

BINDURA UNIVERSITY OF SCIENCE EDUCATION

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DEPARTMENT OF SCIENCE AND MATHEMATICS



**THE EFFECTIVENESS OF COLLABORATIVE LEARNING IN THE TEACHING
AND LEARNING OF SCIENCE. A CASE STUDY AT A PRIVATE COLLEGE IN
MASVINGO.**

By

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**A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DIPLOMA IN SCIENCE EDUCATION**

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DEDICATION

I dedicate this study to lovely family and special mention goes to my mother Felistas Chibwe for their being a shoulder to lean on during this painstaking process. Friends were also social support renders through encouragement and guidance. Your support is highly cherished and applaud able. You are my source of vision and strength. Without you I could not have made it. .I love you all!

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CHAPTER ONE

1.1 INTRODUCTION

This study seeks to provide the effectiveness of collaborative learning in the teaching and learning of science. In this first chapter, the actual research problem is spelt out and put into context in the background of the study. This introductory chapter also clearly spells out the significance of the study, research questions, delimitation and limitations of the study. Clarification of terms marked the end of this chapter.

1.2 BACKGROUND OF THE STUDY.

Globally collaborative learning is viewed as one of modern teaching methodologies deployed by teachers or facilitators to maximise learning outcomes. Collaborative learning if properly organized provides motivation to the learners, enables learning and makes learning interesting leading to the achievement of the lesson objectives. Collaborative is believed to put learners on the centre of learning hence learners understand better. However some learners fall behind as the teacher fail to attend all the learners needs and demand serious classroom management skills and it needs serious planning before implementation. However, Collins (2020) revealed that there has been a great debate about which learning style is the best for all students. Some propose that collaborative learning sometimes fall short in meeting the objectives of the learning process especially when learners are of different cognitive developments. Research indicates that there are benefits and drawbacks to each different teaching style in the global sphere of education.

In USA collaborative learning was posing some challenges in the teaching and learning in both primary and secondary schools (Neza 2020). The researcher discovered that slow learners were not participating well during group activities and their performance was not reflecting their effort. In addition to that, fast learners were always dominating in collaborative activities, hence the adoption of personalized learning in order to cater for these differences during the teaching and learning situation. However these studies were only conducted in humanities not

in sciences. Therefore, it is imperative to carry an investigation on the effectiveness of collaborative learning in the teaching and learning of sciences.

In Asian countries, it was noted that, there are many factors which may differ from one student to another such as their attitude, motivation, and self-discipline (Lightbown & Spada, 2016). This makes it difficult for the teachers to effectively plan for their lessons to ensure that all their students reap the required benefits from the lesson. This is especially a challenge for the instructors who are not equipped with the required skills and teaching methods to deal with collaborative learning styles (Ansari, 2023). Most institutions have sorted to address this problem by dividing the classes according to their ages but this does not solve the problem of individual differences. Studies by Collins (2020) have shown that random grouping does not incorporate the level of ability and attainment skills of individual students. This results in various challenges to the teachers who try to give equal opportunities for learning to all the students in the class (Boaler, 2018). This means that it should be closely looked as Collins (2020) once states that, although collaborative learning is a panacea to address the challenges faced in teaching and learning it is not effective in certain learning areas. The researcher therefore seeks to discover the effectiveness of collaborative learning in the teaching and learning of science.

In Tanzania another study by Mayer (2018) reveals that there are advantages associated with collaborative learning even though they are often outweighed by the challenges. These classes provide interesting learning environments because they are composed of a rich pool of diverse skills, dispositions and perspectives. Most importantly, the interactions in these classes enable the students to be more creative and innovative as they learn from each other's unique abilities. However, the difficulties faced by teachers in classes are often numerous and invariably lead to frustrations on their part since they are unable to create a productive learning and teaching environment for their students. Ireson & Hallam (2021) suggest that teachers need to recognize that in collaborative learning learners have different strengths and weaknesses and improve at different rates. Hence a need to find out the effectiveness of collaborative learning in the teaching and learning of science,

Neza (2020) states that, in Africa most classes are comprised of a large number of students, and it is the responsibility of the teacher to control the students and to deliver the lesson effectively. Since the responsibility of taking care of the individual needs of each student lies

on the shoulder of a single teacher, it has become a very tedious process. It has become difficult to administer their lesson plans in a group learning or whole class since every student has a different level of understanding (Northcote 2006). A good example of this is seen when a teacher is explaining a concept in class. The students with a high-ability of understanding get bored as the instructor tries to make further explanations to the students with moderate to low levels of knowledge absorbing capabilities. The most challenging part of teaching in all students in a class is the fact that teachers are expected to guide students at their individual pace, regardless of the proficiency differences. Failure by the teacher to address the needs of every student often makes the active students maintain their active state whilst their more passive counterparts remain passive, with no positive development (Hedge, 2020). There is always a huge disconnection between these two types of students and thus, no progress in learning is recorded. This means that the teacher should employ different teaching methods and techniques to meet each individual student's needs which can prove to be a challenging task, as it is usually not practical, especially with large numbers of students to handle. In most cases, the teachers turn to employ average teaching methods in a bid to achieve a healthy balance in the middle ground. This leaves the slow learners struggling while the academically advanced students get lost since the learning process effectively neglects their needs (Winebrenner, 2001).

Moreover, another research by Mbereko (2020) in Zimbabwe suggested that all learners, including those recognized as gifted, need educational experiences that help them achieve their maximum potential (Burney, 2008; VanTassel-Baska, 2005). Teaching gifted learners in a diverse-classroom has revealed success, but is not consistent in having all learning abilities involved (Tyler, 2016). It is against this background that the researcher seeks to investigate the effectiveness of collaborative learning in the teaching and learning of science as a case study at one secondary school

1.3 STATEMENT OF THE PROBLEM

The pass rate in science subjects is fluctuating year after year due to poor teaching approaches. The new curriculum framework advocates for the shift from teacher centred approach to learner centred approach. This new thrust requires students to interact with each other and with their environment as they participate in the learning activities. It is in this regard that collaborative learning is considered to be the effective teaching approach in many learning areas. None of

the studies expose the effectiveness of collaborative learning in Science learning activities. It is in this context that this study sought to contribute closure of this gap.

1.4 RESEARCH OBJECTIVES

To identify the challenges faced when teaching learners through collaborative learning?

To assess the effectiveness of collaborative learning in the teaching and learning of science

To evaluate the strategies that can be deployed to ensure that collaborative learning is effective.

1.5 RESEARCH QUESTIONS

The present study addresses the following questions:

What are the challenges faced when teaching learners through collaborative learning?

How effective is collaborative learning in the teaching and learning of science?

What are the strategies that can be deployed to maximise the effectiveness of collaborative learning in the teaching and learning of science?

1.6 BASIC ASSUMPTION OF THE STUDY

The study was carried out with the assumption that; the researcher had adequate time for data collection; all stakeholders at the school are willing to participate in the research study and also the participants would cooperate during the investigation; the research would be completed in good time and respondents would be manage to answer and return questionnaires in time.

1.7 DELIMITATION OF THE STUDY

The study was confined to Shingirai College in Masvingo Province, Zimbabwe. Although the district consist of many schools. I delimited my study to Shingirai College because it included science subjects like biology, chemistry and physics which are important subjects with the characteristics that had the potential to provide answers to both the research broad question and

the specific research questions that guided the study. The community is also close to the school since it is an urban area unlike other schools in rural areas where the researcher had to travel long distances. For this study, I delimited the focus of my study to the effectiveness of collaborative learning. Data for this current study will only be generated primarily through a qualitative case study involving interviews, questionnaires with open-ended questions and observations.

