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FACTORS INFLUENCING LEARNERS' PERFORMANCE IN ORDINARY LEVEL COMBINED SCIENCE EXAMINATIONS AT MATAGA CLUSTER SECONDARY SCHOOLS

BY

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ABSTRACT

This study sough to explore factors influencing learners' performance in Ordinary Level Combined Science examinations. This study was grounded in interpretivist paradigm and qualitative paradigm. Twenty learners and five teachers were purposively sampled to generate data through focus group discussion and interviews. Thematic analysis was used in interrogating the sourced data. Form the generated data it was revealed that various approaches were used in the Ordinary Level Combined Science learning activities. In addition, some challenges were encountered in Ordinary Level Combined Science learning activities. The research study revealed that the learning approach employed in the learning Ordinary Level Combined Science affect learners' performance in the public examinations. Lastly, from the generated data the participants advanced various strategies that can be used to improve learners' performance in Ordinary Level Combined Science learning activities. From the findings it can be concluded that the learners' performance in Ordinary Level Combined Science examinations. The researcher recommends that teachers adopt the learner-centered approach in the teaching and learning of Ordinary Level Combined Science.

DECLARATION

I, Sisizwa Ntuli, hereby declare that, except for references to other people's work which have been duly acknowledged, this dissertation is the result of my own research and has neither in part nor in whole been presented in any education programme.

Signed: S Ntuli Date: 04.01.22

APPROVAL FORM

The undersigned certify that they have supervised, have read and recommend to the University for acceptance and examination a research project entitled: *Factors influencing learners' performance in Ordinary Level Combined Science examinations at Mataga cluster secondary schools* submitted by Sisizwa Ntuli in partial fulfilment of the requirements for the award of the Bachelor of Science Education (Honours) Degree - Biological Sciences.

Supervisor:  Date: 04.01.22

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DEDICATION

I dedicate this project to my two sons Norman & Michael and daughter Nicole. Without their support and encouragement, this work could not have been accomplished.

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CHAPTER ONE

PROBLEM AND ITS SETTING

1.1 INTRODUCTION

In this chapter, the problem is put into context through the interrogation of the following: background to the study, statement of the problem, research questions, significance of the study, delimitation of the study, limitations of the study, definition of terms, chapters layout and chapter summary.

1.2 BACKGROUND TO THE STUDY

Since the attainment of independence in Zimbabwe in 1980, the government introduced many reforms in the education system (Ncube & Tshabalala, 2014). The new curriculum framework (2015-2022) as grounded in the 1987 Education Act declares education a fundamental right for all the children (Ministry of Primary and Secondary Education, 2015). The declaration of education as a right led the government to craft a policy to pay fees for every child up to grade seven and as a result the education system grew to alarming levels (Zvobgo, 2019). At the same time grade seven examination lost its function of acting as a screening method and learners could now proceed to secondary school regardless of their performance (Chavunduka, 2005). Mapolisa and Tshabalala (2014), echoing the same sentiment states that enrolment of learners increased by over 200% across the entire education system and during the same period the number of secondary schools which were built in the rural areas increased.

To consolidate on the efforts to transform the nation socially and economically through education, the government pushed for implementation of recommendations of the Nziramasanga Commission of Inquiry into Education and Training (Ministry of Primary and Secondary Education, 2015). The new curriculum framework (2015-2022) adopted the some of the Nziramasanga Commission's recommendations that targeted the improvement of Science, Technology, Engineering and Mathematics (STEM) learning process in schools (Chitate, 2016). The STEM subjects are central to the advancement of science and technology aimed at promoting the national economic transformation (Andree & Hansonn, 2013; Anderson, 2014). It is against this background that this study sought to look into factors influence the learners' performance in Ordinary Level Combined Science examinations.

1.3 STATEMENT OF THE PROBLEM

The new curriculum framework (2015-2022) advocates for a learner-centred approach in learning activities in different learning areas (Ministry of Primary and Secondary Education, 2015). Thus, it targets at exposing learners to learning activities that are hands on with the aim to promote the acquisition of competences (Bimbola, & Daniel, 2010). The table below depicts learners' performance in Ordinary Level Combined Science national examinations that were crafted following the philosophy of the new curriculum framework (2015-2022).

Table 1.1 Results analysis of the Ordinary Level Combined Science (2018 - 2021)

Year(s)	Pass Rate (%)
2018	50.3
2019	45.6
2020	33.3
2021	20

A look at the results analysis table above shows a considerable decline in learners' performance in the Ordinary Level Combined Science examinations. This has prompted this study to interrogate this issue guided by the following main question: What factors influence learners' performance in Ordinary Level Combined Science examinations?

1.4 RESEARCH QUESTIONS

From the above main research question the following sub-research questions were adopted:

1. What learning approaches are used in facilitating the Ordinary Level Combined Science learning activities?
2. How are these learning approaches used in facilitating the Ordinary Level Combined Science learning activities?

3. What challenges are faced when these learning approaches used in facilitating the Ordinary Level Combined Science learning activities?

1.5 SIGNIFICANCE OF THE STUDY

1.5.1 Policymakers

From the findings of this research, policies might also be formulated by the Ministry of Primary and Secondary Education in order to upgrade the teaching and learning of the subject thereby increasing the number of learners passing Ordinary Level Combined Science. Curriculum planners can also be guided by the results of this study as to identifying which areas to put more emphasis on in order to improve the learner's performance in science subjects.

1.5.2 Combined Science teachers

Teachers might benefit from this research as they might realize some of the factors which influence poor performance in Ordinary Level Combined Science examinations and find measures to alleviate them.

1.5.3 Learners

Learners might start to might start to appreciate the subject if it is appropriately taught as they will grasp the concepts being taught leading to a notable increase in the number of learners passing Combined Science at ordinary level.

1.5.4 Bindura University of Science Education

The research is important to the Faculty of Science Education as it helps the institution make some contribution to body of education knowledge or to academic circles. The research will provide literature that can someday be used by other students who may want to pursue the same path of establishing factors influencing performance in science examinations.

1.5.5 Researcher

The successful completion of the research will contribute to the partial fulfilment of the degree being undertaken by the researcher. The researcher will acquire relevant skills needed in conducting educational research.

1.6 DELIMITATIONS OF THE STUDY

Ministry of Primary and Secondary Education Midlands Province has the following education administration districts: Gweru, Kwekwe, Gokwe, Zvishavane and Mberengwa. In this study the focus was on Mberengwa District with specific reference on Mataga Cluster. The cluster selected has a total enrolment of eight hundred and fifty-two learners and offers arts, commercial and science subjects from form 1-4. In this study the focus centered on gaining insights into the factors that influence Ordinary Level Combined Science performance in public examinations.

