BINDURA UNIVERSITY OF SCIENCE EDUCATION

DEPARTMENT OF CURRICULUM AND EDUCATIONAL MANAGEMENT STUDIES

ASSESSING THE USE OF EDUCATIONAL TRANSITION FUND (ETF) SCIENCE KITS IN THE TEACHING AND LEARNING OF COMBINED SCIENCE IN GOTO CLUSTER IN WEDZA DISTRICT ZIMBABWE.

BY

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A RESEARCH PROJECT SUBMITED TO BINDURA UNIVERSITY OF SCIENCE EDUCATION IN PARTIAL FULLFILLMENT OF THE BACHELOR OF SCIENCE EDUCATION HONOURS DEGREE IN BIOLOGY

SUPERVISOR: MR M. MHISHI

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BINDURA UNIVERSITY OF SCIENCE EDUCATION

APPROVAL FORM

The undersigned certify that they have read and recommend to Bindura University of Science Education for acceptance, a dissertation entitled; **Assessing the use of ETF science kits in the teaching and learning of combined science in secondary schools in Goto cluster in Wedza District Zimbabwe submitted by Mutsetse Francisca (B225379B)** in partial fulfilment of the requirements for Bachelor of Science Education Honours Degree in Biology.

STUDENTS NAME: **MUTSETSE FRANCISCA** SIGNATURE: F.MUTSETSE

DATE: 09/07/ 2024

SUPERVISOR'S SIGNATURE: DATE: 09/07/2024

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DATE: 09/07/ 2024

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Chairperson signature.....

Date.....15/10/24

DECLARATION

This research project is my original work and it has not been submitted to any other examination body. No part of this research project should be reproduced without my consent or that of Bindura University of Science Education.

Signature: Mutsetse Francisca Date: 09/07/2024

DEDICATION

This project is dedicated to the Lord Almighty, myself, my parents, my sister's and my daughters Makanaka and Chikomborero.

ACKNOWLEDGEMENTS

My special thanks goes to my family, thank you for your motivation and encouragement during the period of conducting this study. You greatly inspired me! Especially my two daughters they celebrated the results of each semester with me.

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ABSTRACT

The aim of the study was to assess the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe. The study was structured along the following research questions, how are the ETF Science kits being used in the in the teaching and learning of Combined Science in Goto Cluster? What challenges are being faced by the schools in Goto Cluster in the utilization of ETF Science kits? And What strategies can be used to improve the usage of ETF Science kits in teaching and learning of Combined Science? The researcher used a qualitative research approach in the form of a case study research design. The study revealed that the ETF science kits donated include science apparatus such as combined kit of chemistry, biology and physics. These kits are utilized to conduct hands -on experiments, because this allows students to explore scientific principles in a tangible and interactive manner. The study also revealed that school-based challenges were that they is lack of some of the apparatus needed in experiments, no science labs, lack of qualified teachers. While the teacher-based challenges were the lack of knowledge on how to use the apparatus, integrating science kits into existing curriculum is a challenge for teachers. Rigid curriculum requirements and time constraints may limit the opportunities for hands-on experimentation and exploration facilitated by science kits, impacting their effective utilization in the classroom, learners struggle with understanding the instructions, science concepts and terminology presented in the science kits. The study revealed that there is need for comprehensive teacher training in the utilization of the science kits effectively, that there is need for construction of labs, and implementing mechanisms for evaluating and tracking student learning outcomes when using science kits. The study recommends that, the

government of Zimbabwe to keep on funding schools through these programs to support effective teaching and learning of combined science.

TABLE OF CONTENTS

LIST OF FIGURES

CHAPTER ONE: INTRODUCTION

1.1 Chapter introduction

This study seeks to assess the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe. This introductory chapter gives the background to the study. The chapter also presents the problem of the study investigated, the research questions it plans to answer. A brief statement of the expected usefulness of the study, the limitations and significance of study will also be looked at, the delimitations of the study and definitions of operational terms will be done and finally, the summary will conclude the first chapter.

1.2 Background to the study

Globally, the science education community's support for the notion of engaging all students in active, meaningful learning, such learning is often associated with hands-on instructional strategies and student-centred classroom environments. However, many science teachers fail to employ such practical-based best practices and instead rely on more didactic, teacher-centred methods. The idea of changing teacher and student roles and altering learning environments by moving instruction away from more didactic, teacher-centred forms to more hands-on, student-centred forms historically serve as one of the driving forces behind the use of science kits in formal education (NRC, 2010).

The merits of using science kits on the grounds that they generate greater active participation among students, empower and engage populations that otherwise feel disenfranchised, promote positive classroom environments, increase teacher content knowledge, increase teacher confidence to teach science, and provide enjoyment for teachers who use them (Monhardt, Spotted-Elk, Bigman, Valentine, & Dee, 2012).

Poverty is one of the most common factors bedevilling the provision of education in the developing world in general and in Sub-Saharan Africa (SSA) in particular. This poses a massive challenge in the pursuit of meeting SDG 4 targets (Nudzor, 2015). For example, SSA has the highest teacher-pupil ratio (average 1:45) of all regions of the world, as opposed to the world average of 1:25 and 1:14 in some developed countries (Tilak, 2019). Thus, achieving

equity, which is at the heart of SDG 4, is under severe pressure in the SSA region. While there has been significant progress in the education sector, inequity remains a key issue negatively affecting the marginalised. Education systems have to confront, head-on, the needs of the most disadvantaged (Dalrymple, 2016).

Baghdady and Zaki (2019) studied secondary education governance in SSA and identified accountability as a very important in handling education finances. They cite two examples of achieving high-level accountability in that regard. Uganda established an Education Funding Agency Group (EFAG). This agency brings together all donors who provide financial and technical support to education. UNESCO's GEM Report Policy Paper 23 (January 2016) argues that every child should have a textbook. The amount a country invests on learning materials is a good indicator of the level of its commitment to quality education for all. The report indicates that textbooks are particularly relevant in improving learning outcomes in low-income countries with large classes. In SSA, access to textbooks is limited. In many countries therein, students at all levels either share or do not have textbooks.

Regarding Zimbabwe, Mestry et al. (2017) report that in the first decade of its independence (1980–1990) the country implemented the Education for All policy. It built schools in previously marginalised areas and offered free primary education. As from 1991, the country reverted to charging fees and levies, though primary education remains compulsory. Parents are involved through School Development Committees. Government funds the Basic Education Assistance Module, a fund intended to pay fees for orphans and other vulnerable children. Through the Education Transition Fund (ETF), the government forged partnership with UNICEF to improve the quality of education by distributing learning materials, (Mestry et al. 2017). The Public Sector Investment Programme was established to build infrastructure in aid of non-government schools. Overall, despite the noble initiatives, funding for infrastructural development has significantly dwindled. Previous research has shown that the impact of the presidential computer donations in Zimbabwe faced challenges such as a lack of teacher training, inadequate infrastructure, and a lack of technical support, (Moyo & Ndlovu-Gatsheni 2019). These challenges resulted in many schools not effectively using the computers. The Educational Transition Fund aims to address these challenges by providing science kits that include hands-on learning materials and training for teachers. The science kits provided

by the Educational Transition Fund are designed to address the lack of science resources in Zimbabwean schools, as well as the lack of hands-on learning opportunities. Some schools did not effectively use the computer donations from the president, with some schools keeping the computers locked in storage rather than using them in the classroom. However, it is unclear whether these kits will be successful in addressing the challenges that were faced with the computer. Also, it is still unclear whether the kits will be successful in promoting student learning, especially compared to the computer donations. Therefore, this study seeks to assess the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe.

1.3 Statement of the problem

The Educational Transition Fund has provided science kits to secondary schools in Zimbabwe, but it is unclear how these kits are being used and whether they are achieving the same level of success and limitations as the previous computer donations from the president. This research will explore how these science kits are being used, what challenges or successes teachers have experienced in using them, and whether they have been effective in improving student outcomes. Thus, this study seeks to assess the usage of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe.

1.4 Research questions

1. How are the ETF Science kits being used in the in the teaching and learning of Combined Science in Goto Cluster?
2. What challenges are being faced by the schools in Goto Cluster in the utilization of ETF Science kits?
3. What strategies can be used to improve the usage of ETF Science kits in teaching and learning of Combined Science?

1.5 Assumptions

The study made the following assumptions:

(1) That all respondents are to co-operate and provide the essential data without partiality.

(2) That the head teachers and teachers have kept records on ETF science kits in their schools.

