods like lecture methods can produce poor results, therefore this study investigates the effects of field trips on biology students' academic achievement at Chabata High School. Despite the potential benefits of field trips in enhancing biology students' academic achievements, there is, there is limited empirical evidence regarding their impact on learner achievement in Zimbabwean schools, particularly in rural areas like Buhera. Research has shown that field trips can have a positive impact on student motivation and engagement (Lynch, 2015; Orion & Hofstein, 2015). However, there is limited research on the effects of field trips on biology students' academic performance, particularly in terms of standardized test scores and grades (Tal & Steiner, 2015).

Recent studies have highlighted the importance of experiential learning in science education (Rickinson et al., 2015; National Research Council, 2015). Moreover, the integration of technology in field trips has been shown to enhance student learning outcomes (Hammond & Hammond, 2019; Knezek & Christensen, 2020). However, there is a need for further research to explore the impact of field trips on biology students' academic achievements in the context of

modern educational This research aims to investigate the relationship between field trips and biology learners' academic achievement at Chabata High School, addressing a gap in existing literature and providing insights that could inform educational practices in similar contexts.

1.2. Research Objectives:

1. To investigate the impact of field trips on biology students' academic performance, including their grades and standardized test scores.
2. To compare academic performance between learners who participated in field trips and those who did not
3. To evaluate changes in learner engagement and motivation following field trip experiences.

1.3 Research Questions:

1. How do field trips influence biology Learners understanding of biological concepts?
2. How do field trips affect leaners' motivation and engagement in biology?
3. Is there a significant difference in academic performance between learners who participate in field trips and those who do not?

1.4. Assumptions of the Study:

1. Field trips are a common practice in biology education: The study assumes that field trips are a regular part of biology education and that many schools and educators already incorporate them into their curriculum.
2. Students have equal access to field trips: The study assumes that all students have equal access to field trips and that there are no significant barriers to participation.
3. Field trips are well-planned and executed: The study assumes that field trips are well-organized, well-supervised, and aligned with learning objectives.

4. _Students are motivated to learn_: The study assumes that students are motivated to learn and that field trips will enhance their motivation and engagement.

5. _Biological concepts are complex and abstract_: The study assumes that biological concepts are complex and abstract and that field trips can help make them more concrete and accessible.

1.5. Significance of the Study:

This study is significant for several reasons:

1. This research holds significance for several stakeholders within the educational landscape. For educators, understanding the impact of field trips can lead to more effective teaching strategies that incorporate experiential learning. For policymakers, the findings may support initiatives aimed at increasing funding and resources for practical learning experiences in schools. Additionally, this study contributes to the growing body of literature on experiential learning in Zimbabwe, providing a foundation for future research in this area.
2. The findings of this study will help educators and policymakers to develop and implement effective field trip programs that enhance student learning outcomes.
3. By exploring the impact of field trips on student motivation and engagement, this study will provide insights into how to increase student interest and participation in biology education.
4. The results of this study will inform policy decisions related to the allocation of resources for field trips and the development of educational programs.
5. The study's findings will have practical applications for educators, providing them with evidence-based strategies for designing and implementing field trips that enhance student learning.

6. This study will contribute to the advancement of biology education by exploring innovative ways to teach complex biological concepts and promoting experiential learning.
7. The study's focus on field trips will highlight the connections between biology and other disciplines, such as environmental science, ecology, and conservation.

1.6. Limitations of the study.

The study focused specifically on Chabata High School in Buhera, Zimbabwe, limiting its findings to this particular context. While the results may offer insights applicable to other schools with similar settings, they may not be generalizable to urban or differently resourced environments. It is conducted in a specific educational context which could not be representative of other settings. The study was not able to control for all variables that could impact the results such as student motivation or prior knowledge. Another limitation was duration which made it difficult to assess long term impacts of field trips. The study could not fully consider individual differences among students such as learning style or abilities which could make some of them unable to respond to questions freely. However, the respondents were assured confidentiality of their identity.

1.7. Delimitation of the study

The scope of this study is to investigate the effects of field trips on Biology learner's academic achievement at Chabata High School in Buhera South. The study will not explore the effects of field trips on biology students' academic achievement in other schools or regions. The study will focus on form three biology students at Chabata High School. The study will not include students from other forms or subjects. This study will focus on the academic year 2023. The study will not explore the effects of field trips on biology students' academic achievement in previous or subsequent academic years. In addition, the study will use both qualitative and quantitative approach. Interviews and questionnaire will be used to collect data from science teachers and

biology teachers. The study will focus on the effects of field trips on biology students' academic achievement, specifically exploring the impact on their knowledge, attitudes and skills in biology. The will not explore the effects of field trips on other subjects or aspects of student learning.

1.8. Definitions of key terms

Field Trips

Field trips are educational excursions outside the classroom, designed to provide learners with hands-on, experiential learning experiences that enhance their understanding of subject matter (Ballantyne & Packer, 2015). They can take place in various settings, such as museums, parks, laboratories, or other locations relevant to the curriculum (Orion & Hofstein, 2015). Field trips can be guided or self-guided, and may involve activities such as observation, experimentation, or interaction with experts (Tal & Steiner, 2015).

Effect

Something designed to produce a distinctive or desired impression. Change that results when something is done or happens.

Academic Achievements

Academic achievements refer to the knowledge, skills, and competencies acquired by learners as a result of their educational experiences (National Research Council, 2015). They can be measured in various ways, including grades, standardized test scores, and project-based assessments (Knezek & Christensen, 2020). Academic achievements can encompass a range of outcomes, including:

- Mastery of subject matter (Hammond & Hammond, 2019)
- Critical thinking and problem-solving skills (Rickinson et al., 2015)

- Communication and collaboration skills (Knezek & Christensen, 2020)
- Creativity and innovation (Tal & Steiner, 2015)

1.9. Summary:

This study explores the impact of field trips on biology students' academic achievements, including their grades, standardized test scores, and mastery of biological concepts. The study aims to investigate the effectiveness of field trips in enhancing student learning outcomes and to identify the factors that influence their impacts. Chapter one has established the foundation for this study by outlining its background, problem statement, objectives, research questions, significance, scope, limitations and key definitions of terms. The subsequent chapters will delve deeper into the methodology employed for this research, present and discuss their implications for biology education at Chabata High School and beyond. Through this investigation, we aim to illuminate the potential role of field trips in enhancing learner achievement and fostering a deeper appreciation for biology among learners in Zimbabwean schools.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

Field trips have long been considered a valuable educational tool, providing experiential learning opportunities that extend beyond traditional classroom settings. In the context of biology education, field trips can enhance students' understanding of complex concepts by placing them in real-world environments. This literature review explores the effects of field trips on academic achievement at Chabata High School in Buhera.