1.8 LIMITATIONS

The main limitation to this study was that it was based on a single case. Like any other case study, its findings may, therefore, not necessarily apply to other schools in a similar situation and this posed a threat to the external validity of the findings. This means the findings can only be applicable to the schools in that particular location and not any other. The research could have been compromised by the time allocated since the researcher is also a teacher who will be on duty on weekly working days. Financial problems also limited the researcher to gather information from stakeholders and communicating with necessary participants in the research and buying airtime and data bundles. Respondents had to spare time to answer questionnaires out of their tight schedules. Respondents might be not willing to participate as well in the research study.

1.9 SIGNIFICANCE OF THE STUDY

The study attempts to establish the effectiveness of comparative learning in the teaching and learning of science in Masvingo province in Zimbabwe. It is hoped that the findings of this study will be beneficial to frontline participants in curriculum implementation who include teachers, school administrators, and learners in the area under study and also to other teaching and learning areas under the same situation. This is so because the study will explore experiences, problems and challenges at the school and insights obtained through the study may be useful in attempts to improve the quality of education and the academic performance of learners.

The research findings may also assist policy makers, head of departments and all other stakeholders in their decision-making process. It is also hoped that the findings of this study may, in a special way, add value to the ever-expanding body of knowledge in the field of curriculum implementation, change and innovation. Lastly, it is hoped that the findings of this study may act as an impetus to academics and other curriculum theorists to conduct detailed research on the effectiveness of collaborative learning.

1.10. DEFINITION OF TERMS

Collaborative (or cooperative) learning approach- involves pupils working together on activities or learning tasks in a group small enough to ensure that everyone participates. Pupils in the group may work on separate tasks contributing to a common overall outcome, or work together on a shared task. Cooperative learning is a set of instructional learning method aimed to encourage students to work together on academic tasks.

Personalized learning- is an approach to education that tailors instruction to individual needs and abilities of each student

Group learning- is a situation in which two or more people learn or attempt to learn something together. Bush, Tony, (2014) put it differently, teamwork in learning refers to methodologies and environments in which learners engage in a common task where each individual depends on and is accountable to each other. Therefore Teamwork is a collaborative action within a group of people who share a common goal. It could also be expressed with words such as unity, partnership, alliance and synergy.

Stakeholder – Legotle (2005) a stakeholder is an individual, group or organization who is impacted by the school as an organization and can be within or outside it. These are units which contribute to the activities at the school at all levels.

Poor performance –Collins (2020) states that it is academic results below expectations. Therefore it is the unsatisfactory outcomes in academic performance

1.11 SUMMARY

Chapter one of this research study highlighted the background to the study where important issues to the study were discussed, statement of the problem, research objectives, research

questions, significance of the study, delimitations, limitations and also defined terms used in the study. The next chapter will review related literature on the subject under study.

CHAPTER TWO: LITERATURE REVIEW

2.1 INTRODUCTION

There are many research articles presenting findings about collaborative learning versus individual learning. There are studies supporting cooperative learning styles. This information ranges from non-academic areas to specialty areas in education and includes many different settings, grade levels, and subjects. This chapter refers to earlier researchers who investigated upon the issues surrounding the teaching and learning through collaboration.

2.2 THEORETICAL FRAMEWORK

Team learning model.

Michaelson (2001) originally designed the collaborative-learning model for large college classrooms of one hundred or more students. He theorized that attendance and performance would increase due to peer pressure. He found that cooperative learning resulted in high performance in academics by most of his students. He also saw an increase in attendance when he implemented his team-learning model.

Michaelson believes that the most effective factor in creating group cohesion is the idea of competition. He found that in-group cohesion and competition with out-groups increased good grades for most of his students. He supports that competing with other groups was a main motivator for carrying out schoolwork because most humans strive to be the best when compared to others.

A theory that supports group learning that has different ideas than the team learning model is Lave's situated learning theory. Situated learning is defined as learning as a function of the activity and context in which it occurs. Lave (2020) believes that social interaction is one of the most critical components of learning and that students should practice together to acquire

certain behaviours and beliefs. According to Lave (2020), learning requires collaboration and social interaction.

Situated learning theory is an emerging theory that is particularly applicable to teaching. It combines the important factors of project based learning and problem-solving. In addition, it utilizes domain specific knowledge in that collaborative learning occurs within a given situation. The theory of situated learning has been more fully developed by Brown, Collins, and Duguid (2020). They agree with Lave's ideas about social interaction. They also contend that learning in the classroom is advanced by the social construction of knowledge. Likewise, activities that involve students' use of cognitive tools together aides in the learning process.

Vygotsky presented a social cognition theory that is relevant to this study as well. He first developed this theory to explain the way humans learn language. Later, he applied his theories to all aspects of learning. (Collins 2020) declares that his key points are that cognitive development results from a process where a child learns through shared problem solving with a peer. Social interaction plays a key role in cognitive development.

His ideas explain the way humans learn language only by learning from and practicing with others. Other people's reactions can give meaning to someone's actions. In addition, the action of talking to a peer reinforces the learning that has just occurred. He theorizes that every function of development in a child, including attention, logic, memory, and conceptualization appears first on the social level and then becomes intra psychological. In other words, every facet of learning is first seen as a function of interacting with others, and only after this social interaction is that function an ability of the child alone. Vygotsky hypothesizes that there is a limited span in which cognitive development can be completed, which he calls the zone of proximal development. Full development during this zone depends on full social interaction. And, he believes the range of skill acquired from peer collaboration surpasses what can be obtained alone. Children can accomplish more within groups than they can on their own. Therefore this study will seek to find out the truth between personalised learning versus group learning.

2.3 WHAT CHALLENGES ENCOUNTERED IN THE ASSOCIATED WITH COLLABORATIVE LEARNING?

Group class learning generally refer to classes where learners have a broad range of levels in their achievement and learning. The students in these classes differ in strengths and weaknesses and have different approaches to learning. Different scholars have defined mixed ability group in many ways using the different perspectives gained from different learning environments. Ansari (2023), describes a group class as comprising of not only learners with various capacities but also those that have a broad range of preferences and learning styles. They can also be referred to as a variation of students in their abilities in grammatical knowledge, fluency and accuracy, size of vocabulary, receptive and productive skills working or learning together (Valentic, 2015).

Notably, there are many factors which may differ from one student to another such as their attitude, motivation, and self-discipline (Lightbown & Spada, 2016). This makes it difficult for the teachers to effectively plan for their lessons to ensure that all their students reap the required benefits from the lesson. This is especially a challenge for the Biology instructors who are not equipped with the required skills and teaching methods to deal with mixed-ability classes (Ansari, 2023). Most institutions have sorted to address this problem by dividing the classes according to their ages but this does not solve the problem of individual differences. Studies by Collins (2020) have shown that random grouping does not incorporate the level of ability and attainment skills of individual students. This results in various challenges to the teachers who try to give equal opportunities for learning to all the students in the class (Boaler, 2018).

However, there are advantages associated with teaching in mixed-ability classes even though they are often outweighed by the challenges. These classes provide interesting learning environments because they are composed of a rich pool of diverse skills, dispositions and perspectives. Most importantly, the interactions in these classes enable the students to be more creative and innovative as they learn from each other's unique abilities. However, the difficulties faced by teachers in mixed-ability classes are often numerous and invariably lead to frustrations on their part since they are unable to create a productive learning and teaching environment for their students. Ireson & Hallam (2021) suggest that teachers need to recognize that a class is of mixed-ability because learners have different strengths and weaknesses and improve at different rates. Consequently, instructors in regular classrooms are always put under intense pressure to address the needs of their diverse learners (Mayer, 2018).