1.7 LIMITATIONS OF THE STUDY

The following are limiting factors encountered when conducting the research:

The findings of the study were affected by participant-based bias. In addition, participants may not be able to provide information that the researcher will be looking for as since they may be busy with their day-to-day schedules. Learners may be uncomfortable in revealing the short comings of their teachers as well as teachers hiding their own shortcomings deliberately. The researcher especially with assured the respondents that their responses would be treated in confidentiality. The freedom of the researcher in generating data was affected by bureaucracy in offices. Some information was not accessed at the school due to bureaucratic nature of the Ministry of Primary and Secondary Education. The Official Secrecy Act prohibited the teachers from disclosing information related to their operations at work. This restricted the teachers from divulging information that was of value to this study. In this regard, the researcher conducted the research within the confines of the research ethics.

1.8 DEFINITION OF KEY TERMS

In this section the following terms are defined contextually:

1.8.1 Combined Science examination

Combined Science examination is high stakes standardised tests on biology, physics and chemistry learnt in a single subject, aimed at achievement of cognitive skills administered at the end of four years of secondary level by external agencies often for the purpose of selecting learners for transition to high level (Bernard, 2009).

1.8.2 Performance

Academic performance is the knowledge gained in Combined Science which is assessed by marks by a teacher and or educational goals set by students and teachers to be achieved over a period of time (Abdullar, 2016).

1.8.3 Ordinary Level

A subject based qualification conferred as part of the general certificate of school examination offered upon the completion of four years in secondary education (Zimbabwe School Examinations Council, 2022).

1.9 CHAPTERS LAYOUT

Chapter one outlines the problem and its setting and will be followed by chapter two which will present literature related to the current study. Following chapter two, chapter three outlines the research methodology which will lead into chapter four in which generated data will be analysed and discussed with the view to provide answers to sub-questions raised in chapter one. Finally, chapter five will articulate an overview of the study leading to the conclusion and recommendations of the study.

1.10 CHAPTER SUMMARY

This chapter provided an overview of the study together with its relevance, in the same chapter the background to the study was articulated, the statement of the problem and three research questions were outlined followed by the significance of the study. The chapter proceeded to highlight on the delimitations and limitations of the study. Furthermore, the key terms to the study were defined. The next chapter interrogates on the review of relevant literature.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

In the previous chapter the problem and its setting were articulated. This current chapter focuses on review of literature by different scholars, which is relevant to the project under study. Literature review is a body of knowledge, current or classical knowledge on a particular issue. This chapter gives a review of the theoretical framework of the study such as the Constructivism Theory and the Motivational Theory of learning. The review of literature on the influences of teaching approaches on performance at Ordinary Level Combined Science will be explored. It is of paramount importance to note that a lot of literature concerning the factors that influence learners' performance at Ordinary Level Combined Science has been written by a number of different scholars. Therefore, in this chapter the researcher is going to deliberate on what other scholars have written concerning the subject under study.

2.2 THEORETICAL FRAMEWORK

The theories below form the lens through, which this study was observed. This section gives interrogates the theories that form the theoretical framework or lens through which this study was observed.

2.2.1 Constructivist

The researcher based this study on the constructivist theory which states that learners build an understanding and knowledge of the world by learning through their individual experiences and observations (Gunduz et al., 2015). Thus, if experiences are poor and limited learners are likely to have poor knowledge of the subject under study (Bimbola & Daniel, 2010). Piaget and Vygotsky's cognitive theories are rooted in the Constructivist school of thought which

emphasises on a learner centered and hands on learning model (Samaresh, 2017). From the above notion it implies that Ordinary Level Combined Science learning activities require practical work, problem solving and practical work. According to Piaget (1977), learning is individual, active, create schemes, assimilate and accommodate all forms of science. Vygotsky (1995), emphasises the social nature of learning thus for children to learn successfully they should interact with their peers in groups such that they can solve difficult problems together successfully through discussions (Sterlink, 2018). Ncube (2013) points out that constructivism is based on the assumption that knowledge is subjective rather than objective as revealed when traditional teaching practices are used. Constructivist approach involves leaners actively constructing new knowledge rather passively receiving information (Barth, 2015) This means that in Ordinary Level Combined Science practical work become most effective when learners learn individually or conduct them in groups whereby, they would be interacting amongst themselves, discussing their observations (Aljohani, 2017).

Learners select information from the past and current knowledge and experiences into their own knowledge and understanding (Pritchard & Woollard, 2015). Learners who adopt constructive learning approach develop critical thinking skills like analysis, synthesis and problem solving in order to create long term understanding (Greeno & Gresalfi, 2008). Olsen cited in Gunduz and Hursen (2015) say that the role of teachers in constructivist-based learning is to be facilitators whose roles include fostering acquisition and retrieval of knowledge as well as creating the learning process rather than products of learning. Learners are urged to be actively involved whilst teachers coach, mediates and helps learners access their own understanding (Hand et al., 2020). Learners would seek meanings on their own rather than teacher-imposed meanings, learners learn by searching for relationships among materials and interprets new data according to previous knowledge and experiences (Loibl & Rummel, 2014). The role of teachers is to engage the learner to learn on their own for higher performance outcomes (Qarareh, 2016). In constructive approach the teacher focuses on adapting the teaching and learning approaches to individual learners and encourage cooperative learning rather than competitive learning (Khan,2017).

2.2.2 Motivational learning

Motivational Theory of learning (Skinner, 1985) postulates that to undertake a task depends on expected reward. Schunk et al (2014) concurs and defines motivation as a psychological trait that contributes to the individual's degree of commitment and include factors that cause learners to focus or sustain behaviour for better performance in learning. The motivational

theory of learning explains how to motivate learners to carry out learning tasks that generally are not interesting (Sartawi et al ,2012). According to Ryan and Deci (2000) in the Self-Determination theory (SDT), successful learning activities motivate learners extrinsically and intrinsically and can enhance performance if activities are dependent on self-determined factors. Baron and Donn (cited in Filgona, et al., 2020) postulates that learners with high levels of motivation have traits such as initiative, diligence and active learning. Motivated learners perform well academically through engaging in behaviour such as studying, question asking and participating in classes, laboratories and study groups (Schunk, Pintrich, & Meese, 2014). This proves the importance of motivational strategies in enhancing learner performance.

The choice of learning approaches used in the leaning and teaching process are guided by the need to stimulate learners and stimulation can be extrinsic or intrinsic for which both are meant to direct and control the learners' behaviour towards achieving desired goals (Latham, 2007). Classical theories and the scientific school of management theory views the school teacher as the determinant of learning and performance through repetitive tasks and incentives for high academic performance (Kapfunde, 2000). Other traditional theories such as Elton Mayo's human relations theory found out that repetition and boredom of many tasks common in traditional teacher centered classes reduce motivation (Nwanko, 2014).