2.1 THEORETICAL FRAMEWORK

Field trips are grounded in experiential learning theory, which posits that learning is enhanced through direct experience and reflection (Falk et al 2008). This theory suggests that hands-on experiences in real-world settings can deepen understanding and retention of complex biological concepts. Field trips serve well as opportunities for exploration, discovery, first-hand and original experiences. The general consensus that emerged from this line of research was that under certain favorable circumstances, field trips may lead to somewhat better learning outcomes than school-based instruction. According to Storksdieck, Robbins and Kreisman, (2007), learning on and from a field trip, hence is no longer seen as simply an extension or improvement of classroom teaching, but also a valuable supplement and addition to prepare students for future learning.

2.2 Benefits of field trips.

2.2.1. Hands-on learning.

Hands-on learning Field based learning increases scores. Field trips and hands-on learning make concepts more memorable. Studies indicate that field trips provide practical examples that help solidify theoretical knowledge in biology. For instance, studies who participate in field trips often demonstrate a better understanding of ecological relationships and biodiversity (Luehmann, 2009).

2.2.2. Improved Engagement

By linking classroom learning with real-life applications, students can develop deeper conceptual understandings. Field based learning increases scores. Additionally, field trips are important because students are able to engage with content in a variety of ways. Concepts are presented through all different media and different modalities, so students who struggle with traditional learning can feel smart and confident. They are able to access the content better when they can learn holistically. When they return to school, the trip that they took can serve as a touch point for an entire unit. By stepping outside the traditional classroom, students can connect theoretical knowledge to practical experiences, deepening their overall educational experience and cultivating a lifelong love of learning.

2.2.3. Retention of knowledge

The experiential nature of field trips may enhance knowledge retention. Research suggests that experiential learning can lead better long-term retention of information compared to traditional teaching methods (Behrendt and Franklin, 2014). In the context of biology, students exposed to living organisms and natural habitats during field trips may be more likely to recall information relevant to these experiences during assessments. Field trips allow students to witness abstract biological concepts in action, enhancing their understanding and retention (Dillon, 2017). For example, observing plant diversity in a local park fosters a deeper comprehension of ecological relationships than reading about them in a textbook. Experiential learning through field trips motivates students, increasing their interest in biology and promoting active participation (Lee and Wells, 2015). This is significant for hands-on activities like dissecting specimens or collecting data in field. Research indicates that students who participate in field trips perform better on assessments, demonstrating a significant positive correlation between experiential learning and academic achievement (Sheppard, 2014).

2.2.4. Real- world connections

Field trips are one of the best tools that can be used to provide every student a real-world experience. When students leave a classroom, they see the connections between what is happening in theory and in “real-world”. Senses are allowed to be used, hearing, seeing, feeling, sensing and so on. Students begin to see that what they learn within the walls of the classroom can help them solve the problems they see in the world around them and can have a direct impact on who they become as people.

2.2.5. Problem-solving and Critical Thinking

Field trips encourage critical thinking and problem-solving skills as students are often required to observe, hypothesize and analyze their surroundings. This aspect is crucial in biology where empirical evidence and observations are founded to scientific inquiry (Tannenbaum et al, 2013). Such skills can translate into improved academic performance in biology assessments. Students gain firsthand experiences that reinforce theoretical concepts and stimulate critical thinking. Field trips encourage critical thinking by presenting students with real-world challenges and opportunities for problem-solving. For example, a trip to a historical battlefield can spark discussions on strategy, decision-making and the consequences of actions. These experiences develop analytical skills and promote intellectual curiosity. Field trips offer students the chance to see how the knowledge they acquire in the classroom applies to the real world. For example, a visit to a working farm can illustrate the concepts of agriculture, biology and ecology in a tangible way. This contextual understanding bridges the gap between theory and practice.

2.2.6. Environmental Awareness and Stewardship.

Students are able to access tools and environments that are not available at school. Field trips make it possible to take students to see an underwater ecosystem at an aquarium, participate in citizen science in a river, use high powered microscopes, see and touch historical artifacts in person and present on a public stage among hundreds of other things(Falk, Heimlich and Foutz, 2008). Each experience solidifies learning and supports important academic concepts.

2.2.7. Socio-economic growth

Students who go on field trips become more empathetic and tolerant. Studying art gives students a chance to think about a topic or theme from a different perspective. By participating in field trips, students are able to access tools and environments that are not available at school. In addition, learning about the history, art and traditions of other cultures firsthand helps break down stereotypes and promote empathy. Students can gain a deeper appreciation for diversity, leading to more inclusive and open minded perspectives. Direct interaction with nature fosters a profound appreciation for the environment. Field trips to parks, conservation areas or wildlife sanctuaries instill values of conservation and sustainability. Students develop a sense of responsibility towards the environment, understanding their roles as stewards of the planet.

2.2.8. Social interaction.

Another advantage of field trips is that they are a way to bring the students closer to each other. Many field trips combine educational content with team-building activities, such as working together. It is often a good idea to go on a field trip early in the school year to help create a bond between the students. According to (Kisiel, 2005), interacting with peers and teachers in a new environment fosters the development of social skills such as communication, teamwork and cooperation. Students learn to navigate in familiar situations, work together on tasks and build relationships outside of the classroom setting.

Field trips break the barrier of apathy by allowing students to freely interact with subjects like significant objects, places, personalities and processes. The excursions also sharpen students' observation and perception skills as they engage in sensory-based learning and gain a deeper understanding of the subject matter (Nabors, et al, 2009). In addition, Berer (2016) stipulates that abstract classroom concepts can be viewed from a more holistic perspective. Structural ideas can take form through the teachers that accompany the points of interest in a visited site. This is particularly helpful to students who have trouble keeping up with the classroom discussions since they have tactile or relatable examples to go with teachers. They would also recognize how

certain concepts function in real life. Leaving the classroom for a trip places students in a different social environment. They get to meet a new set of adults and possibly interact with other students during the course of the field trip. These new interactions give them a vital lesson on how to behave in different settings. What a field trip also does is foster a sense of teamwork and community among the students as they experience a new environment together.

2.2.9. Long-Term impact.

Field trips can ignite a passion for a particular subject or field of study. A visit to a planetarium might inspire a future astronomer while exploring a wildlife sanctuary could spark an interest in conservation biology. These experiences can be the catalyst for lifelong hobbies and career choices. The transformative experiences, profound insights and memorable moments encountered outdoors often kindle a lifelong passion for exploratory, inquiry and discovery. Students driven by curiosity and a thirst for knowledge. The great outdoors naturally ignites curiosity. Students, when exposed to unfamiliar terrains or novel experiences, are prompted to observe, question and explore actively (Becker and Park, 2011). This heightened engagement translates to a deeper connection with the subject matter, as the learning process becomes self-driven and exploratory.

Field trips emphasize holistic development. Activities such as team-building exercises, problem-solving challenges and nature walks nurture not just cognitive skills but also emotional, social and physical well-being. Students learn resilience, adaptability and interpersonal skills in real-time and real-world scenarios.

2.2.10. Interests and motivation

Field trips can significantly increase student engagement and motivation. Research shows that hands-on experiences often lead to heightened interest in biological concepts, as students can observe and interact with ecological and biological systems directly (Falk and Dierking, 2000).

Becker and Park, 2011 also stipulate that this increased motivation is linked to higher academic achievement.