(3) That the educational stakeholders in Goto cluster are aware of the the use of Educational Transition Fund (ETF) in their school.

1.6 Significance of the study

The findings of this study will be significant for a number of reasons, to various stakeholders, the parents, the Ministry of Primary and secondary education (MoPSE) and the schools and the ETF science kit donor. This study will have a significant impact on the field of science education, this will make parents to effectively support their children in science subjects and in buying them resources where needed.

This study will provide valuable insight into the effectiveness of the science kits, which is important for the MoPSE. This study will contribute to the existing body of knowledge on the use of hands-on learning tools in science education. Finally, it will offer practical recommendations for improving schools in the effectiveness of science kits and other similar tools. For such funding institutions, their interest is to get feedback on the acceptance, usage and effectiveness of their initiatives.

1.7 Limitations of the study

According to Mega (2014) limitations are conditions beyond the ability of the researcher that may place restriction on the conclusions of the study and their application to other situations. The first limitation might be that the research did not reflect the use of ETFs in each specific subject, but in general the Combined Science subject. The other limitation may be on the part of the researcher to carry out the research in all the schools of Goto cluster, the researcher will only collect data from the sampled Schools. The data will only be collected from science teachers, School Administrators and students in Goto cluster.

1.8 Delimitations of the study

The study was conducted at two selected secondary schools in Goto Cluster in Wedza District, Mash East in Zimbabwe. The study will focus on the usage of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science at O' level. The study participants will be Science teachers, Head of Departments and Students.

1.9 Definition of terms

The following terms are defined within the context of this study.

Assessment: This is a task or duty assigned as part of a job or course of study.

Educational Transition Fund (ETF): It is a fund that is used to support educational programs and initiatives, especially those that focus on improving student outcomes.

Science kits: A set of hands-on learning tools that are designed to help students understand scientific concepts and theories. These kits often include a variety of materials, such as models, experiments, and activities. They are intended to engage students in active learning and to promote a deeper understanding of scientific concepts.

1.10 Summary

This chapter introduced the study into the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe. It started with the background of the study, showing the importance of ETFs Science kits. It also gave the statement of the problem; the research questions were also given. The chapter concludes by looking at the assumption of the study, significance of the study, giving out some of the limitations and defining the key terms in the dissertation. The next chapter (Literature Review) looks at some of the available literature which is deemed to be directly significant to the current research.

CHAPTER TWO: REVIEW OF RELATED LITERATURE

2.1 Introduction

This chapter reviews literature related to use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science. The chapter will review literature on how ETF Science kits are being used in schools, the challenges being faced by the schools in the utilization of ETF Science kits and the strategies that can be used to improve the usage of ETF Science kits in teaching and learning. A summary that will conclude the chapter will be provided at the end of the chapter.

2.2 Theoretical Framework

The study will be guided by the Effective Schools Model by Lezotte (2010) theory which relates to utilization of appropriate resources in the teaching and learning sphere. This model explains that an effective school is a school that can be measured in terms of pupil achievements, demonstrates the joint presence of quality and equity. The seven correlates of effective schools included strong instructional leadership, clear and focused mission, safe and orderly schools, climate of high expectations for success, frequent monitoring of pupil progress, positive home-school relations, and opportunity to learn/time on task as documented by (Lezotte 2010). Additionally, Lezotte (2010) noted that strong instructional leaders are proactive and seek help in building team leadership and a culture conducive to learning and professional growth. In the effective school, the head teacher and others act as instructional leaders and effectively and persistently communicate and model the mission of the school to staff parents, and pupils.

Everyone knows where they are going and why because of a clear and focused mission and it has been noted that a clear focus assists in aligning programs and activities for school improvement. To effectively determine a specific focus, school leadership and stakeholders use a collaborative process to target a few school goals and then build consensus around them. A safe and orderly school is defined as a school climate and culture characterized by reasonable expectations for behaviour, consistent and fair application of rules and regulations and caring, responsive relationships among adults and pupils (Lezotte, 2010). Classrooms are warm and inviting and learning activities are purposeful, engaging, and significant. Personalized learning environments are created to increase positive relationships among pupils and between pupils and their teachers. Pupils feel that they belong in the school community, and children are valued

and honored, their heritage and backgrounds are viewed as “assets," not deficiencies. In a climate of high expectations, those mantra "all pupil can learn” must be followed by instructional practices and teacher behaviour that demonstrate that teachers believe in the pupils, believe in their own efficacy to teach pupils to high standards, and will persist in teaching them. Teaching advanced skills and teaching for understanding together with basic skills are required for all pupils to achieve at high levels.

Lezotte, (2010) observed that frequent monitoring of teaching and learning requires paying attention both to pupil learning results and to the effectiveness of school and classroom procedures and the resources used. Learning is monitored by tracking a variety of assessment results such as test scores, products, performances, and other evidence of learning. Teaching is monitored by teachers themselves through self-reflection and by supervisors for program and teacher evaluation. Assessment results are used for planning instruction for individual pupils as well as for school-wide decision making and planning. On one hand, classroom and school practices are modified based on the data.

Further, Lezotte (2010) noted that family and community involvement is a general term used to describe a myriad of activities, projects and programs that bring parents, businesses and other stakeholders together to support pupil learning and schools. Families and other adults can be involved in the education of young people through a variety of activities that demonstrate the importance of education and show support and encouragement of pupils learning. These are legitimate approaches for involvement and do not necessarily require adults spending time at the school site and does not offer an opportunity to learn. Time on task simply means that each of the teachers in the school has a clear understanding of what the essential learner objectives are, grade-by-grade and subject-by-subject.

Once it is clear what pupils should be learning, they should be given time to learn it and it has been noted that in an effective school, teachers allocate a significant amount of classroom time to instruction on the essential skills. Pupil so fall abilities, races, gender, and socio-economic status have equal opportunities to learn (Lezotte, 2010). Therefore, the theory was relevant to this study in that it clearly highlights on how school effectiveness can be achieved and this relates to improved academic performance. For example, by having effective leadership in the part of the school administrators. This is in line with Sullivan and Glanz (2000) observation that a prime task of school leaders has to exercise instructional leadership of some kind that

results in a shared vision of the directions to be pursued by the school and to manage change in ways that ensure that the school is successful in realizing the vision.

2.3 How ETF Science kits are being used in the teaching and learning of science.

Usman (2016) contends that the presence of suitable and adequate educational resources significantly influences the effectiveness and performance of school administration. Consequently, proficiently managing these resources in schools inherently dictates overall school performance. Conversely, the absence or insufficiency of any of these resources can impede the attainment of educational objectives and hinder the efficacy of school leadership. Yulieana (2020) agrees that schools with ample resources operate with efficacy and yield high-quality productivity. Nonetheless, Yulieana (2020) highlights that many schools in developing African nations need more government funding to provide the requisite resources adequately.

The Education Transition Fund was launched in 2009. The first phase of ETF focused on the emergency revitalization of the education sector which had turned sour after the 2008 era. UNICEF recorded that about 94% of schools in Zimbabwe were closed during this worst economic meltdown. This initiative came in to address the issue of availability of resources and the distribution of essential school stationery and core textbooks for primary and secondary schools. The fund was subdivided into two phases thus leaving second phase with the transitional nature of the second phase which fore saw the program proceeding under the direction of the Ministry of Primary and Secondary Education. Zimbabwe experienced a decade of economic and political meltdown that saw both the government and parents finding it difficult to run the schools (Coltart, 2010). In 2009 the Ministry of Education (MoE) with assistance from United Nations Children's Fund (UNICEF) embarked on an Education Transition Fund (ETF) that saw both primary and secondary schools availed with textbooks across a wide range of subjects (UNICEF, 2012).

The idea of changing teacher and student roles and altering learning environments by moving instruction away from more didactic, teacher entered forms to more hands-on, student-centred forms historically served as one of the driving forces behind the use of science kits in formal education (NRC, 2000). Over the past thirty years, however, many have questioned the effectiveness of kits in promoting and facilitating the type of active learning supported by

reform-based documents (Saul & Reardon, 2016). Criticisms include the inappropriateimplementation of kits in such ways that instruction is rendered ineffective (Saul & Reardon, 2016). Others, however, have argued the merits of using science kits on the grounds that they generate greater active participation among students, empower and engage populations that otherwise feel disenfranchised, promote positive classroom environments, increase teacher content knowledge, increase teacher confidence to teach science, and provide enjoyment for teachers who use them (Gennaro & Lawrenz, 2002).