Teachers are also faced with the shortage of training programs and strategies to prepare them for such situations at the workplace. These strategies have been crucial and instrumental in ensuring there is success in the learning experiences of the students. The fact of the matter is that most instructors lack the professional development, planning time, or the capacity to consistently implement differentiation (Loiacono & Allen, 2018). Instructors in mixed-ability classrooms need to be afforded continuous training to better manage the challenges of their diverse learners (Butterworth, 2020).

Neza (2020) states that, in Africa most classes are comprised of a large number of students, and it is the responsibility of the teacher to control the students and to deliver the lesson effectively. Since the responsibility of taking care of the individual needs of each student lies on the shoulder of a single teacher, it has become a very tedious process. It has become difficult to administer their lesson plans in a mixed-ability class since every student has a different level of understanding (Northcote 2016). A good example of this is seen when a teacher is explaining a concept in class. The students with a high-ability of understanding get bored as the instructor tries to make further explanations to the students with moderate to low levels of knowledge absorbing capabilities. The most challenging part of English language teaching in a mixed-ability class is the fact that teachers are expected to guide students at their individual pace, regardless of the proficiency differences. Failure by the teacher to address the needs of every student often makes the active students maintain their active state whilst their more passive counterparts remain passive, with no positive development (Hedge, 2020). There is always a huge disconnection between these two types of students and thus, no progress in learning is recorded. This means that the teacher should employ different teaching methods and techniques to meet each individual student's needs which can prove to be a challenging task, as it is usually not practical, especially with large numbers of students to handle. In most cases, the teachers turn to employ average teaching methods in a bid to achieve a healthy balance in the middle ground. This leaves the slow learners struggling while the academically advanced students get lost since the learning process effectively neglects their needs (Winebrenner, 2021). Moreover, another research by Mbereko (2020) in Zimbabwe suggested that all learners, including those recognized as gifted, need educational experiences that help them achieve their maximum potential (Burney, 2008; VanTassel-Baska, 2015). Teaching gifted learners in a diverse-classroom has revealed success, but is not consistent in having all learning abilities involved (Tyler, 2016).

2.4 THE IMPACT OF DIFFERENT LEARNING STYLES.

There are some studies that have been conducted wherein the results support on personalized learning styles over cooperative learning styles. Researchers have found that the cooperative learning style may hinder some parts of learning or specific people among the groups in collaborative learning situations

Jenkins and O'Connor, (2023) review the research on cooperative learning for students with learning disabilities. This comprehensive review included different academic areas such as math, writing, and reading. The results suggest that peer assistance and group learning may not be beneficial to students with learning disabilities.

Some disabled students had trouble keeping up with regular education students. The reading requirements were too high for those with a learning disability, but not for nonlearning disabled students. This difference hindered the group learning experience. Only 4% of the learning disabled students participated in cooperative learning groups with success. (Jenkins & O'Connor, 2023)

Next, a study by Crooks et al, (2023) investigated the effects on interactions, attitudes, achievement, and practice time for students with access to learner-controlled options. The students working in groups spent longer practicing and did not achieve higher scores than independent learners. (Crooks et al, 2018) A peer rating system was designed to account for individual performance in two sophomore level chemical engineer courses. These students were required to work in cooperative learning groups. Each team member rated how well his or her teammates performed. The results from this study indicate that many students formed dysfunctional teams. Some students were rated as doing little work while other students were observed doing most of the work. (Kaufman & Felder, 2020)

A different experiment was performed using cooperative learning in three fifth grade classrooms. The students were separated into groups of eight to create an art project. The results may indicate that group learning hinders their creative process.

Furthermore, rights to ownership were challenged. (Aukerman, 2017) Lastly, the impact of individual feedback was compared with the impact of group feedback on achievement, attitudes, and behaviour in cooperative learning groups. Fifty-six eighth grade students worked in heterogeneous cooperative learning groups for an eleven-week period. Participants received

either individual or group feedback in written form on how frequently they engaged in praising, supporting, asking for help, and exchanging information. Individual feedback was more effective than group feedback in increasing students' achievement, motivation, influence, and uniformity. Individual feedback resulted in more positive relationships among group members. In addition, individual feedback created more positive attitudes toward subject matter, the teacher, peers, and themselves. (Archer-Kath, Johnson, and Johnson, 2024) Non-Academic Areas of Group Learning Investigations have taken place where non-academic areas of learning were examined. Cooperative learning seems to be beneficial in areas other than education, such as in the training of office workers, military personnel, and nurses.

First, a class of naval air traffic control trainees participated in a cooperative learning environment for their training. This class was compared to fifty other classes who were trained in an individual learning environment. Two examinations about technical information were given. Also, attitudes and verbal communication were observed and reported. The cooperative learning condition resulted in greater learning of information, greater independent functional ability, and a zero-failure rate. There were also more favourable ratings of the instructor in the cooperative learning environment. (Vasquez et al, 2023). In addition, observations were made of team navigation in a large naval vessel. This study involved distributed activities in small groups. The results revealed some individual errors along with successful detection and correction of these errors. The cooperative system enabled multiple perspectives for error detections. The distributions of knowledge across each team insured a low system output error. (Seifert & Hutchins, 2022)

Research was performed on the learning that people achieved during co-op work placements. This was a longitudinal study that began with a survey of recent graduates from college. Then, interpretive methods were used during one-on-one interviews with the workers. Results support that that learning is a social process and that the environment of the workplace and the co-workers are critical to shaping the particular learning that the workers can achieve. (Eames, 2020)

Magney, (2017) researched the effects of cooperative learning on the attainment of technical information. He reports that the best size for any classroom, educational or otherwise, is relatively small. He presented a number of activities that were successfully organized and affective when done in groups. He felt that his students benefited from small group work and that his students were able to grasp more difficult information when they were working in small

groups. Skills in communication, conflict resolution, and decision-making were also some of the cooperative learning benefits. Furthermore, he felt that cooperative learning is emphasized much more today in the work place, so these skills are important to attain. (Magney, 2017)

Tyson, (2024) explores the importance of experiential learning in facilitating the transition of new graduates into the work place. She found that creative, cooperative programs aided the people entering their jobs. She believed that the roll of diversity and teamwork supported students entering the American work force under such economic conditions. (Tyson, 2024)

Choi et al, (2023) studied the self-efficacy beliefs from individuals in 169 training groups attending a workshop for their jobs. They define self-efficacy as a significant predictor of goal setting, effort placed in a task, behavioural choices, and performance. They examined the degree of change in participants' job-efficacy before and after the cooperative workshop. The results support that a group-learning climate facilitated job efficacy both on the individual level and cross level processes (Choi et al, 2023). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

Furthermore, Chen, (2022) performed a study to determine the preferred learning styles of students based on gender. The study analysed the preferred teaching styles of teachers as well and compared them to the students' preferences. The population studied consisted of teachers and fourth-year nursing students and the Chung-Hua Institute of Medical Technology in Taiwan. Reid's perceptual learning style Preference. Questionnaire was used on sixty-six teachers and sixty-six students. A one-way ANOVA and Tukey's HSD tests were used to analyse the data. The results support that students 'least favorite learning style was individual. Furthermore, teachers reported using groupwork as their most preferred teaching style. (Chen, 2002)Lou, Abrami, and D'Apollonia (2021) performed an extensive meta-analysis on the empirical research done on small group versus individual learning when students learn using computer technology. 122 studies were quantitatively synthesized totaling 11,317 participants in all. Weighted least squares univariate and multiple regression analysis were used to analyse the data. Results indicate that small group learning was significantly more beneficial, on average, than individual learning. Small group learning positively impacted students' individual achievement, task performance, and affective outcomes (Lou et al, 2021)

Group learning has been examined in many academic areas. It has been supported in its effectiveness in different subjects of learning. These school subjects include math, reading, language, sciences, and more. Whicker et al, (2017) investigated the effects of cooperative learning in a mathematics class. Students in one pre-calculus class learned in cooperative groups while students in a separate pre-calculus learned the same material independently.