2.2.11. Memorable experiences.

Furthermore, field trips create memorable experiences that students carry with them throughout their lives. These adventures often become cherished childhood memories. Students may recall specific details, encounters or insights from a field trip for years to come, reinforcing their love for learning.

2.2.12. Erases classroom boredom.

It is common knowledge that students are easily distracted and bored. School field trips build in students a different level of excitement and fun. It gives them something to look forward to. In essence, field trips erase the boredom that is associated with classroom lectures. What's more, it awakens in students an interest to learn and get new learning information, no matter how boring the subject is in theory. Field trips can bring one dimensional lessons to life and create interest for a subject, something that is hard to duplicate through classroom lectures.

Outdoor challenges, it overcoming physical obstacles or adapting to unpredictable situations, build resilience. Students learn to step out of their comfort zones, confront challenges head-on, and emerge more confident in their abilities. These experiences instill a belief in one's potential, fostering a growth mindset.

2.2.13. Inspiration of teachers.

Field trips can also inspire educators by exposing them to innovative teaching methods and resources. Teachers often discover new ways to engage students and incorporate experiential learning into their classrooms after participating in field trips. Furthermore, local field trips can

strengthen the connection between schools and their communities. Local businesses, museums and organizations often welcome school groups, fostering positive community relationships and support for education. Field trips enrich students' lives in countless ways. These real-world adventures shape students into well-rounded individuals with a deep appreciation for knowledge, culture and parents alike should continue to embrace field trips as an integral part of the learning experience, recognizing their potential to inspire and educate future generations.

2.2.3. Challenges in field trips.

(a). Logistical constraints.

A field trip can be a logistical nightmare without close coordination between the teaching staff and the venues to be visited. Anything can go wrong, from the program not living up to the teacher's expectations to conflicting schedules, which can cut the trip short. There are even cases when the venues turned out to be not conducive to learning (Behrendt and Franklin, 2014), thanks to the large volume of tourists, even though they are relevant to the topics of classroom discussions.

(b). Large expenses.

One of the major stumbling blocks to organizing field trips is the huge expenses involved. Excursions consume a large chunk of the budget if a school is to shoulder the expenses. Meanwhile, should the financial burden be passed on to parents outside of tuition fees, not everyone will be able to afford the trips, thus leading to inequity in trip opportunities (Peetz, 2019).

Field trips are increasingly threatened by limited school funding, lack of time and crammed curricula, the pressure of standardized tests and student assessments, and a need for teachers and principals to document whether and in what way individual field trips satisfy curricular demands (Schatz, 2004). Excursions consume a large chunk of the budget if a school is to shoulder the

expenses. Meanwhile, should the financial burden be passed on to parents outside of tuition fees, not everyone will be able to afford the trips, thus leading to inequity in trip opportunities (Peetz, 2019).

Another disadvantage of field trip is that they take an incredible amount of planning. You must figure out transportation issues, chaperons (including background checks), food and alternate plans in the event of inclement weather, if the trip is to a location outdoors. You must make sure that every student has a signed permission form, that you have emergence contact and information available on each student (including allergies) and that all fees have been paid in advance.

Field trips bring up a wide array of legal issues, most regarding liability. If a student gets injured on a nature hike, is the school liable for medical fees? What about the park, or the forest ranger leading the hike? Parents may be nervous about the safety of their children. Other liabilities include expose issues. For example, even a student's theatre performance may contain material or scenes that some parents might object to.

(c).Maintaining order and Safety.

Berer, (2016), stipulates that keeping students safe, behaved and orderly in public spaces is another major headache for educators, especially if the site to be visited typically attracts hordes of visitors. Students can easily get separated from the group, which expose them to danger. Also, unruly behavior could lead to structural damage that will have to be paid for, disruptions of concurrent tours and the school having a negative public image.

(d).Lengthy Duration

According to Behrendt and Franklin (2014), field trips typically last for the entire day and some even require students to stay overnight. Without proper planning, it could cause a disruption to all classes in a school day, leading teachers to cramp up lessons that could have been fleshed out better. Students, in turn, will have to accelerate their pace of learning to compensate for the missed school day. Furthermore, a trip adds more to the plates of both students and the faculty, since it requires a culminating activity.

2.2.4. Considerations

(a). Explore Funding Options

Behrendt and Franklin (2014), advocate that the successful of a trip, despite its potential for positive outcomes is not guaranteed. Costs are a huge concern when organizing field trips. The school's allocated budget might not be enough to cover all the expenses involved, from the cost of food and transportation down to a venue's registration fees. As such, a teacher could have the parents shoulder some of the fees as they sent out letters with reply slips stating the situation, coverage of the trip and the breakdown of coasts. The expenses can be divided among the parents of students who agree. Another method is to hold a fundraiser that involves not just the parents, but also members of the faculty and other relevant groups like parent-teacher association. Sponsorship deals are also possible, but it would involve proposals and communication with department heads and those controlling the budget.

(b). Opt for nearby excursions

Field trips do not need to be far if the region or even the school has its share of locations of scientific, historical or cultural value. After all, a nearby trip is cheaper and does not consume too much time away from academics. There is also the option of staying in school and inviting distinguished speakers over to give colorful lectures. Some schools have their own gardens and research centers that can serve as field trip destinations as well.

(c). Have a concrete plan.

According to Behrendt and Franklin(2014), a plan that details all teacher' s expectations and the venues that can influence the desired outcomes can spell the success of a trip since it quantifies the trip's purpose and exact benefits. With this, a trip can easily be incorporated into the curriculum while its objectives can be clearly communicated to students to keep everyone on the same page. Being meticulous is an asset in this stage as an educator researches the possible sites and their rates and takes suggestions from peers and students.

Close coordination with the venue is necessary. Details like available student programs, the program sequence, crowd control, security, the availability of guides/guest lecturers and the most ideal schedules should be accounted for. One should keep in mind that a populous open space has an abundance of distractions and potential dangers, which is why controlled spaces like museums and galleries make for ideal destinations (Kelly, 2019). Having a backup venue is also a good idea so the trip will not be hindered by sudden cancellations or conflicts in schedule.

(d).Think of sanctions and clearances

Given that students have the tendency to even more carefree once out of the classroom, teachers must implement harsh sanctions on bad behavior (Kelly, 2019). This will keep them orderly and behave in public spaces, avoiding unruly behavior and possible structural damage in places like museums, galleries and laboratories. As an added measure of safety, health clearances and other relevant paperwork should be accomplished prior to trip.

(e). Coordinate with other departments.

Considering that field trips consume a large part of a school day (Behrendt and Franklin, 2024), it would be wise for the organizer to coordinate with other faculty members so they can perform

the necessary adjustments to their lesson plans early on. This help minimize the delays caused by the excursions. Plus, other teachers might find ways to incorporate the excursion into their own taught subjects, which increases the trip's educational value.

(f). Go virtual.