Research supporting the assertion that science kits increase teacher confidence in teaching science was of particular interest to us because we are aware that one of the major concerns regarding the teaching of science in schools involves low teacher confidence (Rice & Roychoudhury, 2003). Such concern is grounded in research reporting that many elementary teachers consider themselves to be uninformed concerning scientific content, making their development or choice of inquiry-based, hands-on science lessons an experience filled with apprehension (NRC, 2000). High anxiety coupled with no tangible external incentives to include science in their teaching and high-stakes testing demands in other content areas creates an atmosphere where science instruction becomes expendable.

2.4 Challenges being faced by the schools in Goto Cluster in the utilization of ETF Science kits.

Rural school encounter many obstacles that significantly impact the quality of education they deliver (du Plessis & Mestry, 2019). Among these challenges, limited school resources are one of the most substantial. This limitation encompasses inadequate funding, remote geographical locations, oversized classrooms, and high learner turnover rates. Rural institutions often need more financial support than urban schools, leading to deficits in essential materials like textbooks, computers and instructional tools. This scarcity hinders teachers from providing high-quality education. The remoteness of rural schools complicates the attraction and retention of qualified teachers while impeding access to necessary resources and support services. This results in difficulties in implementing and managing an effective curriculum. The issue of large class sizes further obstructs personalised attention from teachers, impacting learner learning negatively, (Ajani, 2018) and leading to potential academic struggles. Additionally, frequent learner turnover in rural schools disrupts teacher learner relationships

and consistent education provision, compounding curriculum management challenges.

In South Africa, a study by Mabena et.al, (2021), on factors influencing poor performance, the results of the study showed that numerous factors influenced learners' confidence and performance. The factors found to have an impact on Combined Science performance were learner related, such as ill-discipline, language barriers and learner attitudes. Teachers' factors included lack of pedagogical content knowledge and skill, and lack of appropriate professional training, (Mabena et.al, 2021).

Teachers in most African schools have not been trained in ICT, and hence have poor practical skills in ICT usage. The majority of them cannot even use the basic software in computers for the delivery of their lessons (Bukaliya & Mubika, 2011). Most students and parents had negative attitudes towards the technical and vocational subjects (Bukaliya & Mubika, 2012). The study by Konyana and Konyana (2013) showed that the only students who used computers were those who were doing Computer Studies as a subject. In other words, those students who were not enrolled in Computer Studies did not have access to the computer. The study further revealed that most of the rural secondary schools that received computers from the Government were not prepared to start offering Computer Studies to students. While the computers were welcome, the school Heads submitted that the computers became a big liability to the schools. The major reason was that the schools had no proper computer laboratories to house the computers. In the majority of the cases a classroom had to be converted into computer laboratory and the school had to spend some money adjusting the rooms to accommodate the computers. At two of the five rural secondary schools' electricity was not available in the school buildings. The schools had to expedite the electrification of at least one building or block (room) where the computers would be kept.

More than 75% of the Zimbabwean population lives in rural areas, and most of these people do not have access to technologies as compared to their urban counterparts (Sithole, 2014). There is a technological or digital divide that exist between urban and rural areas. The digital divide in Zimbabwe is putting a whole generation of rural children and students at a disadvantage. The general youth trail behind the rest of the world in technology (Ganyani, 2015). The students are lagging in the adoption and use of technology through interactions with computers because

there are few trained teachers in the rural areas (Konyana & Konyana, 2013), who are also disadvantaged by the same gap.

In Zimbabwe, ICT in education is not a very widespread phenomenon, particularly considering rural settings where most schools are not connected to electrical power supply and where some schools hardly have any buildings to house the computers. In fact, Zimbabwe remains at the bottom ten of ICT Network Readiness Index (Reddi, 2004). Chipinge district is largely rural with the majority of the schools unable to offer Computer Studies due to non-connectivity to electrical power supply. This therefore means that teaching and learning has largely remained rooted in the traditional models of delivery. However, traditional systems of teaching and learning have long been outpaced and outstripped by new and dynamic trends. The traditional concept of schooling inside the walls of brick and mortar has been superseded by the spectacle of schooling without walls. Conventional learning set-ups have been overtaken by digital environments and the face-to-face mode of tuition delivery is fast being replaced by online articulated learning and knowledge delivery methods (Kachembere 2011). Education experts however argue that bringing ICT into the learning environment will create opportunities for broader education initiatives that will bring all students into the information era.

In an effort to bring the potentially empowering benefits of ICT to the students, the government of Zimbabwe embarked on a massive drive to turn around the education sector by donating state of the art computers to many schools around the country mainly in the rural areas. Connected with that was an effort to train Computer Studies teachers who were badly needed in the schools. To that end, many teacher training colleges, both primary and secondary were mandated to train Computer Studies teachers or to offer computer appreciation courses to their student teachers among the programmes they offered. It should be noted, however, that for the past decade or so, Zimbabwe has been limping under the effects of an economic recession which seriously crippled the education sector and also made the country lag behind in this vast digital revolution (BWPI, 2009).

Some schools have, however, made significant progress towards harnessing computer technology for the purpose of teaching and learning. This effort has not been without its

challenges. Some of the major challenges that schools in the district and Zimbabwe in general are facing are largely associated with the prohibitive costs of purchase and maintenance of computers in the schools. Some schools located in the remote parts of the country have also generally failed to attract not only qualified Computer Studies teachers but qualified teachers for other disciplines as well. After graduating from high school or from tertiary institutions worldwide, graduates are expected to join the working fraternity which hitherto has seen a rise in the demand for computer skills It is vital therefore, that all students, whether in urban or rural settings, are equipped with the necessary ICT skills to fully empower them to participate in the highly digitalised world from a young age. All sectors of education from primary, secondary to university as well as vocational and skills-based education need to harness ICT.

In order to bridge this digital divide, the government through various stakeholders, as well as local and international organizations, has partnered with Computers for Zimbabwean Schools (CZwS) to provide computers to schools in rural areas (Sithole, 2012). The government did not only provide schools with affordable computers, but training support and connectivity as well (Sithole, 2012). The aim is to make teachers use computers and Internet based learning programs to enhance student achievement. Students will learn to use computers and thus, be in a better position to compete with their urban counterparts (Sithole, 2015).

Various studies (Bukaliya & Mubika, 2011; Kabweza, 2012; Konyana & Konyana, 2013; Sithole, 2014) carried out in Zimbabwe's rural schools have shown that computer use is lower when compared to urban areas. Students in the rural areas face enormous problems in accessing and using computers. The perceptions of students' use of computers seems to be influenced by teachers and administrators. Bukaliya and Mubika (2011) found that although school principals (heads) had positive attitude toward the use of computers, teachers had negative attitudes. One reason given for the negative attitudes was that some teachers were older and had never had the chance to use computers. As a result, they did not trouble themselves with computers when they are on the verge of retiring. Another problem is the phobia of computers and that leads to the resistance of the use of computers at schools (Tshabalala & Ncube, 2014). Thus, according to Konyana & Konyana, (2013), most rural schools that received donated computers had not been capacitated to fully utilise the new technology for the benefit of students, teachers and the community. As a result, most of the gadgets have been lying idle in classrooms due to lack of

either proper infrastructural facility such as computer laboratories and electricity as well as lack of trained ICT teachers.

A study by Sithole, (2017), presidential donated computers were not being utilised in all facets of the curriculum. They indicated that the use of the computers must spread across all subject areas, other than just being used as instructional tools in a single subject area. In fact, the teachers observed that computers were being utilised solely for Computer Studies lessons. It should be noted, however, that through utilisation of suitable software, computers could be used to teach subjects like Mathematics, Science, Geography, Art, Physics, Biology and other subjects.

Some teachers in the rural areas have never seen a computer, let alone used one (Sithole, 2013). Ncube's (2014) study found that students do not get support and encouragement from teachers and administrators. Most schools in the rural areas are manned by unqualified young teachers who are commonly known as temporary teachers in Zimbabwe. These temporary teachers may lack the skills and necessary training for them to teach computer usage. Some students as well as teachers in the rural areas are nervous about using a computer for the first time and most avoid using it for fear of failing (Sithole, 2013). A whole generation growing up in the rural areas is being disadvantaged because of this lack of access to computers. Musingafi and Chaden'anga (2014) found that the teachers did not use technology to teach because of lack of resources, discouragement by leadership, bad attitude, lack of training and expertise, poor teaching and leadership environment, and work overload.