2.3 APPROACHES USED IN FACILITATING SCIENCE LEARNING ACTIVITIES

Arends (2009), defined a facilitating approach as the procedure and actions employed by a teacher to assist learners achieve a particular objective of learning. Ncube (2013) defines a teaching method is a systematic plan used when presenting material for instruction involving interaction between the teacher and learners to realise set goals. The two general approaches used to teach science in schools are teacher centered approach and learner centered approach, with the teacher centered methods being lecture, seminar, demonstration, presentation and brainstorming whilst learner centered methods include discussion, group work, role playing, experimental learning, laboratory learning, field visits and problem-based learning (Muwaya, 2018).

Ncube (2013) elaborates that in teacher-centered classes, the teacher presents a clear explanation and vivid descriptions, assigns and checks if learning interacts effectively with learners through questions and probes, answers and reactions and praise and criticisms. According to Muzah (2011), in teacher centered classes learning is dominated by the teacher

which may imply that instructions may become boring for learners such that the learners may fail to grasp important facts. Cristillo (2010) further alludes that teacher-centered pedagogy is associated with top to down hierarchical pedagogy which reinforces passive learning, rote memorization and hinders the development of higher-level cognitive skills as well as inhibiting successful learning. Chikowore (2012) states that teaching approaches in many schools, remain traditionally teacher centered and rigid or even authoritarian thereby inhibiting successful learning. According to Jabulom et al (2017) poor teaching approaches like the lecture method are facilitated by the use of outdated materials in teaching such as the use of chalkboards for writing of long notes. These methods consume a lot of learners' times leaving them with limited time for learning and understanding (Cristillo, 2010). Further in a study Makgato and Mji (2006) found out that ineffective teaching approaches directly contributes to below par performance in scientific classes in South Africa.

Teacher centered approaches to teaching and learning have received criticism for favouring passive learners rather than active ones in the classroom (Sterlink, 2018). Knowledgeable teachers in the Ordinary Level Combined Science content can effectively present and apply motivational strategies when teaching, learners will be able to maintain their attention, actively participate in the classroom and become academically successful (Kasembe, 2011). Some researchers support the use of teacher-centered approach because it allows teaching learners in short steps (Espenshade & Radford, 2009). Obanya (2012) in a paper presentation confirmed that the average retention rate of learning by lecture method is 5% while that of practice by doing is about 75%. Thus, performance in learners who are instructed by use of teacher centered approaches may be poor when recall and retention is required. Chirume and Chikasha (2014) postulates that teachers should carry the major part of the blame when they become more authoritarian and less human in their teaching approaches and promote rote learning. Findings advanced by Mangwaya, Mangwaya and Tsumele (2006) highlighted that learner participation and varying teaching methods are strategies that could be used to improve learner academic performance. Langat (2015) recommends the use of varied instructional strategies by, the teacher which promote discovery and stimulate learner interest.

According to Samaresh (2017) learner-centered approach to learning and teaching is based on the constructivist approach and involves both learner and teachers constructing knowledge rather than the teacher being the sole creator of knowledge. Further Bhattachanjee (2015) says that learners are expected to translate what they are learning by relating it to prior

knowledge and by discussing it with others. Further Ministry of Primary and Secondary Education (2014) says that the purpose of the new curriculum is to establish some strong scientific, mathematical and technologically oriented learners therefore without the learner centered approaches to teaching the purpose of STEM cannot be achieved. Learner-centered science instruction has become the driver for people, not just as receptacles for cognitive materials (Ministry of Primary and Secondary Education, 2015). The approach centered on learners allow individual learners to make meaning through interactions with each other and with the environment they live in (Tobin, 2012). Learners then investigate the concepts about the environment on their own or in small groups, with the teacher present to keep learners on track and to answer questions (Jena, 2012).

To put it in a simple way, learner centered approaches in Ordinary Level Combined Science learning are based on the idea that learners are engaged in knowledge construction using their experiences and actions (Sterlink, 2018). Dharmaraj (2013) identified five approaches to learning namely; experiential and laboratory learning. If properly implemented in Ordinary Level Combined Science learning activities, learner-centred approaches promote motivation to learn, develop understanding, and facilitates knowledge retention (Sterlink, 2018). Experiential learning as one of the examples of learner-centered approaches, according to allows learners to engage in and reflect on personal experiences related to the course content (Slavich & Zimbardo, 2012). Teachers using experiential method may engage in a research project which allows learners to move out of the classroom to explore and experience the natural environment (Wiek, et al., 2014). Laboratory being an action centered learning method which involves a hands and minds-on approach to Ordinary Level Combined Science learning (Qarareh, 2015). This method is based on the constructivist theory as it allows learners to build new knowledge by actually doing and observing the experiments as individuals or in small groups (Reigeluth & Carrchellman, 2019).

2.2.1 Collaborative learning

Collaborative learning is an educational approach to learning that involves groups of learners working together to solve a problem or complete a task to achieve a common goal with the teacher playing the role of a guide (Laal & Laal, 2012). When learners learn collaboratively in small groups they can challenge and negotiate their attitudes and beliefs thus they may maximise learning (Corvers et al., 2016). In collaborative learning, development of competence is underlined by social interaction of learners with participation and empathy as

critical factors (Barth, 2015). Thus, learners can restructure their understanding of concepts and identify gaps in Combined Science knowledge through interaction and comparisons with others (Slavin & Zimbardo, 2012).

According to Laal and Godsi (2011) collaborative learning is an umbrella term for a variety of educational approaches involving joint intellectual effort by learners and can also be between learners and their teachers. However, most activities in collaborative learning are learner centered, focusing on learner exploration or application of Combined Science with the teacher playing the role of a guide (Gorghiu, et al., 2014). For teachers to fully use collaborative learning, there is need for understanding of learner preferred learning styles. Laal and Ghodsi (2012) argues that group work allows for individual differences so that the learner learns more effectively, thus group work can be organised as follows: all groups working on the same task, each group working on a separate task which contributes to the lesson objective, each group rotating around different activities or each group working on areas chosen by the group. For this approach to be successful in enhancing learning there should positive interdependence, that is all members of the group must cooperate to complete the task (Laal & Laal, 2012). Collaborative learning approach is hinged on individual accountability; thus, each member is accountable for the final outcome and interpersonal skills among learners (Dumitrescu et al., 2014). According to Olteanu et al (2014) collaborative learning involves five principles namely: positive interdependence, individual and group accountability, interpersonal and small groups skills, face to face interaction and group processing of knowledge.