If excursion plans fall through, teachers can go for virtual field trips. There are websites that provide virtual tours to venues of all kinds, including museums, national parks, science museums, zoos and aquariums (Fink, 2020).these tours are often free or have minimal fees, thus eliminating financial concerns. Moreover, virtual tours are much shorter than traditional field trips. They afford teachers the space to conduct follow-up activities within the duration of the class.

At Chabata High, factors such as socioeconomic conditions, available resources and school culture may influence the effectiveness of field trips. Given the rural context, field trips to local ecosystems could provide unique learning opportunities that are relevant and accessible to students. Engaging local communities and stake holders may enhance the educational experience and provide additional resources.

2.2.5. Summary

The literature consistently indicates that field trips have a positive impact on biology students' academic achievement, knowledge retention, practical application and social interaction. This chapter provides a comprehensive overview of the effects of field trips on academic achievement, highlighting both benefits and challenges while offering insights into the methodology and results of the study conducted at Chabata High School

CHAPTER THREE: RESEARCH METHODOLOGY

3.0. Introduction

This chapter delves into the impact of field trips on the academic achievement of biology students at Chabata High School in Buhera, Zimbabwe. This chapter focused on the research design used, population of the study, sample and sampling techniques, research instruments used for data collection, data collection and analysis, ethical considerations and the summary of the chapter was drawn.

3.1. Research Design

This study employed a mixed-methods approach, combining both quantitative and qualitative data collection and analysis methods. Creswell, (2014) propounds that a research design is a description of procedures to be followed in testing the hypothesis. In addition to that, Lee, and Wells (2015) advocate that research design is a way of planning and strategy of finding out something. Furthermore, Sheppard (2014) postulates that a research design is systematic application of the scientific method to study the problem, be it educational or scientific. The researcher also define a research design as a method or a way of finding out a situation for a specific problem.

3.2. Research Instruments

Research instruments are tools which are used in a research to collect data. Cohen and Manion (2011) propound that research instruments are tools used to gather data on a research problem. Research instruments are tools or techniques one can use to collect data. Therefore, the researcher defined research instruments as methods or ways of finding information on the study. For this research, the researcher opted for interviews and question nares.

3.2.1. Questionnaire

Fowler, (2009) advocates that a questionnaire is a set of carefully constructed questions designed to provide systematic information in particular subject. A questionnaire is a list of questions designed to extract certain facts on identical group of learners. Fowler (2009) go on viewing a questionnaire as a document which contains printed questions to which information is replied in writing. The advantage of a questionnaire is that data collection is done even the researcher is absent. However, people may just tick yes or no answer before reading or without understanding. A questionnaire was administered to all twenty students to gather data on their attitudes towards biology, their understanding of biological concepts and their overall academic performance.

3.2.1.1. Questionnaire for science teachers

Questionnaires are a popular research methods because they offer a fast, efficient and inexpensive means of gathering large amounts of information from sizeable sample volumes. These tools are particularly effective for measuring subject behavior, preferences, intentions, attitudes and opinions. Their use of open and closed research questions enables researchers to obtain both qualitative and quantitative data, resulting in more comprehensive results. Questionnaire for teachers is on appendix 2.0.

3.2.1.2. Questionnaire for students

A questionnaire will be designed to collect data on students' perceptions of the effectiveness of field trips in enhancing their understanding of biology concepts. The questionnaire will be administered to a sample of biology students who have participated in field trips. A minimum of twenty students will be targeted. The questionnaire will be administered over a period of 2-3 weeks. A questionnaire is a research tool that gathers quantitative and qualitative information from respondents through a series of questions or prompts. Questionnaire for students is on Appendix 2.1.

3.2.2. Interview

According to Creswell, (2014), an interview is an approach in which two people are engaged in a conversation with a view to solicit information for a purpose by one or two parties. In addition, Cohen and Manion (2011) are of the view that an interview is a series of questions administered by a researcher to respondents. Also, Kvale, (2007) articulates that an interview is a set of carefully structured questions designed to provide information on a particular subject. Therefore, the researcher defined an interview as one to one conversation that collects detailed personal information from individuals using oral language. Semi-structured interviews were conducted with twenty students and two science teachers to gather more in-depth information about their experiences and perceptions of the field trips.

3.2.2.1..Interview guide for teachers.

The interview guide for teachers is on appendix 3.2. The researcher distributed the interview guide to science teachers (self-administered). Self-administered interviews are common because they are easy to implement and inexpensive. The interview has both open-ended and closed-ended questions. The teachers were approached personally by the researcher and asked to participate in the study. The purpose and objectives of the study were explained to the teachers and they were assured of confidentiality and anonymity. Science teachers were given a copy of the interview questions and were asked to respond to them at their convenience. The interviews were conducted in person and the responses were recorded with the teachers' permission.

3.2.2.2. Interview guide for students.

The interviews were distributed to 20 biology students who are currently enrolled in the biology class at Chabata High School. The students were selected randomly from the biology class and they were approached personally by the researcher. The purpose of and objectives of the study were explained to the students and they were assured of confidentiality and anonymity. Biology students were given a copy of the interview questions and were asked to respond to them at their

convenience. The interviews were conducted in person and the responses were recorded with the students' permission. Interview guide for students is on appendix 3.2.1.

3.3. Population

Cohen et al (2011) postulate that population is a group of interest to research as the researcher would like to generalize to. Population constitutes the group where sample will be derived from. Similarly, Haralambos and Holborn (2000) advocate that population in research refers to a total number of elements or cases that one can investigate. For this study, the researcher's target population comprised science teachers and biology learners. It was from this population that the researcher drew a sample for the study.

3.4. Sample

A sample is a set of respondents or a group of respondents who are representative of the population by virtue of containing the most characteristic or typical attributes of the population being studied. Cohen et al (2011) say a sample is a set of observations and measurements that are collected from a population. Also, Haralambos and Holborn (2000) assert that a sample is small number of individuals drawn from the total population which can be taken as representatives to allow for an accurate generalization. The researcher viewed sample as a portion of population being studied which represents the whole population in that study area. The researcher therefore had ten learners and two science teachers.

3.5. Sampling Technique

3.5.1. Random Sampling

The researcher used random sampling technique. Random sampling was free from bias and also easy to manage. Thus, all members have the same chance of being included in the sample. Moreover, the main purpose for using random sampling technique was that it can be generalized

to a larger population within margins of errors that can be determined statistically. The researcher used the random sampling method to come up with ten learners.

Forty learners were asked to pick cards which were written 'yes' or 'no'. The twenty learners who picked the 'yes' cards automatically became the sample.

3.5.2. Purposive Sampling

Purposive sampling is when subjects are chosen to be part of a sample with a specific purpose in mind; the technique entails that participants are selected for a study because of some desirable characteristics (Blakstad, 2008). Therefore, in this research, two science teachers were purposively selected on the basis of their experience with effects of field trips on biology students' academic performance.