There are enormous problems that schools in rural Zimbabwe are facing in fully implementing computer education. Schools in rural areas do not have access to electricity that powers the computers and other technological devices (Konyana & Konyana, 2013). In addition, schools that did not have electricity had to electrify the building that housed the computers at a cost to the school (Tshabalala & Ncube, 2014). The schools did not have competent, qualified ICT teachers. Konyana and Konyana (2013) found that most schools used the computers for administrative purposes, such as typing and, storing administrative and financial records. The computers were used for generic purposes because there are no qualified teachers who can teach with computers in the rural schools (Sithole, 2014).

The problem rural schools face is the prohibitive costs of the computer purchase (Sithole, 2014). While buying the computers is one issue, maintaining them is another. Most rural schools do not have enough in their budgets to run a successful ICT department (Tshabalala & Ncube, 2014). Although the government of Zimbabwe embarked on a program of donating computers around the country especially in the rural areas the problems mentioned above inhibit their maximum utilization. Therefore, this study seeks to unveil the challenges being faced in the usage of ETF science kits in teaching and learning or Science with particular reference to Goto Cluster in Wedza District Zimbabwe.

2.5 Strategies to improve the usage of ETF Science kits in teaching and learning of Combined Science.

The effects of this digital divide are enormous and may be felt even after completing high school education. At school, educational achievement will result as a factor of geographical and socio-economic status rather than ability and application (Ncube, 2014). In order to ensure all fairness in education, the digital divide between rural and urban schools especially secondary schools, need to be bridged as a matter of urgency (Ncube, 2014). The only way to bridge the digital divide is to bring technology to rural schools so that students learning in the rural areas are at par with those who attend urban schools (Sithole, 2014). With technology, new opportunities will emerge, educational and economic opportunities will be enhanced, and the quality of life for rural students will ultimately improve (Sithole, 2014).

Proactive principals can allocate resources to strengthen curriculum delivery, which can lead to immediate improvements in the quality of teaching and learning. However, rural schools that are struggling financially face unique challenges, such as remote locations, underdeveloped network infrastructure, and challenging terrain. As a result, providing essential services such as running water and electricity can be very costly. In order to address the challenges faced by rural schools, it is crucial to provide them with the resources and infrastructure they need to manage the curriculum effectively. This could include providing them with more financial support and access to training and technical assistance, (Ajani, 2022). It is also essential to create a more equitable distribution of resources so that all schools have the opportunity to succeed. The intricate challenges of limited rural school resources and curriculum management require multifaceted solutions (Naidoo, 2019, Govender et al., 2023).

While no single approach can tackle all these issues, several strategies can enhance the situation. Increased funding can enable rural schools to secure essential resources, attract skilled teachers, and maintain smaller class sizes.

schools are situated within communities, relying on community members for educational resources. Unfortunately, pervasive poverty in numerous African countries has hindered the community's ability to provide such support (Ajani et al., 2018; Ajani & Govender, 2019; Fafunwa & Aisiku, 2022). Consequently, astute management of available educational resources becomes imperative to achieve desired outcomes. As Usman (2016) stated, school leaders must ensure prudent resource management to achieve balanced utilisation and maximise efficacy, which is vital for attaining school objectives. Additionally, rural teachers need support for instructional planning, learner evaluation, collaboration, and professional growth, which can be facilitated through mentoring, professional development, and online resources (Ajani, 2020).

In the socio-economic discourse modernization has been addressed to as the new human. Development process that is, it comprises of socio-economic enhancements which contribute to people’s capabilities to act according to their choices. The Human Development Report (1990) states that human development is a way to enlarge people’s choices and emphasize the freedom to be healthy, to be educated and to enjoy a decent standard of living. In a way this broadens the range of capabilities of a human life thus inclusive of political freedoms, human rights and self-confidence (empowerment and participation). This also reflects that education is a key element in capacitating the human life for development of any nature. HDR (2010) also furthers the description of human development as the expansion of people’s freedoms to live longer healthy and creative lives (that is advancing other goals they have reason to value) so as to engage actively in shaping development equitably and sustainably.

According to Francisco, Ali and Agbo, (2017) the study was undertaken to evaluate the impact of TET-fund intervention on staff development in south-east geo-political zone of Nigeria. Four research questions and one null hypothesis guided the study. While the result of the study revealed that both academic and non-academic staff of the institutions utilized the opportunity offered by TET-fund to acquire higher degrees, attend nation and international conferences

and write books and articles for publications. In the light of these findings, the study recommended among other thing that 3 percent should be deducted from the profit of all registered companies in Nigeria, instead of 2 percent made available to TET-fund office to enable the carry out their works effectively. Udu and Nkwede (2018) examined the Role of Tertiary Education Trust Fund in the Training of Academic Staff in Tertiary Institutions in Nigeria; the case study of College of Education, Ikere- Ekiti. The study adopted descriptive statistics in its analysis. The study found out that TET-fund intervention enhanced staff capacity building and development and improve their ability to deliver quality teaching to students. The study therefore, found out that federal Government cannot bear the cost and burden of tertiary institutions financial needs. The study therefore, recommended that private organisation, Non-Governmental Organisation NGOs, should assist in the funding of institutions. Therefore, this study seeks to reveal the strategies to be used to improve the usage of ETF science kits.

Most of the international debate on education aid focuses on advocacy for increasing the volume of such aid, especially to attain the Education for All (EFA) and Sustainable Development Goals (SDGs). And most of the concerns regarding aid effectiveness focus on enhancing the technical efficiency of delivery and use of aid by reducing aid fragmentation through greater coordination and harmonization, developing more efficient aid instruments, channelling more aid through national systems, and ensuring greater aid predictability. Donor agencies have also worked with aid recipient countries to improve the efficiency with which the aid that is provided for a given purpose is used by strengthening country ownership, improving governance, and developing institutional capacity.

The government should have constant and regular visits on remote site schools so as to know how best these school could be assisted to improve the quality of education service provision. These visits will also allow the government through the relevant ministry, to know areas of special need in their country. The government should see to it that even remote schools have improvement on the education system management tools which will optimally maintain and utilize the sector’s resources directly towards the improvement of the service provision. Also, the government should equip the ministry with adequate monitoring and evaluation tools so that they could do follow ups on educational funds.

2.6 Chapter Summary

Chapter two has presented the literature review. Literature was reviewed on the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science. The chapter was guided by the research objectives. The subsequent or next chapter explores the research methodology on how data is going to be collected.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter looks at the systematic steps to be taken to conduct this study. This chapter covers the research approach, research design, population, sample and sampling techniques, data collection procedures and data analysis. Finally, the chapter summary closes off the chapter.

3.2 Research approach

A research approach is a model of framework of shared set of assumptions about how people perceive the processes and procedures of research done in order to answer pertinent questions, (Creswell, 2018). This study adopted a qualitative research approach which is primarily explanatory as it assists in easy understanding of underlying reasons, opinions, perceptions and motivations, (Cresswell, 2018). It provides insights into how usage of EFT science kits are used. Qualitative research is also used to the usage of EFT science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe.

Concurring with Creswell (2018) DeFranzo (2020) posits that qualitative research uses a naturalistic approach that seeks to understand the phenomena in context. This study sought to assess the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe. The data of the research was collected from students, Science teachers and Head of Departments immensely in the setting of everyday life in which the study was framed.

A qualitative research approach is largely led with discussion around certain concepts or ideas with open questioning. In this study, students, Science teachers and Head of Departments were encouraged to explain or articulate the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science.

3.3 Research design

Plano-Clark and Creswell (2017) view research design as a blueprint for conducting a study with maximum control over factors that may interfere with the credibility of the findings. Concurring, Kothari (2014), defines a research design as a plan that designates how, when and where data is to be collected and analyzed. In Cooper and Schindler's (2014) view, a research design is molded by a method, and is also responsive to the context and the participants. It is a systematic approach the researcher uses to carry out a study.

This study, is a case study in which requisite data was gathered on the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science. A case study involves a deep understanding through multiple types of data sources, (Yin, 2019). Plano-Clark and Creswell (2017) relates that a case study can be descriptive, explanatory or exploratory. This study was a descriptive case study as it sought to describe the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science.

3.3 Instruments

Qualitative data collection methods vary from using unstructured or semi-structured techniques. Some common methods include focus group discussions, individual interviews, and document analysis. In order to collect information on the usage of resources qualitative research assisted to collect in-depth knowledge on the usage of the EFT Science kits.