Reviews of studies on benefits of collaborative learning to STEM subjects, have shown that there is a positive impact on performance when collaborative approach to learning is applied (Petrescu et al., 2017). Laal and Ghodsi (2012) in a similar study focusing on Mathematics found out that improving learners' communication and social skills positively impacts on learning outcomes. Some of the benefits of collaborative learning include development of higher-level communication, leadership and self-management skills. There is increased retention, self-esteem and responsibility in learners and exposure to diverse perspectives on concepts of Combined Science (Gorghiu et al., 2014).

2.2.2 Problem-solving

Problem-based learning is a student-centered method of teaching that involves learning through solving unclear but genuine problems (Obanja, 2012). It is a constructivist, learner

focused approach that promotes reflection, skills in communication and collaboration, and it requires reflection from multiple perspectives (Macdonald, 2014). Learners in Combined Science for example are confronted with actual life scenarios or a problem that requires a solution, they analyse the problem, its context and apply deductive and inductive processes to understand the problem and find a possible solution by self-study, experiments and discussion (Etherington ,2011). Knowing Combined Science entails a learner being able to solve particular problems because they have acquired and mastered skills through the learning process, however this learning process may take a long time. (Samuelson ,2011; Avital, 2010).

In problem-solving learners work on problems that is they learn new knowledge by facing new problems to be solved (Valdez & Bungihan, 2019). In support Gorucu (2016) advanced that this approach enables learners to develop skills of finding solutions to problems on their own, develop scientific process skills as well as developing brain storming approach to learning. This approach is much more relevant and effective in science and mathematics classes and is a learner-centered approach in which the learner is an active participant in the learning process (Avital, 2010).

Implementation of problem based active learning in science education positively affects learners' academic achievement, conceptual development and attitudes towards Ordinary Level Combined Science (Tandogan & Orhan, 2007). In problem solving learning approach the teacher can alternate between different methods of presentations, combining different intelligences and providing numerous hands-on experiences and activities (Gorucu, 2016). This has a positive impact on performance of learners since they are active learning strategies which enables learners to become more self-directed in their learning (Valdez & Bungihan, 2019). According to Polya (2011) an important factor for improving learner performance is learner involvement in the learning process. Problem solving approach increases time, energy and effort learners devote to the learning process hence may help improve learner performance (MacDonald, 2014).

Learner centered classrooms may become difficult to control due to behaviour problems (Gorucu, 2016). Mart (2013) states it is the role of good teachers to encourage learners to be active learners and at the same time focus on promoting learners' intellectual and moral development. Intrinsic motivation of learners in learners centered classrooms is the major focus of the teacher which benefits learners to develop their autonomy and encourage them to

make responsible choices (Serin,2018). Learners who use deep learning approach are intrinsically motivated to learn while learners who use surface learning approach only memorises facts without understanding the subject content (D'cruz & Rajaratnam, 2018). Further, Mart (2013) stresses the importance of motivation and argues motivation is a leading factor in educational achievement as long as teachers sustain their commitment to facilitating learning activities.

According to research by Wang et al., (2013) the learning of science curriculum has to shift from teacher centered approach to learner centered approach basing on constructive learning with appropriate content teaching and assessment methods that enhance learner performance. The role of the teacher in the child centered learning is facilitating, mentoring and role modelling for learners (Hsih et al., 2015). Learning and understanding in Ordinary Level Combined Science is a regenerative process requiring active construction of meaning by the learners based on pre acquired knowledge (McLoone & Oluwadun, 2014).

2.4 CHALLENGES ENCOUNTERED WHEN USING VARIOUS LEARNING APPROACHES ARE USED IN SCIENCE LEARNING ACTIVITIES

Petrescu et al (2017) argues that the collaborative approach to learning has a series of limitations. These limitations include disturbing the silence in the classroom, high consumption of time and effort, danger of erroneous information circulating among learners in the group, developing group-addiction on solving learning tasks, encouraging the passivism of some students, danger of covering erroneous investigative trajectories, expenses related to the acquisition of a large volume of teaching materials, emergence of student conflicts (Petrescu, Gorghiu & Draghicescu, 2017).

2.4.1 Time consuming

Yunus and Ali (2013) identified issues such as huge and wide syllabus as challenges that may push teachers to rush into completing the topics listed. Similarly, Ahmad (2013) identified teachers' self-handicapping thoughts, school support, attitude toward Combined Science and negative belief about use of learner centered approach as challenges in how learner approach

learning. In similar views, Halim, Abdullahi and Meerah (2014) discovered that the time allocated for formal teaching and learning science during school hours was inadequate hence presenting a challenge for adoption of learner centered learning and promotion of deep learning. Ekwueme and Merenikwu (2010) in their study observed that some teachers shun interactive activity-oriented methods citing that it is time consuming and do not permit total coverage of the curriculum.

Saleh (2014) in their research discovered that learners have negative attitudes toward learning science because of a very wide and rigid syllabus and secondly there is the adoption of traditional methods of teaching which is still a norm in science teaching in many secondary schools. Thus, learners' adoption of deep learning approaches is hindered as teachers focus on rushing through the syllabus. The constructivist and student-centred learning models are even more difficult to implement in cultures where transmissivity instructional models are pervasive. Donald et al (2006) asserts that a large class is the one in which the learners per educator ratio is very large so that the social and instructional aspects of the classroom environment is affected. Large class sizes will cause the educators not to meet individual attentions needs of each learner, this will have an effect on resources such as textbooks which will not be adequate.

2.4.2 Poorly qualified teachers

While Traditional teaching and learning models can be robust, and it is difficult for the learners and teachers to change their roles (Halim, et al., 2014). Ganyaupfu (2013) says knowledge transmission can only be facilitated by teachers applying appropriate methods of teaching in order to meet specific objectives and level exit outcomes. In a study by Muzah (2011) the instructional strategies used by most science teachers are confined to examination preparation instruction instead of growing capacity of hands-on inquiry in learners. Zakaria, Chin and Daud (2010) brought out that the rote learning is what most teachers employ making the science lessons boring, thus the teaching of Ordinary Level Combined Science in many schools in Zimbabwe is still based on the parrot approach.

Providing and conducting science experiment effectively depends on both teachers' personality and teachers' ability to provide clear examples and applications of knowledge, provision of adequate teaching and learning facilities for science, increasing learners' awareness about the relevance of science in the everyday world and providing effective timetable for teaching science (Halim et al., 2014). Rehman and Haider (2013) argue that usage of effective teaching methods creates motivation in learners. Ahmad (2013) pointed out three teacher related factors that my make it difficult to adopt deep learning in Combined Science that is teacher self-handicapping thoughts, school support and attitude toward the subject content being taught.