3.6. Procedures of collecting data

The researcher firstly, applied for permission to carry out the research study to the Ministry of Primary and Secondary Education. When the permission was granted, the researcher then contacted Chabata High School authorities, briefed them on the subject matter and booked them for the interviews. This was followed by the actual interviews which the researcher personally administered. Data collection took place over a period of six weeks. The field trip was conducted during the third week and the questionnaire was administered during the sixth week. All the data provided by the researcher was accurately recorded using a smart phone. Questionnaire were distributed to students and teachers during class time and collected after completion. Interviews were conducted in person and audio-recorded with the permission from participants.

3.6.1. Procedures of collecting data through questionnaires for science teachers.

Two science teachers were given questionnaires by the researcher for two days. The researchers distributed the questionnaires themselves. After that, researchers collected the questionnaires

from science teachers and analyzed them and discussed. All the information was put in form of tables.

3.6.1.2. Procedures of data collection from biology students.

Students were given questionnaires during the day for four hours through their science teachers. After that, the responses were collected by the researchers through science teachers.

3.6.2. Procedures of collecting data through interview guide from science teachers.

Science teachers were given prior notice by researchers within six weeks. The researchers then collected data using their smart phones. Data was recorded using the smart phones using simple English.

3.6.2.1. Procedures of collecting data using interview guide for biology students.

Biology students were given prior notice within six weeks of the study. The researchers then collected data from biology students using smart phones. Information was recorded using smart phones. Data was then presented using hypothesis.

3.7. Data Presentation and analysis procedures

Data analysis is the process of inspecting, cleaning, transforming and modelling data with the goal of highlighting useful information, suggesting conclusions and supporting decision making (Musingafi and Hlatywayo, 2013). All data analyzed both qualitatively and quantitatively using themes that were derived from the objectives of the research study. Frequency distribution tables were used to present the frequency of responses to some of the questions. Inferential statistics were used to make inferences and draw conclusions about the population such as chi-square test and t-test.

3.8. Ethical Considerations

In this research study, ethical principals were applied. American Psychological Association (2017) define research ethics as moral obligations and principles that researchers should adhere to in carrying out and reporting their studies. Beauchamp and Childress (2013) propound that research ethics are important in that they enable the researcher to develop meaningfully acceptable research protocols that are worth the participants' time and have a reasonable chance of yielding meaningful findings, protects the rights of participants and report results fairly and accurately. In respect of this, the researcher obtained a written authorization was obtained from all relevant authorities such as Ministry of Primary and Secondary Education and Chabata High School and also sought for written consent from participants before gathering data. The researcher also observed both national and as school rules and regulations governing school operations and research such as informing all participants on the purpose, benefits and possible risks of their environment in the research study in order to ensure voluntary participation. The responder's privacy was highly respected while all responses were treated confidentially. The researcher further avoided the falsification of data in order to maintain the integrity and objectivity of the research study.

3.9. Validity and Reliability

Trochim (2006) defines reliability as the accuracy of the actual measuring instrument or procedure and validity is the appropriateness, meaningfulness and usefulness of specific inferences made from the answer. Therefore validity is concerned with the study's success at measuring the researcher set out to measure. To ensure that the research is valid and reliable, the researcher used both qualitative and quantitative research methods so that they complement each other's weaknesses. A case study design was appropriately chosen and used in order to enhance the validity and reliability of results. The research ethics such as informed consent, upholding human rights, voluntary and participation were also observed. The research instruments were refined and perfected before they were finally used in the research field.

3.10. Summary

In this chapter, the researcher presented research methodology that is the research design research instruments which are observations, interviews and questionnaire. Target population, sample and sampling technique were also revealed in this chapter. The researcher also looked on validity and reliability of the research study. Data was processed and analyzed qualitatively and was presented for in chapter four.

CHAPTER 4: Data Presentations, Analysis and Discussions

4.0. Introduction

In this chapter, the study is going to present data, analyze and discuss data collected on effects of field trips on biology students' academic achievement at Chabata High School in Buhera South. Data was collected through questionnaires and interviews. Data collected was presented in the form of tables and simple descriptions were used as well as chi-square calculations.

4.1. Presentation of data from questionnaires.

4.1.1. Responses from science teachers and biology students

1a) .Teaching methods used.

Table 4.1.

N=2

Lecture group discussions outdoor pair work lab experiments

TEACHING METHOD	Lecture method	Group discussion	Outdoor activities	Pair work	Laboratory experiments
NUMBER OF TEACHERS	2	2	2	2	2

Both science teachers reported using a combination of all these methods in teaching biology. Science teachers used a range of teaching methods including lectures, group discussions, outdoor activities, and pair work and laboratory experiments.

1. Methods used in teaching biology.

Table 4.2

Teaching method	Lecture method	Outdoor activities	Group discussions	Pair work	Lab experiments
responses	20	20	20	20	20

Laboratory experiments lecture outdoor activities group discussions pair work

All students reported that their teachers use a combination of all these methods to teach biology. Students appreciate the use of variety of teaching methods including lab experiments, lecture outdoor activities, group discussions and pair work.

1b). Methods that enhances students' understanding of biology concepts.

Both teachers reported that outdoor activities enhance students' understanding of biology concepts. Dillon (2017) said that field trips allow students to witness abstract biological concepts in action enhancing their understanding and retention. For example, observing plant diversity in a local park fosters a deeper comprehension of ecological relationships than reading about them in a textbook.

2. Methods that help comprehend biological concepts most

Table 4.3

Teaching methods	Lecture method	Outdoor activities	Group discussions	Pair work	Lab experiments
percentage	5%	80%	3%	2%	10%