Students in the cooperative learning group had significantly higher chapter test scores than the students in the independent learning group. Furthermore, a student survey revealed favourable responses from the cooperative learning group. (Whicker et al, 2017). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning.

In a study pertaining to a biology laboratory course, student's preformed cooperative group learning. The results support the effectiveness of the cooperative learning style. The biology students were encouraged, active, and student directed.(Colosi & Zales, 2018)Next, a longitudinal study was performed on chemical engineer students over five consecutive semesters. These students were taught in a cooperative learning style and compared to students in an individual learning comparison group. The students' who learned cooperatively outperformed the comparison group on retention, graduation, and pursuance of advanced study in the field. (Felder et al, 1998). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

Chang and Mao studied the difference between cooperative and individual teaching methods on earth science students. The findings supported the use of cooperative learning methods. Improvement in student achievement was observed at higher-level cognitive domains. (Chang & Mao, 2019) Cooperative learning was also examined in a literature based reading classroom. Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

The experimental results support cooperative learning for literature-based projects. The students reported literary growth, boosted confidence, and developed social skills after the study. (Renegar & Heartling, 1993)Next, a study was conducted to examine students studying health sciences in a cooperative learning environment. The findings support that a sense of

community and cooperation enabled risk taking. A connected understanding of health science concepts followed the group learning instruction. (Lundeberg & Moch, 2015). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

A group of grade school students was taught mathematics using the cooperative learning method. Their individual test scores were compared to grade school students who learned mathematics individually. The classes that used cooperative learning contained students who scored much higher on their individual tests (Shaw et al, 2017). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

In addition, 170 physical therapist students participated in a study comparing lectures to group learning. Course grades were found to be higher in the group learning sections than those in the lecture sections. (Lake, 2021). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning.

Lopata, Miller, and Miller (2023) investigated the teachers' view of cooperative learning. They surveyed 142 exemplar teachers to see the frequency of use and the attitudes about the cooperative learning style of teaching. In addition, Lopata et al examined the individual characteristics of each teacher to locate an association with relative use of group learning in the classroom. They found that many of the teachers reported using cooperative learning in their classrooms. Also, the analysis indicated an association between the high frequency of using group learning with high participation in staff development for cooperative learning. (Lopata et al, 2023). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning.

Some experiments that have been performed using college and graduate school students. These studies support the advantage of using cooperative learning among younger and older adults who are still in school. A meta-analysis was performed on undergraduate science, mathematics, engineering, and technology courses since 1980. This analysis demonstrated that various forms

of group learning were effective in promoting great academic achievement, favourable attitudes toward learning, and increased persistence. (Springer, 2019) Next, 107 students who were freshman athletes were required to participate in night study sessions. The students completed academic assignments and studied together in cooperative learning groups. Later, three questionnaires were given to a sample of fifty of the student athletes. The responses reported the students felt highly task oriented, confident of their academic ability, and involved in positive relationships with their peers. Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

(Dudley et al, 2017). Students enrolled in an on-line master's program participated in virtual team learning. This study found that collaboration on-line is effective in accomplishing group tasks. In addition, the results present the leadership role to be shared among team members. (Johnson, 2022). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

Another investigation was designed to evaluate learning processes and productivity during individual and cooperative clinical education experiences. Clinical instructors and students were engaged in an individual-learning working experience. Patient care, administration, and teaching were examined. Questionnaires were used to evaluate the teaching and learning processes. The same information was provided to a comparable group engaged in a cooperative learning experience. Findings showed instructors in both experiences had to reduce their levels of productivity to supervise students. The students, however, compensated for this reduction. The productivity gains in cooperative learning were greater. (Ladyshevsky et al, 2018). Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

Finally, 576 introductory psychology college students were placed in one of two separate conditions. The control group took their examinations individually while the other group of participants completed their tests with a partner from class. Exam performance was significantly higher when students worked cooperatively compared to those who worked alone. The cooperative team testing had a robust effect size of .80 (Zimbardo et al, 2023) In addition to higher test scores, the students who worked in teams also reported many positive feelings

during and following the work. These participants felt less test anxiety, more confidence, and increased enjoyment of the course and subject matter. Furthermore, the teamed students reported an attitude of irrelevance to cheating on their exams. Therefore this study seeks to find out if this is true by providing a comparative of group learning versus personalised learning

2.5 THE STRATEGIES THAT CAN BE DEPLOYED TO MAXIMISE THE EFFECTIVENESS OF COLLABORATIVE LEARNING IN THE TEACHING AND LEARNING

Collins (2020) states that within the educational institutions at all levels, bringing about improvements in every student learning is regarded as one of the major goals. To achieve this goal, improvements need to be brought about in the teaching-learning processes, instructional strategies and create an amiable environment, which would lead to the desired academic outcomes. Neza (2010) states that in order to promote collaborative learning in a well-organized manner and to generate the desired academic outcomes, it is vital to make provision of pleasant environmental conditions within the school as well as home. On the other hand, Mazara (2020) revealed that it is vital on the part of the students to inculcate the traits of diligence, resourcefulness and conscientiousness to enhance their academic performance. The teachers and the students need to form amiable terms and relationships with each other.

Another study by Mbereko (2020) revealed that to bring about improvements in collaborative learning, it is necessary to put into practice various strategies. These are, making improvements in the instructional strategies, teaching students to examine their own data and setting of the learning goals, establishing a clear vision of the school-wide data use, making provision of support that foster the data-driven culture within the educational institutions, putting into practice the assessment strategies and creating an amiable environment (Student Assessment, 2011). Mbereko added that one of the most important areas that need to be taken into consideration is, the educators need to make improvements in the instructional strategies and provide assignments and tests to the students at the end of each lesson plan in all subjects. On the other hand, it is vital for the students to be regular in the implementation of academic tasks.

Mangwio (2020) declares that educators are required to gain a deeper understanding of the learning needs and requirements of every student. For this purpose, they are required to collect the information from multiple sources, such as, annual state assessments, interim districts and school assessments, data on the basis of the performance of every student within the classroom

and other relevant data (Student Assessment, 2011). When the data collected is appropriate, the students perform well, then the educators believe that the teaching-learning processes are being carried out in a well-organized manner and the instructional strategies too are appropriate. Whereas, the students are also working diligently and resourcefully. On the other hand, Mbereko (2020) added that when the students are unable to render an effectual performance, then improvements need to be made. One of the important ways is the development of hypothesis by the teachers in terms of the factors that improve student learning and ways to make improvements in the instructional methods to enable the students to achieve the academic goals.

Mazara (2020) is of the view that the instructional methods are considered to be of utmost significance in bringing about improvements in learning and academic outcomes of the students. There are different types of instructional methods that are put into practice by the educators, based upon the standards of education and the needs and requirements of the students. Mangwiro declares that normally, students learn better, when the teachers provide verbal explanations of the concepts. Whereas in others, students prefer taking notes regarding the concepts, which they can learn and acquire an efficient understanding. The assessment of the instructional methods is clearly depicted in the academic outcomes of the students. When the academic outcomes are deficient, then the educators possess the viewpoint that modifications need to be brought about in the instructional methods to suit different needs of learners.

Collins (2020) reveals that the educators are required to explain the content knowledge to the each student in a proper manner. In some cases, concepts in the books are not clearly explained and the students need assistance from the educators to explain them the concepts. Collins added that providing explicit articulation of the content knowledge is regarded as one of the important strategies that improves student learning. In this case, there are two areas, which need to be taken into consideration. The educators are required to possess effective communication skills and adequate knowledge. They should be prepared to provide solutions to the problems experienced by the individual students.