2.4.3 Unavailability learning resources

Chikwature (2016) states that in most rural schools there is a serious shortage of both laboratories and the requisite apparatus for proper learning of Combined Science. Many scholars attest to the fact that there is generally a lack of adequate resources in schools internationally (Mwenda et al., 2013; Makgato & Mji, 2006). Studies by Muyambo,2017), compared performance of learners at schools without resources and those with resources and arrived at the conclusion that learners at schools with access to materials performed much better in public examinations. In a study Mafa and Tarusikirwa (2013) linked the absence of adequate apparatus and chemicals to low pass rate in Ordinary Level Biology. The survey of several works from many academics concurs that there is a link between lack of Laboratory apparatus and low performance in scientific subjects, which includes Combined Science (Rudhumbu, 2014). Laboratory work which requires apparatus, is an effective way to increase interest and understanding of the subject content (Amukowa, 2013). Learners in most cases do not learn through hands on approaches because of the lack of the necessary chemicals and apparatus (Mwaba, 2011).

Lack of resources prevents effective learning as the subject content is only represented in theory yet science is a hands-on subject that requires learners to do experiments to better comprehend concepts (Makgato, 2007; Dhurumraj, 2013). There are so many restrictions caused by lack of materials, for example lack of textbooks mean teachers can only give less

extra work for learners to work on their own (Lebata, 2014). According to Yara and Otieno (2010), the availability of instructional materials improves the efficacy of the schools by enabling the learners to achieve well academically. In Zimbabwe, Ordinary Level examination paper three is a practical paper which requires learners to have done a lot of practice in practical work. If learners lack that practice due to lack of resources, the pass rate may decrease (Dhurumraj, 2013).

Ordinary Level Combined Science is mostly still taught using the boring traditional approach using a talk-and-chalk technique which is teacher-centered (Onwu, 1999; The inadequacy of science textbooks, physical infrastructure, and laboratory equipment has led to loss of motivation towards Combined Science and thus poor learner performance. It can therefore be concluded that the same phenomenon could be linked to performance for rural schools in Combined Science for which this study sought to establish. Chavhunduka (2005) identified lack of resources in schools in Zimbabwe due to the fact that most apparatus are imports.

2.6 CHAPTER SUMMARY

In this chapter a detailed review of the theoretical framework of the study was presented on the constructivist and motivational theories of teaching and learning. Factors influencing learners' performance and learning approaches used in facilitating the Ordinary Level Combined Science learning activities were explored. Challenges faced when these learning approaches are used in facilitating the Ordinary Level Combined Science learning activities were also reviewed as well gaps in literature on the topic under study. The next chapter focuses on the research methodology adopted for the study.

CHAPTER 3
RESEARCH METHODOLOGY

3.1 INTRODUCTION

The previous chapter centred on the identification of gaps in the consulted literature that the current study intends to fill. This chapter focuses on the research methodology which was used to conduct the study. The following issues will be discussed: research design (research paradigm and approach), research methods, sample and sampling procedure, data generation procedure, data presentation and analysis procedures, research integrity and chapter summary

3.2 RESEARCH DESIGN

A research design is a structure, plan and strategy to obtain answers from research questions through investigation (Cohen & Marion, 2011). According to Creswell (2014), a research design is a general plan that outlines how the research study will be executed. The importance of having a research design is that it directs the researcher on how to gather the data (Grey, 2014). It is in this context that the researcher selected a research design that entails the and qualitative approach and interpretivist research paradigm.

3.2.1 Research Paradigm

Research paradigm is a model that is based on practices and beliefs that control inquiry within a discipline by offering an outline, lenses and processes in which a research study is accomplished (Kivunja & Kuyini, 2017). Scotland (2012) states that a research paradigm has

many categories namely ontology, epistemology, methodology and methods. An interpretivist paradigm was adopted as the paradigm for this study. The interpretivist approach assumes reality is subjective and differs among individuals thus research participants would not provide general interpretations (Collins, 2010). This means the data collected will not be generalised as it will be based on specific context or viewpoint of a learner, teacher or school (Saunders, 2012). According to Bhattacherjee (2012) the interpretivist paradigm believes that reality is complex and multi-layered and therefore, multiple interpretations can be derived from a single phenomenon to answer a specific research question. The interpretive paradigm enables the researcher to focus on whole experiences of participants in learning Combined Science, thus the research and questions will be guided by the researcher's interest as a practicing teacher (Myers, 2010).

3.2.2 Research Approach

The research approach is a plan or procedures that are followed which span the steps from broad assumptions to detailed methods of data collection, analysis, and interpretation (Creswell, 2014). Hence the qualitative approach was used by the researcher in this study to obtain an in-depth understanding of the issue under investigation. Since the qualitative approach assumes that there are many realities about phenomena it allows the researcher to understand social situations from participants' views (Saunders et al.,2012). The research design takes shape as the data is gathered and there is no need for a research hypothesis at the beginning of the research (Kumar, 2011). The qualitative approach was adopted since it is detailed context based and explores behaviour of humans that is unquantifiable like learner attitude or teacher qualification and skill (Pessu, 2017).

3.3 METHODS

According to Karemba (2014) defines research methods as tools that are used by the researcher in generating data. In this study, the researcher used tools like focus group discussion and personal interviews.

3.3.1 Focus Group Discussion

Chavula (2016) defines focus group discussion as a method of data generation which involves interviewing a group of people with common expertise. Nyasulu (2014) defines a focus group discussion as a planned group discussion with clear specifications of who should form the groups in order to have people of similar traits in groups to maximize discussions.

The researcher chose twenty Ordinary level Combined Science learners from secondary schools in Mataga cluster based on the thinking that they have knowledge and experience pertaining to Ordinary Level Combined Science learning activities. The major issues discussed include: various learning approaches used in Ordinary Level Combined Science, and challenges that may be encountered by learners when participating in the learning activities.

3.3.2 Personal Interview

Personal interviews refer to a set of questions that are asked directly and personally to the respondents (Cohen, 2016). The researcher adopted a semi-structured interview to get information on the factors influencing learners' performance in Ordinary Level Combined Science, from the key informants. The interviews were done on one-on-one basis. According to Anderson (2011), a semi-structured interview is a set of prepared questions which serves as an interview guide. The research questions in chapter 1 were used by the researcher to prepare the interview guide. The most important merit of personal interviews is that it has a high response rate as well as immediate feedback (Creswell, 2014). Saunders et al (2016) pointed out that interviews can be conducted in a short period of time. The researcher chose 5 Science teachers based on their knowledge and experience in teaching of Ordinary Level Combined Science. The personal interviews were facilitated by the personal interview guide used by the researcher. For clarity and to get in-depth data, the structure of the questions would be adjusted as well as capture, both verbal and non-verbal cues, hence the personal interview provided detailed information about the respondents' attitudes, perceptions, personal feelings and opinions (Collins, 2010).