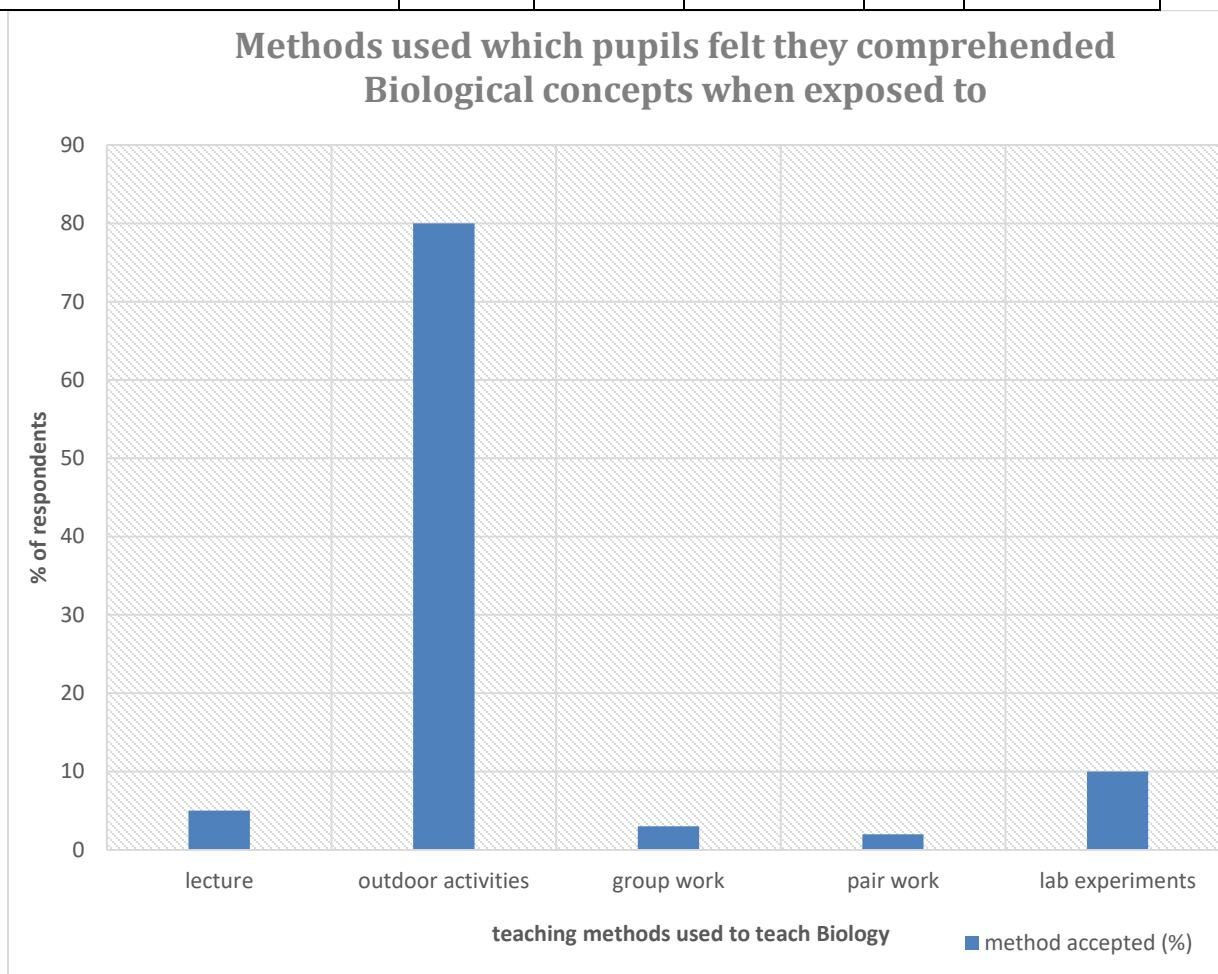


Figure 4.1.

Outdoor 80%, laboratory experiment 10% lecture 5% group discussion 3% pair work 2%. The majority of students reported that outdoor activities help them comprehend biological concepts most. Outdoor activities such as field trips are the most effective method for helping students comprehend biological concepts. Students opted for outdoor activities (field trips) because of several benefits which include hands-on learning, retention of knowledge, problem-solving skills and critical thinking among others. Lee and Wells (2015) said that experiential learning through

field trips motivates students, increasing their interest in biology and promoting active participation.

2. Effectiveness of field trips retaining information.

Table 4.2

Use a tick to show your answer.

N = 2

YES	NO	UNDECIDED
2	0	0

Both science teachers reported that field trips retain information better. Field trips were considered effective in helping students retain information better. According to Behrendt and Franklin (2014) field trips can lead better long-term retention of information compared to traditional teaching methods.

3. Challenges faced when organizing field trips.

Both teachers talked about large expenses, logistical constraints such as transportation and ensuring student safety and well-being during field trips. According to Peetz (2019) excursions consume a large chunk of the budget if a school is to shoulder the expenses. Not everyone will be able to afford the trips thus leading to inequality in trip opportunities.

Franklin (2014) stipulated that a field trip can be a logistical nightmare without close coordination between the teaching staff and the venues to be visited. In addition, transportation can be a challenge since most transporters fail to produce required document needed by the circular P 54 in education. The circular stated that the transporter should provide a license of fitness, permit and insurance, so these documents are not easy to get from most transporters.

Berer (2016) stipulated that keeping students in public spaces is another challenge for educators, especially if the site to be visited typically attracts hordes of visitors. Students can easily get separated from the group, which expose them to danger.

4.2.

3. Methods used in teaching biology.

Table 4.3

Teaching method	Lecture method	Outdoor activities	Group discussions	Pair work	Lab experiments
responses	20	20	20	20	20

Laboratory experiments lecture outdoor activities group discussions pair work
 All students reported that their teachers use a combination of all these methods to teach biology. Students appreciate the use of variety of teaching methods including lab experiments, lecture outdoor activities, group discussions and pair work.

4. Evaluation of teaching methods.

Table 4.5.

	Lecture method	Group discussion	Pair work	outdoor	Laboratory experiments	Total
POOR	12	6	6	1	5	30
GOOD	6	8	6	3	6	25
EXCELLENT	6	6	8	16	9	45
TOTAL	20	20	20	20	20	100