According to Shumbayaonda (2011) when learning takes place, the educators need to provide students with the tools and materials, which may facilitate their learning. These include technology, hand-outs, notes, and stationary items. For instance, when the students are learning

how to make some type of handicraft or an artwork. Then there are some materials, which they are given by the educational institutions or the training centres, whereas, others, they have to provide themselves. When they are learning how to do fabric painting, then cloths and designs are provided to them in schools, whereas fabric colours and brushes, they have to provide themselves. Hence, provision of tools and materials by the educational institutions is also regarded as one of the ways that would facilitate collaborative learning.

Mangwiro (2020) states that when the students are lacking in their performance in class or are unable to acquire a better understanding of the concepts, then teachers need to provide them feedback. The main purpose of feedback is to identify the weaknesses and encourage students to improve upon them. The feedback needs to be provided in a constructive manner. Constructive feedback helps the students develop motivation and identify the limitations in their performance. The teachers need to help them understand their weaknesses and suggest the ways that would bring about improvements. Feedback is usually given in the form of remarks or grades, the remarks may be in a written or oral form. The educators normally put the remarks in a written form on the worksheets or exam papers of the students, so that they are able to learn well from feedback.

2. 6 CHAPTER SUMMARY

This chapter discussed some literature which was found to be relevant to collaborative learning. The next chapter will discuss the methodology that was adapted for this study to find out the effectiveness of collaborative learning in the teaching and learning of science.

CHAPTER 3: METHODOLOGY

3.1 INTRODUCTION

This chapter describes the procedures that are to be followed in data collection. The following aspects are considered in this chapter: research paradigms, research design, sampling procedures, population and instrumentation. The researcher will focus on how the methods and instruments are used as well as their merits and demerits.

3.2 RESEARCH DESIGN

Kothari (2014) defined research design as the structure of collecting and analysing data in a format that targets to achieve the main of the study. This is the conceptual framework through which the research is conducted. According to Creswell (2022) it acts the blueprint guiding the one carrying the study especially in collecting the required. It tells what the researcher is going to from the first step to the last step. The study is a qualitative experimental case study to be carried out at a private college in Masvingo province in Zimbabwe.

According to Merriam (2019) a case study design gives a detailed analysis of a sample under study. When using the case study design the researcher obtained information from observations and complied documents of the group under study. In carrying out the research the teacher used experimental research design which was used to answer casual effects. The experimental design enabled the teacher to meet the objectives of the study.

3.3 RESEARCH APPROACH

Collins, M (2020) states that research approach is a procedure or step by step plan with data collection instruments to carry out a study. This study adopted both qualitative used to provide effectiveness of collaborative learning. Open questions were used to collect data from teachers and learners. Interviews were given to teachers from the science department and form three learners.

3.4 Population

A population is a group of interest to the researcher, the group which she would like the results of the study to be generalized (Vhirimo, 2019). The researcher will use the teachers and learners at one private college in Masvingo province in Zimbabwe as the population. The population comprised of 20 teachers and 530 students. Therefore gathering information will be easier. The teachers were also considered because they are the ones who teach learners.

3.5 SAMPLING PROCEDURES

Bhathasara, Chevo and Changadeya (2023) describe a good sample as one that is representative of the population from which it was selected. The researcher will use the Form 3 classes as the chosen sample since all the classes of the school could not be used due to limited time. In sampling the researcher will use stratified procedure to ensure that all sub-groups in the population are represented in a sample. In support of this Gall, et al (2016) says “stratified sampling involves selecting a sample so that certain sub-groups in the population are adequately represented in a sample. This method allowed every member of the population to have an equal chance of being chosen to be in the sample. Random sampling restricts against selection bias and the results will apply to all pupils.

The researcher carried out the research with 20 form 3 learners from the population by choosing them randomly. The researcher used random sampling because it is possible to estimate the sampling error because of the population size and sample which are known. The sample error is the discrepancy between a sample statistics and the population parameter. Every member in the group has an equal chance of being selected

3.6 RESEARCH INSTRUMENTATION

The research used various instruments in collecting data. Frankel and Wallen (2016:583) define

instruments as any device for systematic collecting data. Instrumentation is the whole process of collecting data. This being the case study the instrument used is interviews, observations and questionnaires.

3.7 QUESTIONNAIRE

In this research questionnaires are going to be used. Information will be obtained from teachers to responds to asked questions. A questionnaire is a device of collecting information whereby the respondent answers in writing to the specific questions asked (Vhirimo 2019). Therefore it is a method of collecting data by asking questions or asking them to agree or to disagree with Statements representing different points of views. Questions maybe open-ended or close ended. In this research the researcher used a open type of question which respondents are flexible.

3. 8 INTERVIEWS

Waller (2022) defines an interview as a formal way of asking questions so as to discover the unknown of the area of study. The researcher will have some interviews with the teachers, and learners. These interviews are going to be randomly done so as to avoid bias.

Advantages

Interviews gives are reliable as the researcher communicates face to face with the clients at hand. The researcher will also ask anything which he or she feels is not clearly explained. Interviews are also easy to carry out.

Disadvantages

They cannot cover a large number of population therefore they need much time to carry them. Gwarinda (2021) states that interviews do not give enough space for the client to recall what he know or experience and sometimes the client might be afraid to share the information because of self-protection and privacy to the society.

3.9 OBSERVATION.

Creswell (2022) states that observation is a research instrument that can provide first-hand

information. According to him, rather relying on what the respondents say, the researcher is capable of getting first-hand information through observation of the situation or phenomenon under study. The main advantage is that the researcher is capable critically look deeply into the situation. In this study the researcher will observe the learning process in order to find out the effectiveness of collaborative learning

3.10 DATA PRESENTATION AND ANALYSIS PROCEDURES

Creswell (2022) maintains that data analysis refers to interpreting the findings of the study in order to discover the thematically aspects in the information. In terms of Data analysis method, the researcher gathered the data and grouped it into themes as coding process (Marlow, 2021). It is important for the researcher to breakdown the data into small units that can be easily interpreted to convey themes in relation to the study objectives and research questions. The data collected will be analysed and presented in tables, frequencies and charts. This is where the researcher found the effectiveness of collaborative learning in the teaching of science. Data will be presented in narrative and in numbers, logically organized following the order of research questions

3.11 ETHICAL CONSIDERATIONS

Ethics are guidelines or principles which are imposed by researchers upon themselves so as to clarify how they can conduct their professional duties as researchers. This is a code of conduct or a rule indicating what is right or wrong in the professional practice of a particular profession. Lie (2018) defines ethics as Science of morality. Ethics are enforced to protect the research profession. Informed consent was an ethical consideration observed where researcher obtained a letter from her learning institution which helped him to seek permission to carry out the study. Primarily ethical clearance will be obtained from the school head.

Conducting research in young people is fraught with practical and health pitfalls (McIlwaine and Data, 2016). According to Lie (2018) careful consideration of how to address people, for instance, how to ensure that individual's integrity is protected and how to show respect for existing social values is of great importance. The researcher will sought consent from all participants to be interviewed.

3.11.1 INFORMED CONSENT

In this study, the researcher sought informed consent from the research. Mungenda (2023) avers that informed consent means that the research participants understand the research process and willingly agree to it. Participants were made aware that the purpose of the research is academic, and as such, their participation is voluntary. Thus, participation in the study was voluntary (Neuman, 2018).

3.11.2 ANONYMITY AND CONFIDENTIALITY

While Makore (2021) posits that the researcher has to protect the anonymity of the research participants and the confidentiality of their disclosure unless they consent to the release of personal information, Tuckman and Monette (2021) postulate that anonymity requires that names or identities of the respondents should not be divulged. Therefore, the researcher conformed to these ethical considerations by assuring respondents that their names would not be published in the write-up but rather, pseudonyms were used.