3.4 SAMPLE AND SAMPLING PROCEDURE

According to Mack (2018), a sample is a smaller group of members of a population selected to represent the population. Sampling technique, according to Tuli (2010) is the process of studying the population by gathering information and analysing those data. In this study, 20

learners and 5 teachers were purposively sampled to be the key sources of data needed to provide answers to research questions in chapter one. In selecting the participants purposive sampling techniques were used. In the selection of learner participants, the researcher purposively sampled 20 brightest learners to ensure relevant information is gathered also equal representation of both sexes to eliminate gender bias was considered.

3.5 DATA GENERATION PROCEDURE

On the data generating procedure, the researcher got an introductory letter from Bindura University of Science Education (Department of Science and Mathematics Education). The introductory letter enabled the researcher to seek permission from the responsible authorities to carry out the study on the selected schools from the school. The researcher made some appointments for interviews with the participants over the phone. Personal interviews were made with science teachers, and learners in the targeted secondary schools.

3.7 DATA ANALYSIS

Data analysis is a process of collecting, modelling and analysing raw data to bring out meaningful and useful information suitable for decision making (Steven, 2021; Creswell, 2013). To analyse data of qualitative nature this researcher relied on descriptions or narratives from respondents (Hammersley, 2013). The qualitative research design reveals the attitudes and perceptions of the target audience in this case focusing on the factors influencing performance in Ordinary Level Combined Science national examinations (Mack, 2010). Usually, data analysis involves reduction of accumulated data to a manageable size developing summaries, looking for patterns and applying statistical techniques (Galeto, 2017). The data on each theme was presented in the form of short quotations from the participants followed by the analysis of the data (Dannawi, 2013).

3.8 RESEARCH INTEGRITY

In this study the validity and reliability of research instruments was grounded on trustworthiness and ethical consideration of the study discussed in detail below.

3.8.1 Trustworthiness of the study

Rigour or trustworthiness in a study refers to the amount of confidence in the data collected, interpretation and analysis of this data and methods used to demonstrate quality and standard of the study (Connelly, 2016). Further Collins (2014) points out that dependability of a study is grounded in the ability of the data to stand and be stable over time. To ensure trustworthiness the researcher allowed data to be assessed to check on its credibility,

dependability, generalisability and confirmability. The researcher focused on providing consistent data. Clarity and reality of the study ensured that the researcher was able to produce dependable research.

3.8.2 Ethical issues

Informed consent means research participants know all the information related to the research they wish to participate in (Chinyoka, 2013). All participants were briefed on benefits, harms and other issues about the research. Participants were informed about the study and also received a description on the intended use of data that was collected. Confidentiality of the participants` responses was assured by the researcher to complete the study. Access to the information provided by participants was kept confidentially and under no circumstances was it ever accessible to external people. Cohen and Mariah (2011) ascertain that if privacy is not confidently assured participants may deliberately provide inaccurate data which may compromise the research. Real identities of participants were never revealed anywhere in the research and pseudo names were used where identities of participants were required (Chiromo, 2009). The researcher put into consideration all likely consequences of the research and matched the risk with proportionate benefits (Hammersley & Traianou, 2012). To ensure that the participants are protected from harm the researcher did not coerce or force the participants to get information from them.

3.9 CHAPTER SUMMARY

This chapter set to highlight the methodology that the researcher used to conduct the study. Semi structured interviews were used for data collection and purposive sampling were also used to select the participants for the interviews. The next chapter analyses and discusses the findings of this study.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION

4.1 INTRODUCTION

This chapter analyses and discusses findings from the study under the following sections: demographic characteristics of the participants, approaches used in Ordinary Level Combined Science learning activities, and the challenges encountered when selected learning activities are used in Ordinary Level Combined Science learning activities.

4.2 CHARACTERISTICS OF THE PARTICIPANTS

In this section the demographic characteristics of the selected participants are outlined.

Table 4.1: Demographic characteristics of the selected learners (n=20)

Attribute(s)	(n)	(%)
Sex		
Female	10	50
Male	10	50
Age range (years)		
16-18	18	90
19-20	1	5
Above 20	1	5
Level of study		

Form 4	20	100

From the presented information it can be noted that there was equal distribution of gender as there were 10 males and 10 females. In terms of age, 18 learners (90%) of fall within the 16-18 years age range. One of the participants, (5%), were within the 19-20 years age range whilst the remaining one participant, (5%), falls within the 20 years and above age range. The table also shows that in the level of study, all 20 participants, (100%), were in Form Four during the time of the study.

Table 4.2 Demographic characteristics of selected science teachers (n=5)

Attribute(s)	(n)	(%)
Sex		
Male	3	60
Female	2	40
Professional Qualifications		
Diploma in Education	4	60
Degree in Education	1	20
Teaching experience (years)		
0-5	3	60
6-10	1	20
Above 10	1	20

From the information in table 4.2 it can be noted that of the 5 teachers who participated in the study, 3 were males (60%) and 2 were females (40%). The table also shows that 4 teachers (80%) were Diplomas in Education holders and the other teacher, (20%) being degree holders. The table also shows different experiences of teachers in teaching sciences. It was noted that 3 teachers, (60%), fall within the range of 0-5 years of teaching, one teacher (20%) falls within the range of 6-10 years of teaching and the remaining teacher, (20%) falls in the

range of above 10 years. These levels of experience made it possible to provide different contributions to the study because the teachers had been involved in teaching for some time.

4.3 APPROACHES USED IN ORDINARY LEVEL COMBINED SCIENCE LEARNING ACTIVITIES

This section interrogates the participants' responses concerning the approaches used in Ordinary Level Combined Science learning activities. In line with this issue, one of the selected science teachers highlighted that:

Most of lessons I conduct are teacher-centered, with the lecture method being the dominant one, because in my view, it is one method which allows me to cover much ground as far as syllabus coverage is concerned (Science Teacher 3)

In support, one of the selected learners noted that:

Usually in Science lessons the teacher explains to us science concepts while we are quiet and listening to the teacher. When she is through, she invites for questions she will then ask everyone to explain the concepts to the class and write notes on those concepts on the board for us (Focus Group Discussion Participant 5)

This concurs with Chirinda (2012) who observed that the lecture method is the method that is widely used by teachers across the world and that it can lead to poor performance as it is a passive method of learning. In line with the above statement, another participant revealed that:

We learners cannot dominate the lessons because we do not have the knowledge, we can only know after the teachers have told us (Focus Group Discussion Participant 1)

In support, one of the selected learners revealed:

I find it hard to grasp the concepts that our Combined Science teacher explains to us. I do not think I will pass the subject. I am contemplating on not registering it in the national examinations (Focus Group Discussion Participant 10)

The above findings indicate that although the lecture method is used widely, in the learning of Combined Science, it reduces the motivation as well as conceptualisation, which may pave way for poor learner performance (Fofo, 2015). Butts (2010), alluded that it is not the buildings themselves that are important for effective teaching and learning, but the quality of the processes that occur within the buildings.