Saunders, Lewis and Thornhill (2018), define research instruments as tools used for collecting information and data needed to find solution to problems under investigation. Leedy and Ormond (2015) postulate that careful planning for data collection can help with setting realistic research goals. The authors further allude to the fact that data collection instruments can save time and can increase the study's credibility and once the data procedure has been determined, a time for completion should be established. The instruments to be used in this study include focus group discussions for students and unstructured interviews for science teachers and Head of Departments.

3.3.1 Focus group discussion

Focus group discussions were structured and were guided by the researcher. According to Sekeran and Bougie (2016), a focus group discussion is an interaction between one or more researchers and more than one participant for the purpose of collecting data. Put differently in focus group discussions facilitators (researchers) interview participants with common characteristics or experiences for the purpose of eliciting ideas, thoughts and perceptions about the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe, (Leedy and Ormond, 2015). In this study, the researcher interviewed students on the use of ETF science kits in their everyday learning. The group comprised of ten participants per school indeed the focus groups were generally open and very lively.

For this study focus group discussion are found to be a cheaper and quicker way of obtaining valuable data as the students were at their particular school for one of their normal school activities sessions on the day the group discussion were held. Also, in this study participants have been pre-warned about the discussion they were found to be orderly and they had become fairly comfortable in voicing opinions in each other's company without any of them dominating the group.

3.3.3 In-depth Interviews

Cooper and Schindler (2014) define an interview as a specialized form of communication between people for a specific purpose associated with some agreed subject matter. This study used in-depth interviews. The purpose of in-depth interview in the form of semi structured is to obtain research-relevant information from the interviewee, about the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe. In-depth interviews may serve as a rich source for exploring people's inner feelings and attitudes (Dilshad & Latif, 2013). The other advantage of in-depth interview semi structured in this study is that in-depth interviews do not follow any predetermined pattern of questions or themes. Rather, the interviewer addresses the issues as they emerge in the interview. In-depth interviews were useful when the researcher wishes to explore and probe the full breadth of the usage of usage of the EFT Science kits.

3.4 Population

Combs (2018) defines a population as any group of individuals that have one or more characteristics in common that are of interest to the researcher. A population can also be viewed

as a specified group of human beings or non-human entities such as objects (Sekeran and Bougie, 2016). In other words, a population is the entire set of organisms, units or characteristics of interest to the investigator. In this study, the population consisted of all Goto Cluster secondary school Form Three Science students who are approximately 560 in Wedza District Zimbabwe. All Form Three Science teachers' population of 15 teachers and 5 Head of Departments in the same cluster were considered. The study participants were drawn from two selected secondary school from the Goto cluster.

3.4.1 Sample and sampling techniques

A sample is a subset of participants that is representative of the entire population. Sampling is the act or process of selecting a suitable group of participants, (Cass and MacKay 2019). In the selection of Form Three Science teachers in this study the researcher used purposive sampling in order to select the participants in this study. Purposive sampling is defined as the selection of set of elements from a population in such a way that descriptions of those elements accurately portray the total population from which the elements are selected, (Macmillan and Schumacher, 2014). A sample size of 24 Form three Science students, 5 Science teachers and 2 Head of department were selected.

3.5 Procedures of collecting data

After getting a confirmation letter from Bindura University of Science Education, the researcher sought permission to carry out the research from Mashonaland East, Wedza district. A letter from Bindura University of Science Education endorsed by the District Schools Inspector (DSI) in the Ministry of Primary and Secondary Education, Bindura was then delivered to the two selected schools in Goto cluster. To stick to the ethical requirements of the research made appointments with the study participants a week before the visit in order to set the stage and gain entry into the schools and visited the schools on five separate days as per schedule to collect data. Focus group discussions were held as per schedule and interviews were conducted on two separate days, each allocated to a particular school.

3.5.1 Ethical considerations

Ethical considerations were paramount throughout the research process. Green (2008), concurs by saying ethical considerations are paramount to any research and it is imperative for the researchers to adhere to these ethical standards when carrying out their researches. Ethical

considerations concern “principles and guidelines which researchers must follow in order to ascertain that they do not violate the physical, psychological and emotional state of the participants of the study during the data collection process” (Resnik, 2015).

For research results to be acceptable, the researcher is obliged to follow certain ethical principles. Maxwell (2013) defines ethics as, a set of moral principles that are suggested by an individual or group, are subsequently widely accepted, and offer rules and behavioral expectations about the most correct conduct towards experimental subjects and participants, employers, sponsors, other researchers, assistants and students. Informed consent was obtained from all participants, and their confidentiality and anonymity were protected. Participants had the right to withdraw from the study at any time without repercussions.

3.5.1.1 Permission

Researchers need ethical clearance for the permission to undertake the study from the relevant authorities before going to the schools as advance protocols. Researchers also need to secure the approval of the research participants prior to conducting their studies, (McMillan and Schumacher 2006). In order to secure the approval of the research participants, the researcher sought clearance and authority to conduct the study from the local authorities at Mashonaland East, Wedza district.

After that participants were not forced to participate but they volunteered. According to Creswell (2018), it is mandatory that research participants get informed before they are approached for data collection. The aim is to seek permission, ensure voluntary participation and provision of information, as well as give them free room to withdraw from the research participation any time they wish to (Creswell, 2018). Once the individual participants accept the researcher’s request to participate in the survey the researcher then proceeded with the data collection.

3.5.1.2 Confidentiality

Assurance of confidentiality is a prerequisite in carrying out research studies. Creswell (2018) also insists on anonymity and confidentiality in research study. Every researcher should give reverence to the right to confidentiality of his or her research participants (Burns and Grove 2003). Ritchie and Lewis (2003) reveal that confidentiality is a basic ethical principle, while anonymity is one way in which confidentiality is maintained. Confidentiality ascertains the ethical duty of the researchers to keep the identity and responses of the research participants private. In this study, the names of the respondents were not disclosed. This reduces the

possibility of the participants being recognized, additionally, the researcher assured that the respondents that the information shared was between the two that is, the interviewer and interviewee and was kept with confidentiality.

3.6 Data analysis and presentation procedures

In analysing the qualitative data in this study through the FGDs, and in-depth interviews the researcher began by transcribing all the interview audios, followed by a thorough review of the FGDs and interview responses. As stated by Miles, Huberman, and Saldaña, (2014) this enabled the researcher to familiarise with, as well as gain an initial understanding of the responses, while extracting keywords and meaningful statements. The researcher then reduced the data into themes and patterns (Lee, 2012) thereby interpreting emerging characteristics and concepts, (Miles et al., 2014). Therefore, a thematic analysis was used to analyse data.

3.7 Chapter Summary

This chapter described the research design. It pointed out the target population, sample and sampling techniques. Similarly, the chapter highlighted the research instruments, their merits and demerits. It also looked into the data collection procedures. The next chapter looks into data presentation and analysis.

CHAPTER FOUR:

PRESENTATION AND DISCUSSION OF RESEARCH FINDINGS

4.1 Introduction

This chapter presents the interpretation and analysis of data which was collected from Goto Cluster in Wedza District Zimbabwe. The contents comprise of the response rate, which is fundamental in the reliability of the study, demographic data which is also essential in understanding the characterisation of the sample. The participants in this study are coded as, T1 -T5 for teacher 1- teacher 5, HOD1 -HOD2 for head of department 1 to head of department 2 and FGD1 L1-L8, FGD2 L1-L8 and FGD3 L1-L8 for focus group discussion1-3 Learner 1-Learner 8.

4.2 Demographic detail

This section sought to establish the demographic details of science teachers and learners at Goto Cluster in Wedza District. Salkind (2010) says demographic information provides data regarding research participants and is necessary for the determination of whether the individuals in a particular study are a representative sample of the target population for generalization purposes. The demographic details to be presented are age range, gender, highest educational qualification and number of years work experience for paramedics.