3.12 CHAPTER SUMMARY

This chapter looked at research design and research methods chosen. The researcher outlined the data collection producers, data analysis procedures, defined the type of instrument used as well as giving advantages and disadvantages. An attempt to make sure that the information was collected in relation to ethical considerations was provided. The coming section is going to focus on data presentation and analysis.

CHAPTER FOUR: DATA PRESENTATION, INTERPRETATION AND ANALYSIS

4.0. Introduction

This chapter focused on the presentation and analysis of data gathered from participants through lesson observations, interviews and questionnaires. The findings were presented and discussed in themes.

4.1 Demographic characteristics

Findings on demographic characteristics of respondents were considered and can be evidenced below

4.1.1 Gender of respondents

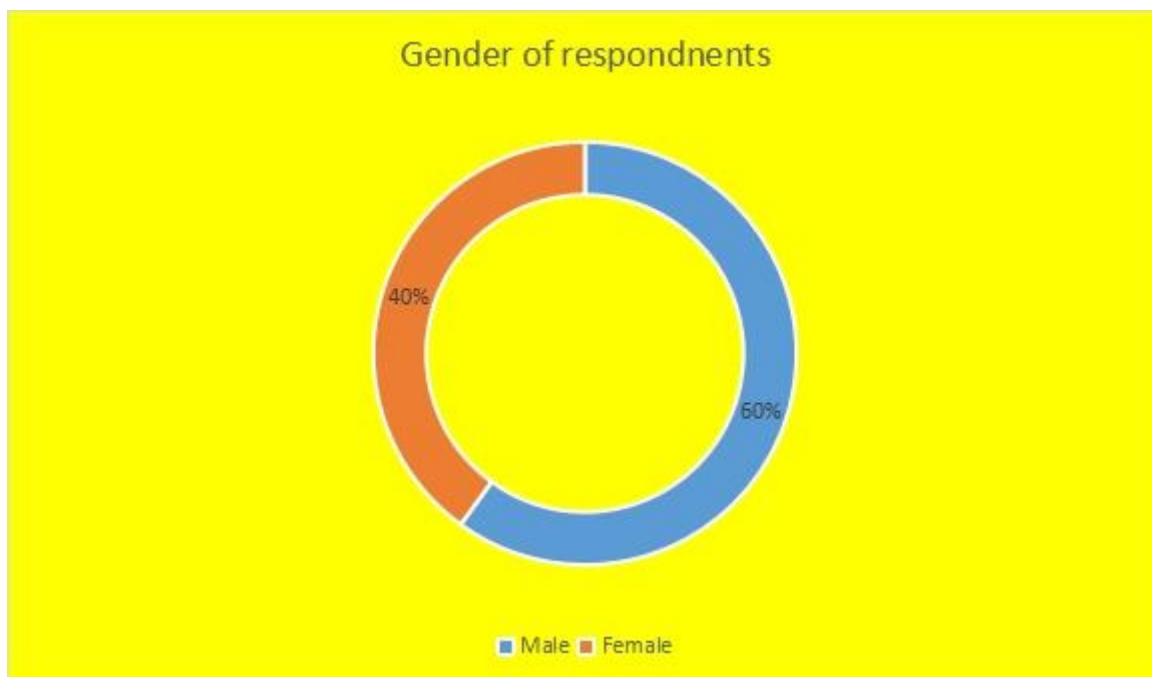


Figure 4.2: Gender of respondents - Source: primary data, 2022

From fig 4.2 above, 60% of the respondents were male and 40% were female. This implies that the study provided responses from both sexes. This agrees with Cresswell (2007) who states that researchers should not be gender bias so that they will have both perspectives.

4.1.2 Level of education of educators.

The researcher was interested in the level of education to find out the skills, expertise and experience of educators. The results are shown in the graph below.

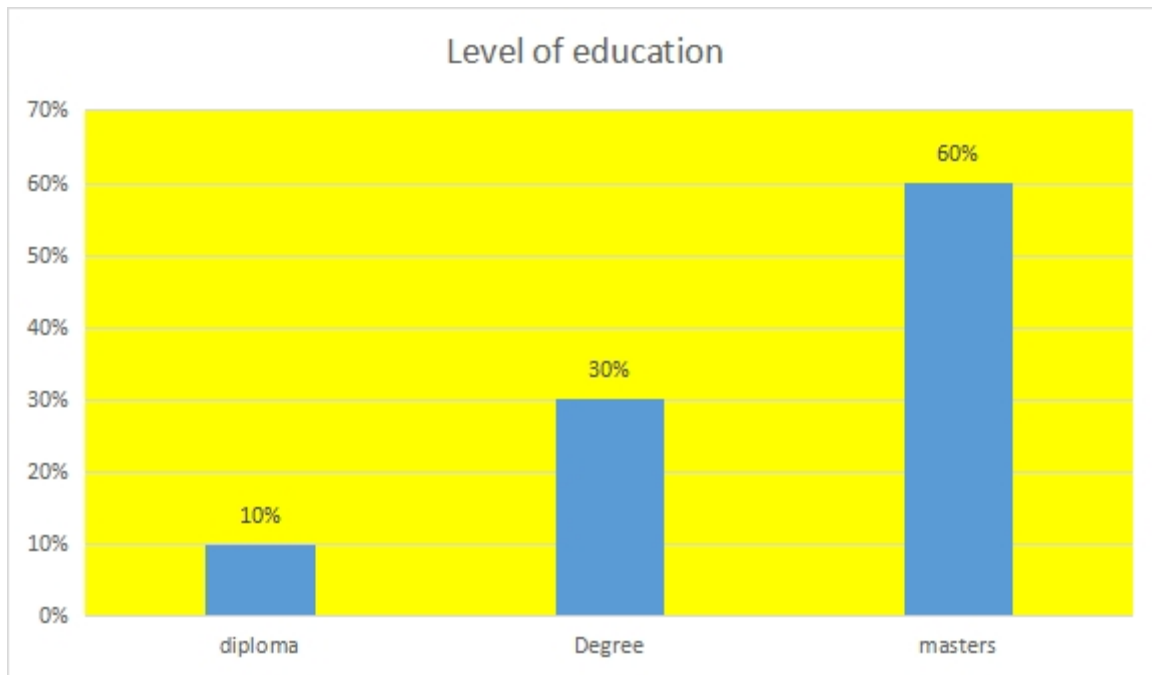


Figure 4.3: Level of education - Source: primary data, 2022

From Fig 4.3, 10% were diploma holders, 30% were bachelor's degree holders while 60% were masters' degree holders. This implies that the respondents had the capacity to answer the questions in the interview guide. Stirring, J. (2001) pointed out that dealing with respondents of different academic qualifications within a particular study provides the researcher with a clear picture of the phenomenon under study as their response will vary in relation to their understanding of the phenomenon

4.1.3 Working experience of educators

The researcher was interested in knowing the working experience of the respondents prior to the study and the findings are shown in the graph below.