When the asked them another teacher-centred method that is used in the learning of Ordinary Level Combined Science, one teacher participant revealed that

In most experiments I use the demonstration method because if I am the one conducting the experiments, I quickly make observations unlike individual experiments whereby most learners find it difficult to follow the procedure due to poor understanding of English language. Normally most learners fail to reach the observation stage /process because of failure to understand English. Unavailability of laboratory equipment is the other reason why I resort to class demonstration (Science Teacher 4)

The other participant highlighted the following:

When doing experiments, we normally arrange our desks in a C-shape so that we all face the teacher and he conducts the experiments whilst we are listening and observing (Focus Group Discussion Participant 9)

The statement indicates that apart from the lecture method, demonstration is another teacher-centred approach that is employed in Ordinary level Combined Science learning activities at selected secondary schools. The main reason for this being lack of time as well as inadequate apparatus.

The employment of teacher-centred approaches in the learning of Combined Science is done contrary to the objectives of the Competence-based Curriculum which is stipulated in the new curriculum framework (2015-2022). No improvement in the performance can be recorded if the teacher-centred approaches persist in the learning of Ordinary Level Combined Science (Ruparanganda, 2012). In this regard, the desire for effective learning has become a force that drives education in the 21st Century (Mupa & Chinooneka, 2015). It was noted, however that learner – centred approach, although they are employed on a small scale in learning activities are conducted in Ordinary Level Combined Science. This was revealed by one learner participant who said that:

In doing Continuous Assessment Learning Activities (CALA), us learners are the drivers of learning because the role of the teacher is just to guide us on what to research and we go and look for the information on our own, make observations and conclusions on our own (Focus Group Discussion Participant 17)

In addition to the above issue, one teacher participant indicated that

CALA is very good as it also encompasses experiential learning. For example, my ordinary level class was excited to view mosquito larva and pupa through binoculars in water samples that they had brought for examination. They actually came to realise that concepts in science relate to their lives (Science Teacher 2)

From the above sentiments, it can be noted that the learner`s performance in Ordinary Level Combined Science examinations can improve when learner-centred such as problem-solving approach are employed. One learner-participant commented that,

Most CALA are problem based, which is very good because despite them being time consuming, they make our minds to open up. (Focus Group Discussion Participant 20)

This statement is supported by the observation below, that, this method ensures learners sharpen and improve their analytical and critical skills as well as becoming observers (Sulaiman 2010). Group work, collaborate learning, according to Stover and Holland (2017) improves communication skills and results in higher academic achievement. One learner had the following to say:

Group work CALA in particular enable us come up with many different ideas and facts, Besides, through CALA makes us to become more self-directed and hardworking as we search for information. To be frank, in the CALA we did the concepts were difficult for me but up and everything become clear (Focus Group Discussion Participant 8)

The learning approaches that are used in learning activities in Ordinary Level Combined Science are factors that affect performance of the conceptualisation and morale (motivation) of learners. This section seeks to present challenges that are encountered the experimental problem solving and collaborative approaches are used in the teaching approach are used in the teaching are used in the teaching and learning of Combined Science. Learner-centred approaches like the experiment method, problem-solving and collaborative approach are selected.

4.4 CHALLENGES ECOUNTERED WHEN USING SELECTED APPROACHES IN ORDINARY LEVEL COMBINED SCIENCE LEARNING ACTIVITIES

This section seeks to present the challenges that are encountered when selected learner-centred approaches are use in the teaching and learning of Combined Science at Ordinary level.

4.4.1 Experimental learning method

From data/gathered, it is clear that experiments are not conducted frequently even though they are done. The only time experiments were done was when the learners were a few weeks to start the ZIMSEC examinations. Moreover, when interviewed one learner participant revealed;

From Form 3, the total number of experiments that we did conduct are less than five. Two of them were conducted two weeks before the ZIMSEC examinations (Focus Group Discussion Participant 10)

In line with that, another learner participant testified:

Up to now I am not confident to carry out an experiment on my own. Thank God, I hear that ZIMSEC allows us to seek for assistance in carrying out the experiments for Combined Science Paper 3. I would rather do that than fail even if some marks will be subtracted for that (Focus Group Discussion Participant 5)

This clearly shows that experiments are done only to prepare the learners specifically for the Combined Science Paper 3 examination which is a practical paper and not to prepare them to be competent to meet everyday challenges in life (Ruparanganda, 2012). In support of the above notion, one teacher participant enlightened:

It is hard to carry out experiments at our school most of the time due to unavailability of science apparatus. When we report the issue to the school authorities, they respond by telling us that the school does not have enough money to buy science equipment. Again, we as teachers, do not have enough know how to carry out experiments. During our time at school, we were not exposed to much of them (Focus Group Discussion Participant 6)

The above discourse indicates that there is a challenge of lack of resources for conducting Science experiments and this supports the assertion made by Najumba (2015) that in effective finding and budgeting cutbacks is seen in the decline of the standards of learners' performance in subjects like Combined Science. Resources such as textbooks may also negatively affect the adoption for learner-centred approaches in Ordinary Level Combined Science learning activities. In addition to the challenge of resources, the response of the teacher participant implies that the teachers are not adequately trained and cannot effectively adopt the experimental approach to improve learner performance in Ordinary Level Combined Science. Tshabalala (2014) advances that the level of teacher training has an effect on teaching and learning of science subjects.

4.4.2 Problem solving learning

Data gathered has shown that problem solving activities is not utilised much as very few lessons and few questions requiring critical thinking are offered to learners. The teachers instead, used exposition method on concepts that require critical thinking and knowledge construction to the learners. In line with that one learner participant contributed by revealing;

Out of the few textbooks that we have, there are not many activities that require critical thinking, analysis and problem solving. If we had them, we would not be struggling even with our CALA (Focus Group Discussion Participant 11)

This implies that learners are not exposed to activities requiring problem solving. One teacher in the focus group admitted that:

The fact that most of our lessons are teacher-centered means that our learners do not develop attributes like critical thinking and innovation and as a teacher you can see that when they are doing their CALA because that I normally when we give tasks requiring such abilities (Focus Group Discussion Participant 4)

The results of this research indicated that textbooks do not contain enough information to help learners. According to Behlol, Rafaqat and Hifsa (2018), such scenario results in schools producing results which are poor. Learners' minds might not be stimulated to think and reason. As such they may not be able to think about solutions to the problems they may face in really life (Ministry of Primary and Secondary Education, 2015). In addition, Matimbe (2014) advances that shortage of instructional materials such as textbooks to use during teaching and learning process affects Ordinary Level Combined Science learners' performance in a negative way as teachers are prompted to use the exposition method in place of the problem-solving method (Chirinda, 2012).