4.2.1 Gender of participants

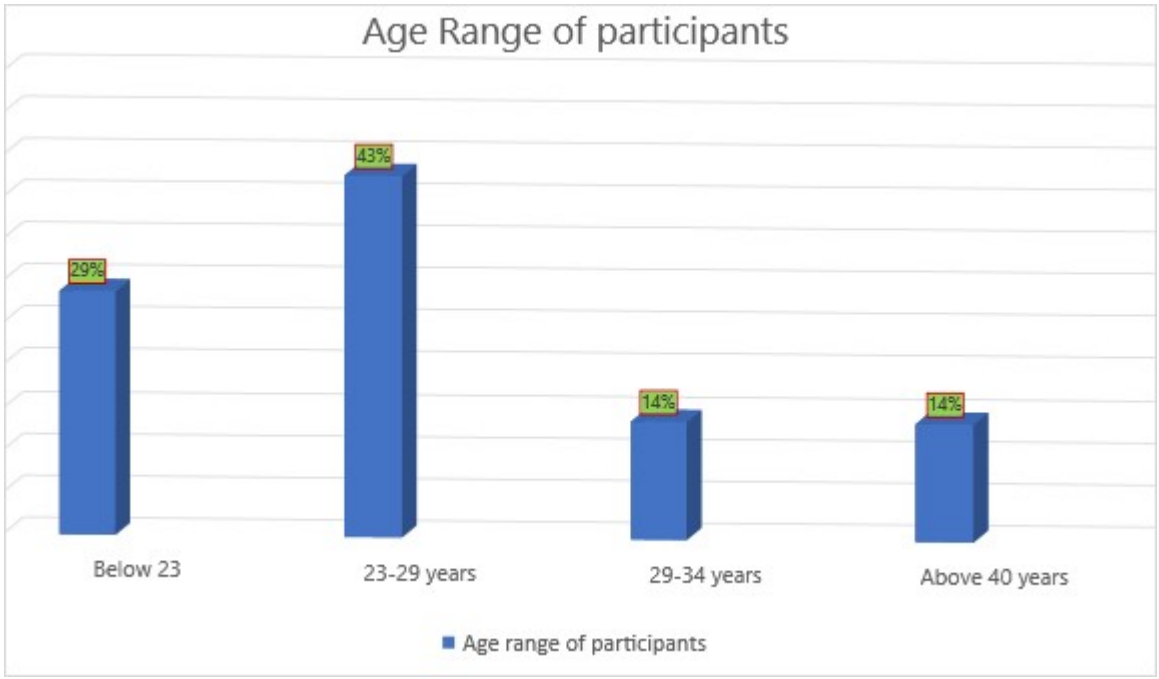
Fig 1 gender of participants

Source: Primary Source

The study findings show the gender of participants with 55% participants male, and 45% of females. The results presented shows that the study used data from both males and females although more males were interested in participating in the research and hence the findings of the study were not affected by gender biases. This is acceptable in research as it improves the validity of the findings.

4.2.2 Age range participants

Fig 2 Age range of participants

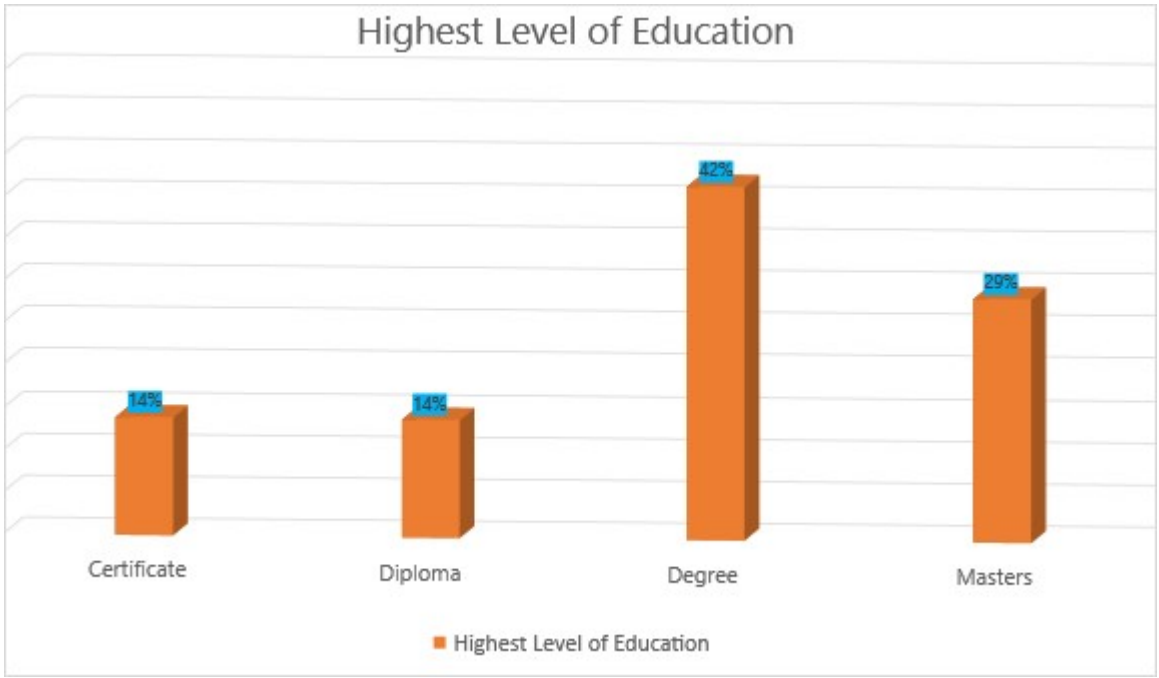


Source: Primary source

The study showed that the majority 43% of the participants were aged between 23-29 years, while 29% were between the ages of below 23 years and also 14% were between 29-34 years of age while 14% were above 40 years.

4.2.3 Highest level of education of participants

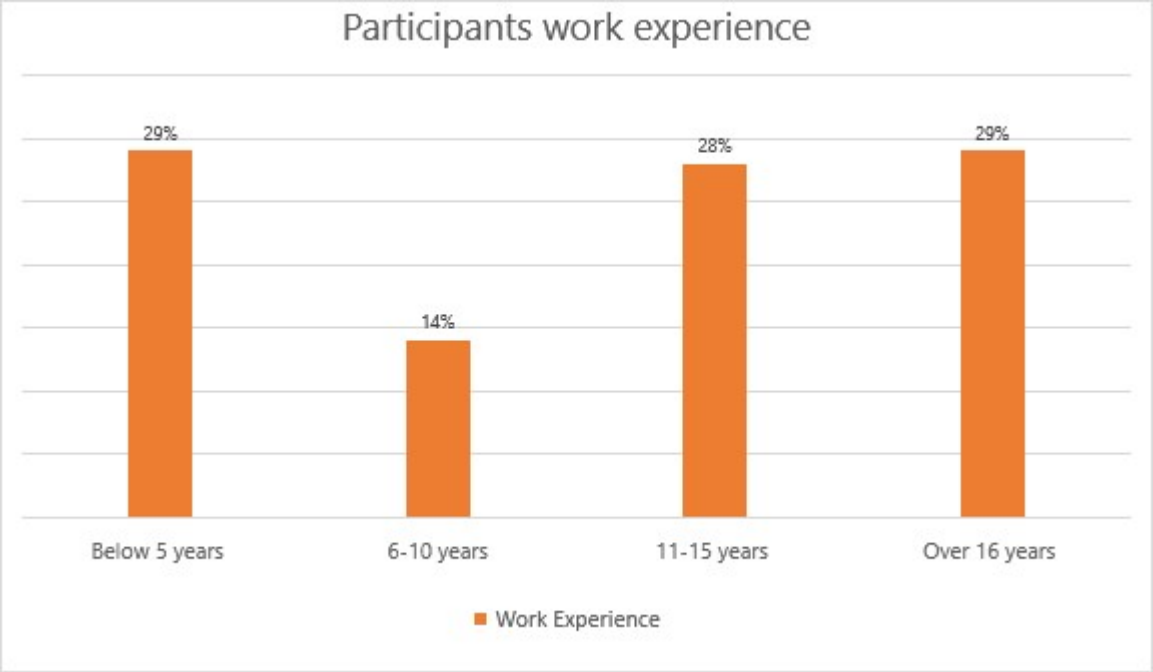
Fig 3 Highest level of education



Source: Primary source

The above findings show that 42% of the participants were degreed, 29% having masters, 14% having masters and the other 14% having a certificate.

4.2.4 Work experience



Source: primary source

The above table shows the participants work experience. 29% of the participants had below 5 years work experience, with 14% having between 6-10 years' work experience. The results presented show that the majority of the respondents about 89% used in this study had more than five years' experience and therefore the study used well experienced respondents. This implies that the study obtained detailed and relevant responses. The respondents had greater depth and understanding of the use of educational transition fund (ETF) science kits in the teaching and learning of Combined Science in Goto cluster in Wedza district Zimbabwe.

4.3 Use of ETF Science kits in the teaching and learning of Combined Science in Goto Cluster

The first objective sought to reveal the use of ETF Science kits in the teaching and learning of combined Science in Goto cluster. The participants were asked to indicate the types of ETF Science kits which were donated in Goto Cluster, the participants highlighted that,

The science apparatus was donated to our school, (T1).