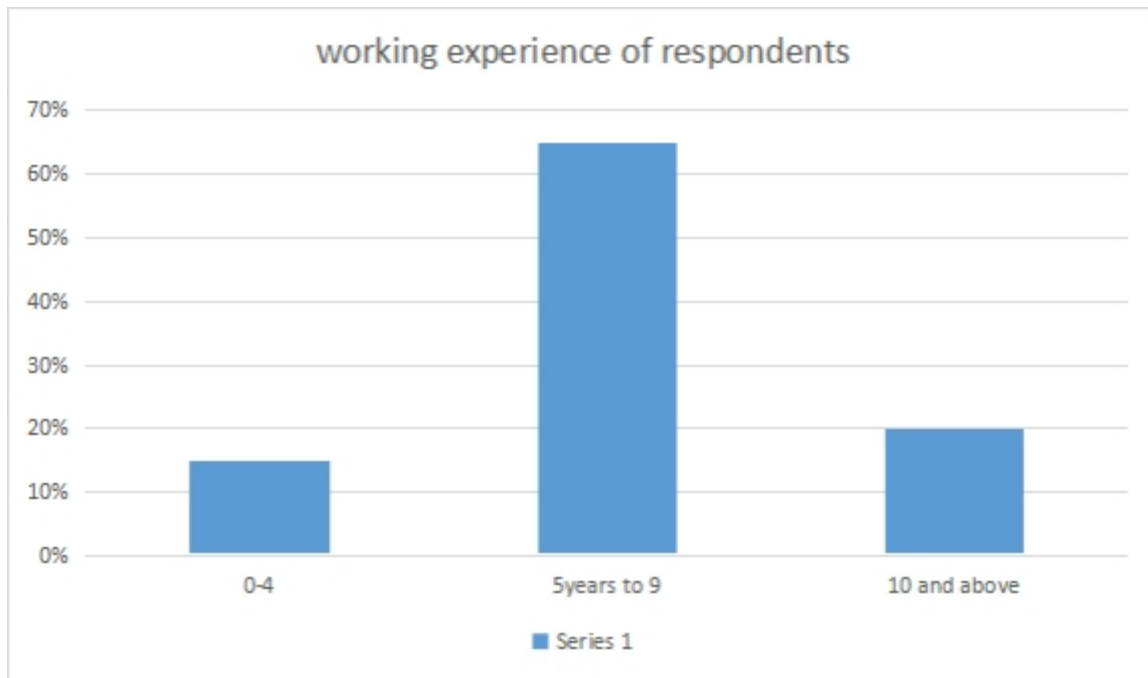


Fig 4.4 working experience of respondents - Source primary data source 2022

Fig 4.2.4 shows the working experience of the respondents and the findings shows that 15% of the respondents have 0 to 4 years working experience, 65% were 5 to 9 while 20% were ten years and above. This implies that most of the respondents were have much experience to answer the questions as supported by Kothari, C.R. (2004) who postulates that the working experience of respondents in an organization contributes to their reflection of knowledge on the subject matter.

4.2. FINDINGS FROM THE RESEARCH QUESTIONS

Questionnaires were distributed to five teachers and interviews were conducted with both teachers and learners. They were all completed and collected. The response rate ensured that the researcher gathered data from the correct sample selected. All questions were answered. The results were presented as themes resulted from the questions on the questionnaire.

4.2.1. What are the challenges faced when teaching learners through collaborative learning?

The participants stated that there were many factors which differed from one learner to another such as their attitude, motivation, and self-discipline. Participant P stated that it was difficult for the teachers to effectively plan for their lessons to ensure that all their learners reap the required benefits from the lesson. His finding is in agreement with Ansari, (2003) who states that this is especially a challenge for the instructors who are not equipped with the required skills and teaching methods to deal with mixed-ability classes.

Participant M stated that the difficulties faced by instructors in collaborative learning are often numerous and invariably lead to frustrations on their part since they were unable to create a productive learning and teaching environment for their learners. It was revealed that instructors needed to recognize that learners in class had different strengths and weaknesses and improved at different rates and this always put instructors under intense pressure to address the needs of their diverse learners. The results showed that teachers teaching in classes were facing a challenges of in the teaching and learning situations. They had challenges in formulating group work activities and written exercises which should cater for individual differences since the learners were working in mixed ability groups. Collins (2020) argues that it is difficult to make certain concept simple so that the slow learners will capture the concept.

The participants also expressed that most classes are comprised of a large number of students, and it is the responsibility of the teacher to control the students and to deliver the lesson effectively. Participant P states that “Since the responsibility of taking care of the individual needs of each student lies on the shoulder of a single teacher, it has become a very tedious process.” Findings from the participants revealed that it had become difficult to administer their lesson plans in group learning since every student has a different level of understanding. Collins (2020) says a good example is seen when a teacher is explaining a concept in class. The results revealed that students with a high-ability of understanding get bored as the instructor tries to make further explanations to the students with moderate to low levels of knowledge absorbing capabilities.

Participant P stated that the most challenging part of teaching in collaborative class was fact that the teachers are expected to guide learners at their individual pace, regardless of the proficiency differences. Participant X revealed that failure by the teacher to address the needs of every learner often made the active learners maintained their active state whilst their more passive counterparts remain passive, with no positive development. This finding is in agreement with (Hedge, 2020) who states that there is always a huge disconnection between these two types of students and thus, no progress in learning is recorded in during collaborative learning with learners of different abilities. This meant that the teacher employed different teaching methods and techniques to meet each individual learner's needs; this was a challenging task, as it was usually not practical, especially with large numbers of learners to handle in collaborative learning. Results from participants indicated that in most cases, teachers turned to employ teaching methods which caters for average learners leaving behind the below and those gifted learners. This left the slow learners struggling while the academically advanced learners got lost since the learning process effectively neglected their needs as alluded by Participant M. This is in agreement with Neza (2010) who reveals that it's very difficult to accommodate learners of different abilities when teaching a concept in collaborative classroom.

4.2.2. The effectiveness of collaborative learning

During the interviews, the participants revealed that collaborative learning allowed them as learners to do effective and productive discussions as they share ideas. According to the Learner F and Learner J, no one will dominate the discussion but everyone will have an opportunity to reveal his or her ideas. This could not be done in personalised learning only the teacher might be dominating.

The participants revealed that, cooperative learning can be achieved through group work, pair work, class discussion and all forms of collaboration during teaching and learning process. During interviews one of the participants was quoted saying

Cooperative learning is a study approach aimed to manage classrooms activities into academic and social learning experiences. Cooperative learning is not merely arranging students into groups but it has been proved as structuring positive

interdependence. Basically, students have a lot of differences, whether in genders, races or learning styles.

The findings exposed that Collaborative learning dissolves all diversities into cognitive, behavioural and social interdependence as they study the map work especially when finding the bearing of a particular palace on the map. Most of the teachers 'argued collaborative learning invokes cognitive interdependence which is a mental state characterized by pluralistic, and collective representations of the self in relationship.

Some of the participants also added that there is behavioural interdependence which refers to the mutual impact that people have on each other as their life and daily activities intertwine. What one person does can influences what the other person is going to do. During lesson the teacher must allow the learners to discuss in their groups. This will allow all the learners to master the concepts. This findings is in line with Vygotsky who considered that the roles of culture and society, language, and interaction are important in understanding how humans learn. Therefore the study findings justify Vygotsky who assumed that knowledge is cultural.

Some of the participants revealed that during the teaching and learning of science, interaction between the learners is key to cooperative learning. It was revealed that parents, adults, caregivers, teachers, and peers play important roles in the process of appropriation in children's learning. One of the participants was quoted saying

Teachers and adults give direction and instructions, comments, and feedback to students. These are not passively received by students because they also communicate with teachers, conveying them their problems or their answers in an interactive manner. Children also use conversations in working with their peers in handling map work exercises, projects, and problems. In this way, they exchange ideas and receive information, thereby they generate understanding and develop knowledge.

The findings above clearly shows that collaborative learning can help in bringing all groups of people who can shape the learners behaviour and academic performance together in the learning process.