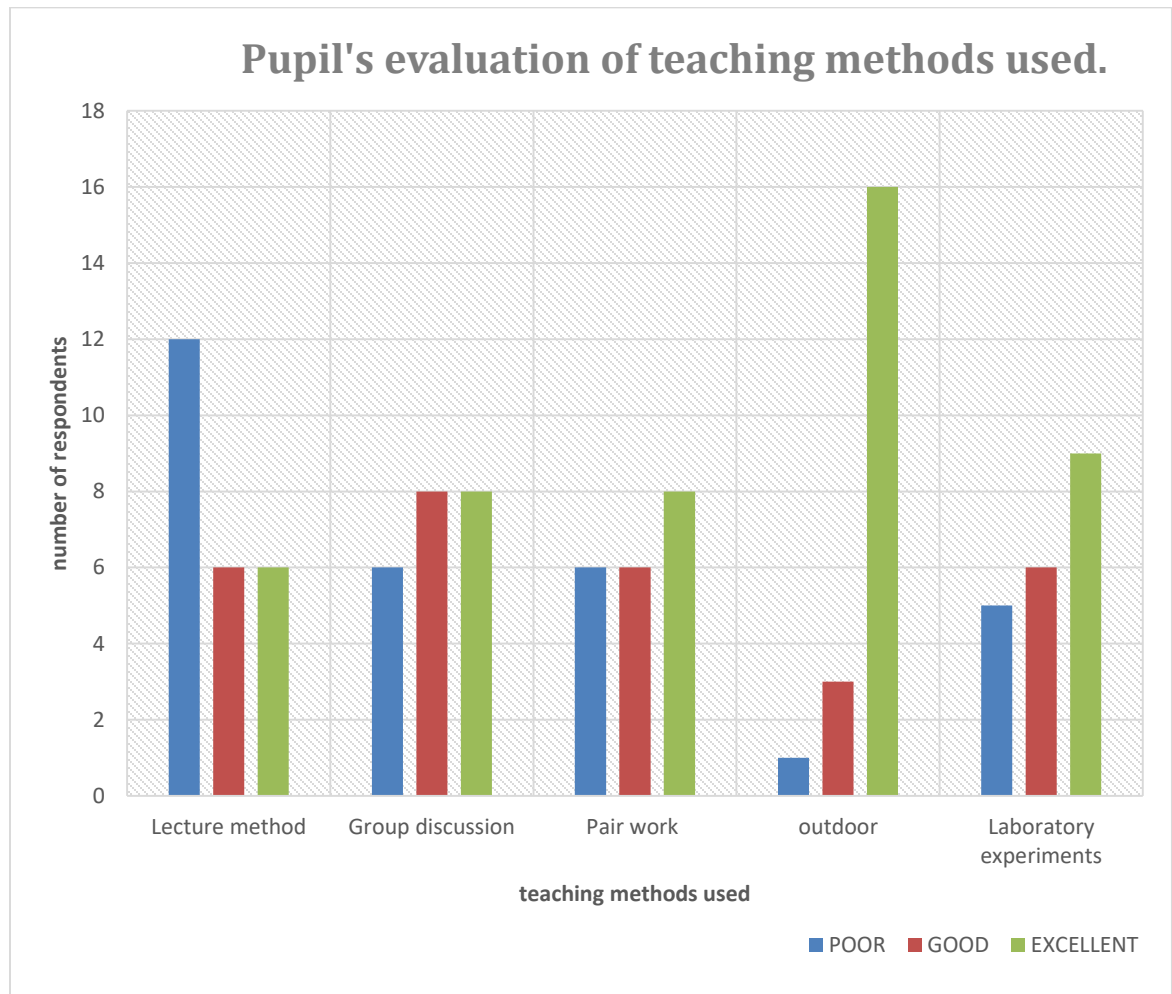


Figure 4.2

Ho: There is no significant difference in using field trips and traditional methods.

H1: There is significance difference in teaching using field trips and traditional methods.

Significance level

The test is performed at 0, 05% significance level.

Test statistic

$$X^2 = \sum \frac{(O-E)^2}{E}$$

Table 4.6. Calculation of x2 Test statistics.

O	E	O-E	$(O-E)^2$	$\frac{(O-E)^2}{E}$
12	$\frac{30*20}{100} = 6$	6	36	6
2	$\frac{25*20}{100} = 5$	-3	9	1.8
6	$\frac{45*20}{100} = 9$	-3	9	1
6	$\frac{30*20}{100} = 6$	0	0	0
8	$\frac{25*20}{100} = 5$	3	9	1.8
6	$\frac{45*20}{100} = 9$	-3	9	1
6	$\frac{30*20}{100} = 6$	0	0	0
6	$\frac{25*20}{100} = 5$	1	1	0.2
8	$\frac{45*20}{100} = 9$	-1	1	0.11
1	$\frac{30*20}{100} = 6$	-5	25	4.16
3	$\frac{25*20}{100} = 5$	-2	4	.8
16	$\frac{45*20}{100} = 9$	7	49	5.44
5	$\frac{30*20}{100} = 6$	-1	1	.16

6	$\frac{25 \times 20}{100} = 5$	1	1	.2
9	$\frac{45 \times 20}{100} = 9$	0	0	0
TOTAL				22.67

$$X^2_{\text{CRIT}} \text{ df} = 8$$

$$X^2_{\text{cal}} > X^2_{\text{crit}}$$

$$22,67 > 15,507$$

Rejection criteria

Reject H_0 and conclude that there is significant difference in using field trips versus traditional teaching methods.

The evaluation of teaching methods reveals that students perceive lectures as the least effective method, it was rated Poor. In contrast, outdoor activities were rated as excellent by students followed by laboratory experiments and group discussions.

The findings suggest that students value hands-on, experiential learning methods such as outdoor activities laboratory experiments over traditional lectures. This is consistent with research that highlights the importance of active learning and authentic experiences in science education. Lynch (2015) said that field trips can have a positive impact on student motivation and engagement.

The poor evaluation of lectures by students may indicate a need for teachers to revise their approach to lecturing incorporating interactive and engaging strategies to promote learning.

4.3. Data presentation from interviews

4.3.1. Responses from science teachers and biology students

Two science teachers were asked which teaching methods they use when teaching biology. Both teachers that is 100% said that they use both traditional and field trips. So this means all teaching methods are being applied by science teachers in their teaching. These methods include lectures, discussions, pair work, outdoor, videos and laboratory experiments.

Secondly, the researcher also asked science teachers which one teaching they use most. One said he uses lecture method most and the other one said she uses outdoor most.

Two science teachers were also asked that from their observations, students like biology more when they use which teaching method. Both teachers said that students like biology more when they use teaching methods like outdoor, laboratory experience and videos which all fall under field trips. According to Dillon (2017) students are able to access tools and environments that are not available at school. When students leave a classroom, they see the connections between what is happening in theory and in the real-world.

Teaching methods used

Twenty students were asked which methods have been used when they wrote their tests. Students said that first three tests were written after lecture methods and the other three were written after outdoor activities like videos, outdoor and lab experiments. The tests were numbered A to D, and then grouped A and B. A represents lecture methods and B represents field trips. The hypothesis used was t-test.

Ho: there is no significant difference between traditional teaching methods and field trips on biology students' academic achievement.

H1: There is significant difference between traditional teaching methods and field trips on biology students' academic achievement.

The hypothesis is t-test

Level of significance

0, 05% significance level

$$t = \frac{\bar{x}_1 - \bar{x}_2}{\sqrt{\frac{s_1^2 + s_2^2}{n_1 + n_2}}}$$

Table 4.7. Calculation of T-Test statistics

X ₁ (A,B,C)	X ₂ (D,E,F)
32	39
28	39
33	30
25	33
34	37
36	42
32	38
35	48
27	42
34	44
37	41
45	42
35	50
40	42
42	48
42	48

36	46
34	48
35	46
31	44

$t_{\text{calculated}} = 4.7$ $t_{\text{crit}} = 1.7$

Rejection criteria

Reject H_0 and conclude that there is significant difference between traditional teaching methods and field trips.

X1 shows score using lecture methods and x2 shows scores using field trips. This shows that students scored higher in tests done using videos, outdoor and lab experiments.

Research indicates that students who participate in field trips perform better on assessments, demonstrating a significant correlation between experiential learning and academic achievement, (Sheppard, 2014).

Rating of method's impact on understanding.

The majority of students (80%) rated outdoor method on their understanding of biology concepts.

4.4 summary

This chapter focused on presentation, analysis and discussion of data collected. Data was presented in form of tables, graphs and hypothesis such as chi-square and t-test. Findings were also summarized, hence data collected showed that there is significant difference between traditional teaching methods and field trips. Field trips have positive impacts on biology students' academic achievement at Chabata High School.

CHAPTER 5: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0. Introduction

This chapter focuses on summary, conclusions and recommendations that were drawn from the findings of the study.

5.1. Summary of the project including constraints

The major purpose of this study was to investigate the effects of field trips on biology student at Chabata High School in Buhera South. The study has high lightened the background of the study, statement of the problem, research objectives, significance of the study, and delimitations of the study and definition of key terms in chapter 1.

The study focused on related literature review. Theoretical framework on effects of field trips on biology students' academic achievement was given. Benefits of field trips such as hands-on learning, improved engagement, retention of knowledge, real-world connections, problem-solving and critical thinking among others were explained. Challenges on organizing field trips such as logistical constrains, large expenses, maintaining order and safety as well as lengthy and duration were also explained. The study also focused on considerations like exploring funding options, opting for nearby excursions and having a concrete plan were suggested. The summary of the chapter was drawn.