Combined kit of chemistry, biology and physics apparatus and chemicals we received them, (T2).

Science practical kit, (FGD 1 L1).

It is a mixed kit of biology, chemistry and physics apparatus, (FGD2 L5).

The study revealed that the ETF science kits donated to Goto cluster include science apparatus such as combined kit of chemistry, biology and physics. The participants further revealed how ETF Science kits are used in the teaching and learning of combined Science. The participants remarked that,

By doing experiments with learners so that they have hands on, (T3).

The kits are used to conduct hands -on experiments. Because this allows students to explore scientific principles in a tangible and interactive manner, (SA1).

Through practical's, (FGD 1 L3).
The kit is used during practical lessons and we carry out activities in groups, (FGD 2 L6).

The science kits came with so many benefits as indicated by the responses from the respondents.

learners learn through doing practical's, (T1).

The learners understand better through practical's, (T3).

The kits cover a wide range of topics, from chemistry, biology and physics, (SA1).

During the focus group with the learners the learners revealed that,

Learning through doing things is the benefit of having the EFT science kits, (FGD 1 L2).

The kit helped us to a greater extent since we are able to carry out activities, (FGD 2 L3).

The study showed that science kits come in handy as the kits helps in making the practical's clearer. The study findings also revealed that the frequency of use of the science kits is either once a week or usually once a month we carry out an experiment. The study findings are in line with findings made by Monhardt, Spotted-Elk, Bigman, Valentine, & Dee, (2012), who revealed that the merits of using science kits on the grounds that they generate greater active participation among students, empower and engage populations that otherwise feel disenfranchised, promote positive classroom environments, increase teacher content knowledge, increase teacher confidence to teach science, and provide enjoyment for teachers who use them.

4.4 Challenges faced by the schools in Goto Cluster in the utilization of ETF Science kits.

The study indicated that there are various challenges that are faced in Got cluster in the utilization of ETF Science kits. These challenges are themed as the school-based challenges and the teacher-based challenges.

4.4.1 School- based challenges

The second objective revealed the challenges faced by the schools in Goto cluster in the utilization of ETF Science kits. The school-based challenges faced in the utilization of ETF Science kits were revealed in the below responses,

They lack some of the apparatus needed in experiments, (T1).

No science labs, (T2).

There is need for comprehensive teacher training in the utilization of the science kits effectively. Educators may require professional development to effectively integrate hands-on science activities into their teaching practices. Without adequate training, teachers may struggle to facilitate meaningful learning experiences using science kits, leading to underutilized or ineffective implementation, (T3).

Learners in focus group discussion 1 revealed that, s*ome apparatus break, there is also shortage of chemicals.* More so learners in FGD 2 concurred that, the apparatus are not adequate they are not permitting individual work. Also, indicating that there is lack of adequate

resources and funding for science education schools may struggle to procure and maintain sufficient science kits and equipment, limiting students hands-on learning experiences.

The above findings du Plessis & Mestry, (2019), rural school encounter many obstacles that significantly impact the quality of education they deliver Among these challenges, limited school resources are one of the most substantial. This limitation encompasses inadequate funding, remote geographical locations, oversized classrooms, and high learner turnover rates

4.4.2 The teacher-based challenges

The findings of this study also revealed that there are teacher-based challenges faced in the utilization of ETF Science kits, these were indicated in the below verbatim quotes,

> *Lack of knowledge on how to use the apparatus, (SA1).*
>
> *Breaking of apparatus by learners, is a huge problem which needs to be taken into consideration, (T1).*
>
> *Integrating science kits into existing curriculum is a challenge for teachers. Rigid curriculum requirements and time constraints may limit the opportunities for hands-on experimentation and exploration facilitated by science kits, impacting their effective utilization in the classroom, (T2).*
> *Learners may struggle with understanding the instructions, science concepts and terminology presented in the science kits, (T3).*

Learners added the learner-based challenges,

> *Most teachers are not able to use the science apparatus, (FGD 1 L3).*
>
> *No science trained teachers, (FGD1 L4).*
>
> *Limited time since the use of the apparatus need more guidance and support especially to new students, (FGD 2 L8).*

The above findings are in sync with findings made by Moyo & Ndlovu-Gatsheni (2019), who indicated that, the overall, despite the noble initiatives, funding for infrastructural development has significantly dwindled. Previous research has shown that the impact of the presidential

computer donations in Zimbabwe faced challenges such as a lack of teacher training, inadequate infrastructure, and a lack of technical support.

4.5 Strategies used to improve the usage of ETF Science kits in teaching and learning of Combined Science.

The last objective sought to reveal the strategies used to improve the usage of ETF Science kits in teaching and learning of combined Science. The study participants were asked the question to explain in detail what the school can do to improve the full utilization of ETF Science kits,

> *Frequent purchasing of chemicals, (T1).*
>
> *Providing comprehensive professional development for educators is crucial to ensure that teachers have confidence and content knowledge that is needed to effectively integrate science kits into their teaching practices,* (T2).
>
> *Of most important is the rural electrification whereby technology will be accessible to enhance digital learning, (T3).*
>
> *There is need for science teachers, (FGD 1 L2).*
> *Construction of labs, (FGD 1 L3).*
> *Implementing mechanisms for evaluating and tracking student learning outcomes when using science kits, (FGD2 L4).*

The study findings are in line with findings made by Sithole, (2014), who revealed that, with technology, new opportunities will emerge, educational and economic opportunities will be enhanced, and the quality of life for rural students will ultimately improve.

The study participants recommended that,

> *The chemicals should be frequently given to schools, (T1).*
>
> *Utilize adapted science materials kits that cater to diverse learning needs, including students with disabilities, to ensure that all learners can actively participate in hands-on lab activities, (T2).*

Learners added that,

> *The kit should be given to schools frequently, (FGD 1 L1).*

The ministry to keep on funding schools through these programs to support effective teaching and learning of combined science, (FGD 2 L2).

The study revealed that there is need for various parties to partake in funding the schools with ETF science kits this will enhance the teaching and learning of Combined science.

4.6 Chapter Summary

The presentation of findings, their interpretation, and analysis were the overall objectives of this chapter. Several themes and subthemes were revealed in this chapter these were analyzed using thematic analysis. The next chapter covers summary, conclusion and recommendations.

CHAPTER FIVE:

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This study sought to assess the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe. In this chapter findings and contributions of this study by focusing on summaries of previous chapters is provided. Conclusions and recommendations are presented in this chapter, which includes areas for further research or studies.

5.1 Summary

This section provides a summary of the research findings in presenting key scholarly and empirical findings. More so, this section of the study attempts to answer all the research questions satisfactorily. The major aim of the study was to assess the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe. The study was structured along the following research questions:

1. How are the ETF Science kits being used in the in the teaching and learning of Combined Science in Goto Cluster?
2. What challenges are being faced by the schools in Goto Cluster in the utilization of ETF Science kits?
3. What strategies can be used to improve the usage of ETF Science kits in teaching and learning of Combined Science?

The researcher used a qualitative research approach as it sought to assess the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe. This study, was a case study in which requisite data was gathered on the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science.

5.2 Conclusions

The below are the major conclusions drawn from the study,

5.2.1 The ETF Science kits being used in the in the teaching and learning of Combined Science in Goto Cluster.

The study revealed that the ETF science kits donated to Goto cluster include science apparatus such as combined kit of chemistry, biology and physics. These kits are utilized to conduct hands -on experiments, because this allows students to explore scientific principles in a tangible and interactive manner, the kit is used during practical lessons and we carry out activities in groups.

The study findings also revealed the benefits of using the Science kits in teaching and learning of combined science, these include helping the learners learn through doing practical's, the kits cover a wide range of topics, from chemistry, biology and physics, also, learning through doing things is an advantage as abstract concepts will be made easier.

5.2.2 Challenges are being faced by the schools in Goto Cluster in the utilization of ETF Science kits.

The study indicated that there are various challenges that are faced in Goto cluster in the utilization of ETF Science kits. These challenges are themed as the school-based challenges and the teacher-based challenges. The school-based challenges revealed were that they is lack of some of the apparatus needed in experiments, no science labs, lack of qualified teachers, breaking of apparatus by learners and it is a huge problem which needs to be taken into consideration.

The study also revealed that there are teacher-based challenges which include, the lack of knowledge on how to use the apparatus, integrating science kits into existing curriculum is a challenge for teachers. Rigid curriculum requirements and time constraints may limit the opportunities for hands- on experimentation and exploration facilitated by science kits, impacting their effective utilization in the classroom, learners struggle with understanding the instructions, science concepts and terminology presented in the science kits, most teachers are not able to use the science apparatus and there is no science trained teachers.