Some of the participants exposed that collaborative learning motivates the learners to participate in the learning process by using a media like a video projector which demonstrates how to use various apparatus or carry out an experiment. This finding is in line with Gwarinda (2012) who stipulates that because learners always want to work in groups, the media motivates them to participate in learning process. Shumbayaonda (2011) once also declare collaborative approach accompanied with visual instructional media motivate the reluctant learners hence maximizing the attainment of the lesson objectives in the classroom.

However, the researcher observed that besides being effective in the teaching and learning, cooperative learning needs much planning for it to be effective in science. this findings is in line with Shumbayaonda (2011) who declare that it need serious planning hence time consuming even during the lesson. Most cases some do not work well because of limited time as learners are asked to stop their discussions in the groups before they exhausted their mind. Therefore it is clear that, although cooperative learning have some benefits it needs much time to prepare tasks that enable interaction and successful learning process in the classroom.

4.2.3 What are the strategies that can be deployed to maximise the effectiveness of collaborative learning in the teaching and learning of science

Information obtained from both questionnaires and interviews reveals that, for collaborative learning to be effective it should be accompanied by participatory teaching methods and effective instructional media. According to them the participatory methods are the most effective in the teaching and learning of science for one to understand the concept of the subject and its attributes. It was revealed that these methods stresses the subjectivity of learners and the self-construction of scientific skills. It is a shift from a belief that learners are empty plate who are supposed to be imparted with knowledge (teach concept) to a belief that learners can construct knowledge and learn on their own if properly guided. The participants exposed that the media motivates them to participate in learning

process. This is in agreement with the researcher's findings as she utilised the participatory methods in science experiments.

4.4. SUMMARY

This chapter has presented major findings as revealed by respondents of this study. Findings were presented in accordance with the study's specific objectives and questions. The chapter opens with response rate, followed with the information respondents' age, sex, education level and working experience. This was now followed with answers from findings prior to the research questions.

CHAPTER FIVE

5.0 SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter presented, analysed and discussed the data obtained. This chapter will cover the summary of the study, research based conclusion and the recommendations generated by this study.

5.2 SUMMARY

The research looked at the effectiveness of collaborative learning in the teaching and learning of science. The research was guided by research questions. The researcher, decide to first find out what the related literature say about these research questions. In the literature review, it has been accumulated that collaborative learning is essential for effective teaching and helps learners to master the concepts. The methodology guiding the research was qualitative. The researcher picked on teacher, and students to assist in the research. Questionnaires were designed for teachers and students to give their views and comments as they filled in the questionnaire. Interviews were also conducted with both the teachers, and learners as a way of gathering information. Ethical considerations were also taken into consideration as a way of promoting privacy.

The study revealed that there are many factors which differed from one learner to another such as their attitude, motivation, and self-discipline making it difficult for the teachers to effectively plan for their lessons to ensure that all their learners reap the required benefits from the lesson.. It was also exposed that the difficulties faced by instructors in collaborative learning were often numerous and invariably lead to frustrations on their part since they are unable to create a productive learning and teaching environment for their students. It was revealed that instructors needed to recognize that in a group learning learners had different strengths and weaknesses and improved at different rates and this always put instructors under intense pressure to address the needs of their diverse learners. The study also exposed most classes are comprised of a

large number of learners and it is the responsibility of the teacher to control the students and to deliver the lesson effectively. Since the responsibility of taking care of the individual needs of each student lies on the shoulder of a single teacher, it had become a very tedious process. It was revealed that it has become difficult to administer their lesson plans in a group learning since every student has a different level of understanding.. It was revealed that failure by the teacher to address the needs of every learner often made the active students maintain their active state whilst their more passive counterparts remain passive, with no positive development. This means that the teacher should employ different teaching methods and techniques to meet each individual student's needs; this is a challenging task, as it is usually not practical, especially with large numbers of students to handle. The participants states that in most cases, the teachers turn to employing average teaching methods in a bid to achieve a healthy balance in the middle ground. This leaves the slow learners struggling while the academically advanced students get lost since the learning process effectively neglects their needs.

The study revealed that cooperative learning can be achieved through group work, pair work, class discussion and all forms of collaboration during teaching and learning process. It was revealed that *Cooperative learning is a study approach aimed to manage classrooms activities into academic and social learning experiences. Cooperative learning is not merely arranging students into groups but it has been proved as structuring positive interdependence. Basically, students have a lot of differences, whether in genders, races or learning styles.*

The findings exposed that Collaborative learning dissolves all diversities into cognitive, behavioural and social interdependence as they study the map work especially when finding the bearing of a particular palace on the map. It was revealed that collaborative learning invokes cognitive interdependence which is a mental state characterized by pluralistic, and collective representations of the self in relationship. The study exposed that there is behavioural interdependence which refers to the mutual impact that people have on each other as their life and daily activities intertwine. The interaction between the learners is key to cooperative learning. It was revealed that parents, adults, caregivers, teachers, and peers play important roles in the process of appropriation in children's learning.

The findings exposed that collaborative learning can help in bringing all groups of people who can shape the learners behaviour and academic performance together in the learning process. It was also revealed that collaborative learning motivates the learners to participate in the learning process by using a media like a video projector which demonstrates how to use various apparatus or carry out an experiment.

5.3 Conclusion

In line of the above mentioned findings, it can be concluded although collaborative learning is effective there are many challenges faced in collaborative which may differ from one student to another such as their attitude, motivation, and self-discipline making it difficult for the teachers to effectively plan for their lessons to ensure that all their learners reap the required benefits from the lesson. The teachers should be able to better direct lessons towards the specific ability level of the student in each class and as a result of this, the content, teaching methods, time allocation and student activities such as group work that can be done must then follow personalised learning to help learners to master the content in discussions sharing their experience from personalised learning.

5.4 Recommendations

- The study recommends that teachers to use cooperative learning followed with personalized learning in order to effectively assist both slow learners and fast learners.
- Collaborative learning should be accompanied by participatory teaching methods that keeps the learner engaged.
- Learners should be remediated when they fail to meet the required or targeted goals.
- Teachers should use a variety of instructional media during collaborative learning

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Appendix

Questionnaires for teachers

Good Afternoon Sir/Madam, My name is I am a student at -----conducting a research project /study on the effectiveness of collaborative learning. Please respond to my questions as honestly and fully as you can. I would appreciate your participation in this research. All the information obtained will remain strictly confidential and your answers will never be identified.

SECTION A: BASIC SOCIO-ECONOMIC & DEMOGRAPHIC CHARACTERISTICS.

Gender. of respondents

Female ☐ Male ☐

Age of respondents

Below 20years ☐

21-30years ☐

31-40years ☐

41-50years ☐

Above 50years ☐

Level of education

Secondary ☐

Certificate ☐

A'level ☐

Undergraduate☐

Postgraduate☐

Position in the organisation

School head ☐

Senior teacher ☐

Deputy head ☐

General teacher ☐

Working experience

Less than a year ☐

1-2years ☐

3-4years ☐

Above 5years ☐

Section B

What are the challenges faced when teaching learners with collaborative learning?

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How do the challenges affect the teaching and learning process when using collaborative learning?

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3: What are the advantages of using collaborative learning in the class room?

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How effective is collaborative learning in maintaining higher learning outcome?.....

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What are the strategies that can be deployed to maximise the effectiveness of grouping in the teaching and learning through collaborative learning?

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Observation guide

Learner name	Behaviour in collaborative class	performance in collaborative class

Interview guide.

1. Have ever used collaborative learning in the teaching and learning process?
2. What are the challenges faced when using collaborative teaching and learning process?
3. What are the strength or benefits of using collaborative learning in the teaching and learning process?
4. What are the strategies to improve the effectiveness of collaborative learning in the teaching and learning process?
5. What are the measures that can be used to mitigate the challenges encountered when using collaborative learning in the teaching and learning process?