The design of the study was both qualitative and quantitative. Research questions were raised and some research questions were tested using chi-square. From the results of analyses discussed in chapter 4.2, the study shows that there is a significant difference between the achievements of students taught using field trip teaching method and those taught by traditional method.

5.2. Conclusions

Field trips are different from the traditional teaching-learning process in which teachers are active and students remain passive. It is determined in this study that academic field trips changed the attitude of students positively towards biology. The conclusion of this study portrayed that students who enjoyed field trips put a positive attitude towards biology as compared to other students who did not experience field trips. Based on the findings of this study, the following conclusions were drawn:

1. Field trips are an effective teaching and learning strategy for enhancing biology students' academic achievement
2. Field trips promote students' interest and motivation in biology, leading to improved academic performance
3. Field trips provide students with hands-on experiences and real-world applications of biology concepts, leading to deeper understanding and retention of knowledge.
4. Teachers' attitudes and perceptions towards field trips play crucial role in determining their effectiveness in promoting students' academic achievement.

5.3. Recommendations

Based on the findings and conclusions of this study, the following are recommendations were made:

- Teachers should incorporate field trips into their teaching and learning strategies to enhance achievement in biology.
- Schools should provide support for teachers to organize and implement field trips.
- Teachers should ensure that field trips are well-planned and aligned with the curriculum to maximize their effectiveness.
- Further research should be conducted to investigate the long-term effects of field trips on students' academic achievement and interest in biology.

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APPENDIX 1

QUESTIONNAIRE FOR SCIENCE TEACHERS

TOPIC: Effects of field trips on biology students' academic achievement at Chabata High School in Buhera South.

Introduction.

Thank you for participating in this study. Your responses will help us understand the effects of field trips on biology students' academic achievement.

1a). Which teaching methods do you use when teaching?

Teaching method	Group discussion	Pair work	Outdoor activities	Laboratory experiments	Lecture method
responses					

b). which enhances students' understanding of biology concepts?

2. Do field trips help students retain information better?

YES	NO	UNDECIDED

1. What challenges do you face when organizing field trips?

APPENDIX 2

QUESTIONNAIRE FOR BIOLOGY STUDENTS

TOPIC: effects of field trips on biology students' academic achievement at Chabata High School in Buhera South.

INTRODUCTION

Thank you for participating in this study. Your responses will help us understand the effects of field trips on biology students' academic achievement.

1. What teaching methods do your teacher use in teaching you biology?

Teaching method	Lecture methods	Group discussions	Pair work	Outdoor activities	Laboratory experiments
responses					

2. Which method makes you comprehend biological concepts most?

Teaching method	Lecture methods	Group discussions	Pair work	Outdoor activities	Laboratory experiments
responses					

3. What can you say about the teaching methods your teacher uses?

	Lecture method	Group discussion	Pair work	outdoor	Laboratory experiments	Total
POOR	12	6	6	1	5	30
GOOD	6	8	6	3	6	25

EXCELLENT	6	6	8	16	9	45
TOTAL	20	20	20	20	20	100

APPENDIX 3

INTERVIEW GUIDE FOR SCIENCE TEACHERS

Topic: investigating on the effects of field trips on biology students 'academic achievement.

SECTION A

Information about the researchers

We are Marikopa, N. and Mazhara, T., students at Bindura University of Science Education, we are carrying out the research on the above mentioned topic. You are requested to truthfully answer all the questions below to the best level you can.

Note that your responses will only be used for the purpose of this research work and your identity will be protected from the public, revealed only to this researcher.

SECTION B (questions)

1. Which teaching methods do you use when teaching biology?
2. Which one do you use most?
3. From your observation, students like biology more when you use which method? Why?

SECTION D (Future Recommendations)

- What recommendations do you have for improving field trip experiences for biology students' at Chabata High School?

SECTION E (CLOSING)

- Thank you for sparing your time to answer to these research questions.
- Any information you can share concerning field trips in biology?

APPENDIX 4

INTERVIEW GUIDE FOR BIOLOGY STUDENTS

TOPIC: investigating effects of field trips on biology students' academic achievement at Chabata High School in Buhera South

SECTION A (Introduction and Background)

We are Marikopa, N. and Mazhara, T., students at Bindura University of Science Education studying Honors'-Bachelor of Science education degree in biology. We are carrying out a research on the above mentioned topic. You are requested to truthfully answer all the questions below to the best level you can.

Note that all your responses will only be used for the purpose of this research work and your identity will be protected from the public, revealed to this research only.

SECTION B (Questions)

1. When you write this test, which method has been used?
2. Had it been another method used, how would you have fared?
3. How would you rate the impact of this method on your understanding of biology concepts?
 1. No impact _____
 2. Minimal impact _____
 3. Moderate impact _____
 4. Considerable impact _____
 5. Significant impact _____

SECTION C (Future Recommendations)

Field Trips and Learning

- If you could exchange something about field trips to make them more even better for learning, what would it be?

Future Field Trips

- What types of field trips would you be interested in going on in the future?

SECTION D (CLOSING)

- Thank you for answering these research questions.
- Anything you want to ask or add about the research project.

APPENDIX 5

RECORDED TESTS USING DIFFERENT TEACHING METHODS.

LECTURE METHOD (A) (out of 20)	LECTURE METHOD(B) (out of 20)	LECTURE METHOD(C) (out of 20)	VIDEOS(D) (out of 20)	OUTDOOR(E) (out of 20)	LAB EXP(F) (out of 20)
11	09	12	14	13	12
09	09	10	13	12	14
12	10	11	10	10	10
07	09	09	12	11	10
09	12	13	12	14	11
13	12	11	10	17	15
11	11	10	11	15	12
09	12	14	16	17	15
10	09	08	12	14	16
13	10	11	12	17	15
11	13	13	11	14	16
14	16	15	14	13	15
10	13	12	16	17	17
16	14	10	13	15	14
12	14	16	14	16	18

16	10	16	15	17	16
13	11	12	15	16	15
10	13	11	13	17	18
12	10	13	14	16	16
08	12	11	13	15	16

APPENDIX 6

APPLICATION LETTER

APPENDIX 7

PERMISSION LETTER

P Bag 1020
BINDURA
ZIMBABWE

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

SAMED



BINDURA UNIVERSITY OF SCIENCE EDUCATION

Date: August 2024

TO WHOM IT MAY CONCERN

NAME: MAZHARA T & MARIKOPA N REGISTRATION NUMBER: B225755B & B225844A

PROGRAMME: HBScEdBz BIOLOGY PART: 2.2

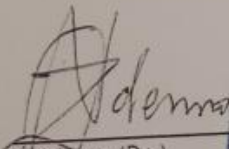
This memo serves to confirm that the above is a bona fide student at Bindura University of Science Education in the Faculty of Science Education.

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


Zindemo (Dr.)
CHAIRPERSON - SAMED