5.2.3 Strategies can be used to improve the usage of ETF Science kits in teaching and learning of Combined Science.

The study revealed that there is need for comprehensive teacher training in the utilization of the science kits effectively. Educators may require professional development to effectively integrate hands-on science activities into their teaching practices. Without adequate training, teachers may struggle to facilitate meaningful learning experiences using science kits, leading to underutilized or ineffective implementation. The study also revealed that there is need for construction of labs, and implementing mechanisms for evaluating and tracking student learning outcomes when using science kits.

5.3 Recommendations

5.3.1 General Recommendations

From the research findings, the researcher recommends the following to improve the usage of the ETF Science kits in the teaching and learning of combined science.

To government:

The government of Zimbabwe to keep on funding schools through these programs to support effective teaching and learning of combined science. The kit should be given to schools frequently.

To the schools:

The schools should utilize adapted science materials kits that cater for diverse learning needs, including students with disabilities, to ensure that all learners can actively participate in hands-on lab activities.

5.4 Suggestions for future research

Since this study looked at the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science in Goto Cluster in Wedza District Zimbabwe only, there is need to also look at the same in other districts across the nation this will yield considerable results that can be used to generate considerable recommendations.

References

Baghdady A & Zaki O (2019). *Secondary education governance in sub-Saharan Africa*. Doha, Qatar: World Innovation Summit for Education.

Bukaliya, R., & Mubika, A. K. (2012). Factors militating against the introduction of computer education in secondary schools. *Journal of Education and Instructional Studies in the World, 2*(3), 56-68.

Ganyani, K. (2015). Bringing technology to rural schools in Zimbabwe. Retrieved from http://www.alightzimbabwetrust.org/alight/index.php/19-main/111-bringing-technology-to-rural-schools-in-zimbabwe.

Gomba, C. (2016). Transforming rural secondary schools in Zimbabwe through technology: Lived experiences of student computer users. International Online Journal of Education and Teaching (IOJET), 3(2). 108-120.

Kabweza, L. S. M. (2012). Every Zimbabwean child should be computer literate.

Konyana, S., & Konyana, E. G. (2013). Computerization of rural schools in Zimbabwe: challenges and opportunities for sustainable development: The case of Chipinge district, south-east Zimbabwe. *African Journal of Teacher Education, 3*(2).

Mandoga, E., Matswetu, V., & Mhishi, M. (2013). Challenges and opportunities in harnessing computer technology for teaching and learning: A case of five schools in Makoni East district. *International Journal of Humanities and Social Science, 3(1), 105-112.*

Mayring P. (2000). *Qualitative content analysis, Qualitative Social Research,* 1(2), retrieved on Dec 28, 2013.

Mncube, D.W., Ajani, O. A., Ngema, T., & Mkhasib, R., G. (2023). Exploring the problems of limited school resources in rural schools and curriculum, management. UMT Education Review, 6(2), 01-31.

Miles M. B and Huberman A. M. (1994). *Qualitative data analysis: an expanded sourcebook, 2nd ed.* Sage Publications, California.

Mestry R, Du Plessis P & Shonubi O., K (2017). State funding in selected African countries: Implications for access to public education. In E Shizha & N Makuvaza (eds). *Re-thinking postcolonial education in sub-Saharan Africa in the 21st century: Post-millennium development goals*. Rotterdam, The Netherlands: Sense.

Monhardt, R. M., Spotted-Elk, N., Bigman, D., Valentine, D., & Dee, H. (2012). It's about people: A successful school/university partnership. *Winds of Change, 17*(1), 14-17.

National Research Council (NRC). (2016). *National Science Education Standards*. Washington, DC: National Academy Press.

NRC. (2010). *Inquiry and the National Science Education Standards: A guide for teaching and learning.* Washington, DC: National Academy Press.

Nudzor H., P (2015). Taking education for all goals in sub-Saharan Africa to task: What's the story so far and what is needed now? *Management in Education*, 29(3):105–111.

Tilak J., B., G (2019). Editorial: Basic education and development in sub-Saharan Africa. *Journal of International Cooperation in Education*, 12(1):5–17.

Patton, M. Q (1990). *Qualitative Evaluation and Research Methods*, (2nded) Sage Publications Newbury Park, California.

Siegel, M. A., & Ranney, M. A. (2013). Developing the changes in attitude about the relevance of science (CARS) questionnaire and assessing two high school science classes. *Journal of Research in Science Teaching, 40*(8), 757-775.

Sithole, T. (2014). Bringing technology to rural schools In Zimbabwe. Retrieved from http://www.globalgiving.org/projects/bringing-technology-to-rural-schools-in-zimbabwe/updates/

UNESCO Institute for Statistics & UNICEF (2015). *Fixing the broken promise of education for all: Findings from the global initiative on out-of-school children*. Montreal, Canada: UNESCO Institute for Statistics.

Yin, (2019). *Case study research and methods.* Beverly Hills: Sage Publications.

APPENDIX A: INTERVIEW GUIDE FOR SCIENCE TEACHERS AND HEAD OF DEPARTMENTS.

I am **Francisca Mutsetse**, a student at the Bindura University of Science Education, carrying out a study entitled, **ASSESSING THE USE OF EDUCATIONAL TRANSITION FUND (ETF) SCIENCE KITS IN THE TEACHING AND LEARNING OF COMBINED SCIENCE IN GOTO CLUSTER IN WEDZA DISTRICT ZIMBABWE.** Kindly assist by answering the interview questions. This research study is purely for academic purposes only and information assembled from this interview will be treated with utmost confidentiality and no names of respondents will be reflected anywhere.

Section A: Demographic details

1. Participant gender.

2. Age range participants.
   - Below 23
   - 23-29
   - 29-34
   - Above 40.

3. What is your highest level of education?
   - Primary level
   - Secondary level
   - Certificate
   - Degree

4. What is your work experience in your line of work?
   - Below 5 years
   - 6 – 10 years
   - 10 – 15 years

   Over 16 years

Section B: How are the ETF Science kits being used in the in the teaching and learning of Combined Science in Goto Cluster?

1. What type of ETF Science kits were donated to your school?

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…….

2. Explain how you use the ETF Science kits in the teaching and learning of combined Science? Why do you use them that way?

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……

3.What benefits/advantages of the Kits?

……
……
…….

Section C: What challenges are being faced by the schools in Goto Cluster in the utilization of ETF Science kits?

1. Give details on the school-based challenges faced in the utilization of ETF Science kits?

……
……

2. What are the teacher-based challenges faced in the utilization of ETF Science kits?

……
……..

3. Explain why there is so much hinderance in the utilization of the ETF Science in your school?

……
……
……..

Section D: What strategies can be used to improve the usage of ETF Science kits in teaching and learning of Combined Science?

1. Explain in detail what the school can do to improve the full utilization of ETF Science kits?

……
…….

2. What recommendations do you have with regards to the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science?

……
……..

Thank you for your cooperation!!!!!!!!!!!!

APPENDIX B: FOCUS GROUP DISCUSSION FOR LEARNERS

I am **Francisca Mutsetse**, **(B225379B)** a student at the Bindura University of Science Education, carrying out a study entitled, **ASSESSING THE USE OF EDUCATIONAL TRANSITION FUND (ETF) SCIENCE KITS IN THE TEACHING AND LEARNING OF COMBINED SCIENCE IN GOTO CLUSTER IN WEDZA DISTRICT ZIMBABWE.** Kindly assist by answering the interview questions. This research study is purely for academic purposes only and information assembled from this Focus Group Discussion will be treated with utmost confidentiality and no names of respondents will be reflected anywhere.

1. What type of ETF Science kits do you use when learning Combined Science?
2. What is the Frequency of use of the science kits??
3. Explain how the ETF Science kits are used in the teaching and learning of combined Science?
4. How have the kits benefited you?
5. Give details on the school-based challenges faced in the utilization of ETF Science kits?
6. What are the learner-based challenges faced in the utilization of ETF Science kits?
7. Explain why there is so much hinderance in the utilization of the ETF Science in your school?
8. Explain in detail what the school can do to improve the full utilization of ETF Science kits in the learning of Combined Science?
9. What recommendations do you have with regards to the use of Educational Transition Fund (ETF) science kits in the teaching and learning of Combined Science?

Thank you for your cooperation!!!!!!!!!!!!!!!!!!!!!!!!!!!!