4.4.3 Collaborative learning

The information gathered from the participants has shown that time management is a big challenge in the implementation of learner-centred approaches, particularly group work and that is the reason why most teachers and up using the lecture method. One teacher says that;

I arrange my learners into groups to work on questions on work cards I will have given them but as you know learners do not operate on the teacher's anticipated pace. They tend to quarrel much before they finish discussing and writing down their points. As a result, that may take a lot of time. It may require two to three lessons to deal with group results as all of groups will have to present their findings and analysis to be made (Science Teacher 3)

The above statement was admitted by another teacher participant who responded:

With such a long syllabus, it becomes impossible to conduct many groups works considering we would need some time to conduct revisions and do CALA before the start of the external examinations (Science Teacher 2)

The above responses indicate that time management is a huge challenge in the implementation of learner – centred activities such as collaborative activities. Nelson (2012) advances by mentioning that the most important resource which schools should effectively use is time. This was alluded to by Mupa and Chinooneka (2015) who assert that it is necessary for teachers to manage their time and complete the whole syllabus so that learners obtain enough content to tackle examinations. This is particularly important in Ordinary

Level Combined Science examinations where questions are chosen. The learners may have a wide choice from which to choose questions which are easier to them. In that way their performance may improve.

4.5 CHAPTER SUMMARY

Chapter four presented, analysed and interpreted data generated through personal interviews and focus group discussions. In addition, the researcher attempted to provide answers to the research questions raised in Chapter 1. The next chapter will provide summary of the general conclusion and recommendations.

CHAPTER FIVE
SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter dealt with data analysis and discussion This chapter will centres on the summary, conclusion and recommendations.

5.2 SUMMARY OF THE PROJECT

In chapter 1, the researcher examined the problem and its context with the focus being on the back ground of the study, statement of the problem, research questions, significance of the study, limitations of the study and delimitations of the study as well as definition of terms. Literature review was outlined in chapter 2 and highlights on several researches that were conducted by different other scholars on factors that influence learners' performance in Ordinary Level Combined Science examinations were put forward .The aim of reviewing the researches was to identify the gap in research that needs to be covered by the current study .Chapter 3 dealt with research design ,research approach ,sample and sampling procedure

,methods ,data generation procedure , data analysis and research integrity .The major research findings were outlined in Chapter 4 as follows:

- Both teacher centred approaches and learner centred approaches are used in the learning of Ordinary Level Combined Science in Secondary Schools in Mataga Cluster.
- Teacher centred activities are used more than learner centred activities in the learning of Ordinary Level Combined Science in Secondary Schools in Mataga Cluster.
- The challenges that hinder the adoption of learner centred activities in the learning of Ordinary Level Combined Science in Secondary Schools in Mataga Cluster.

5.3 CONCLUSION

From the generated, analysed and discussed data it can be concluded that the learning approach employed, inadequate time resources and inexperience as well as proper training of teachers are factors that influence learners' performance in Ordinary Level Combined Science in Secondary Schools examinations in Mataga Cluster.

5.4 RECOMMENDATIONS

In connection with the findings, the researcher recommends that teachers adopt the learner-centred approach in the teaching and learning of Ordinary Level Combined Science. It is further recommended that teacher capacity development and development programmes be done to train teachers on how to apply the learner- centred approach effectively .It is recommended that for Combined science to have a strong practical and real life component experimental plots, greenhouses, fish ponds and so on, be established in schools .It is further recommended that textbooks writers include more problem solving activities in their textbooks and the final recommendation is for the responsible authority in schools to prioritize the purchasing of resources necessary for learner-centred approaches like laboratory equipment and textbooks.

5.5 AREAS FOR FURTHER RESEARCH

The researcher proposes that more research be done to find the factors influencing learners' performance in Advance Level Pure Sciences, that is, Biology, Chemistry and Physics.

5.6 CHAPTER SUMMARY

The chapter outlined the summary of the research, conclusion and recommendations. The research also proposed areas for further study.

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APPENDICES

APPENDIX: FOCUS GROUP DISCUSSION GUIDE FOR SELECTED LEARNERS

Introduction

Welcome and thank you for coming forward to take part in this discussion. You have been requested participate because your contribution is appreciated. This discussion is designed to gain insight into your current thoughts and feelings about your experiences as secondary school teacher.

Ground rules

- Only one participate speaks at a time (There may be a temptation to jump in when someone is talking but please wait until they have finished)

- There are no right or wrong answers.
- You do not have to speak in particular order.
- When you do have something to say please indicate by lifting your hand slightly.
- You do not have to agree with the views of other participants in the group.
- Alright, let's begin.

I will give you a couple of minutes to think about your experience in basic education in general and in Ordinary Level Combined Science in particular. Is there anyone who is happy to share with us?

Discussion

1. Identify approaches that are used in Ordinary Level Combined Science learning activities in particular.
2. Explain how these identified approaches are used in Ordinary Level Combined Science learning activities.
3. Establish how these factors affect learners' performance at Ordinary Level Combined Science public examinations.
4. Explain the challenges encountered when selected activities are used in ordinary Level Combined Science.
5. Identify strategies that can be implemented to overcome these challenges.
6. Of all these issues we discussed here, what would you say are the most important ones?

Conclusion

- Thank you for taking part. This has been a very fruitful conversation.
- Your sentiments will be appreciated in this study.
- I wish once again to let you know that any remarks featuring in this study will remain anonymous.

APPENDIX 2 INTERVIEW GUIDED FOR SELECTED SCIENCE TEACHERS

Thank you for agreeing to be interviewed. My study particularly focuses on factors that affect Ordinary Level Combined Science learners' performance at public examinations. I believe you can make a significant contribution with regard to gaining insight into the issue under investigation

I am going to ask some questions; which you are free to elaborate in ways you consider fit. In case you do not feel like answering the question, you are free to say so. I would like to let you know from the start that your personal and school details will not be included in the final report.

1. What do you think are the leaning approaches that are used in Ordinary Level Combined Science learning activities?
2. How are these approaches used in Ordinary Level Combined Science learning activities?

3. How do these learning activities used in Ordinary Level Combined Science affect the learners' performance in public examination?
4. What are challenges encountered when using each of the selected approaches in Ordinary Level Combined Science learning activities?
5. What strategies can be done to overcome the challenges encountered when using some of the learning approaches in Ordinary Level Combined Science?