CLASSROOM MANAGEMENT AND STUDENTS' LEARNING OF PHYSICS

CASE STUDY: SELECTED SECONDARY SCHOOLS IN BUKULULA SUB COUNTY KALUNGU DISTRICT

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Master's Dissertation

Declaration

I have read the rules of Uganda Martyrs University on plagiarism and hereby state that this work is my own.

It has not been submitted to any other institution for another degree or qualification, either in full or in part.

Throughout the work I have acknowledged all sources used in its compilation.

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Date of Submission: 25th/9/2024

Submitted to: School of Postgraduate Studies and Research

DEDICATION

I dedicate this piece of work to my family and friends for all your support during this course.

May God bless them greatly and reward them abundantly.

ACKNOWLEDGEMENT

It would not have been possible to complete this research dissertation had it not been the support and cooperation of so many people. I am particularly grateful to Dr. Sr. Elizabeth Namazzi my supervisor, whose guidance brought me to the completion of this work.

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LIST OF ABBREVIATIONS/ACRONYMS

DV	:	Dependent Variables
IV	:	Independent variables
PBL	:	Problem Based Learning
S/C	:	Sub County
SPSS	:	Statistical Package for Social Scientists
TPACK	:	Technological, Pedagogical, and Content Knowledge

ABSTRACT

This study assessed the relationship between classroom management and students' learning of Physics in secondary schools in Uganda focusing on Bukulula Sub County, Kalungu district. This study was guided by research objectives specifically identified as; to determine classroom management strategies that can enhance the teaching and learning of Physics in secondary schools, to establish the factors that hinder effective classroom management in secondary schools, and to examine the effects of instructional methods on students' learning of Physics in secondary schools in Bukulula S/C, Kalungu District, Uganda. The study demonstrated that management of the class has a great influence on Physics learning outcomes. Strategies like discussion-based activities, role plays and practical experiments were proved successful for students in increasing their understanding and involvement. While the study highlighted some major challenges as the large class sizes, insufficient teaching materials, and environmental disruptions which all pose a threat towards effective classroom management. The study reported that the best classroom management strategies for improving Physics learning outcomes are not the only factor in the system due to the resource constraints and classroom overcrowding which have serious implications. Advising consists of three steps - improving teacher training, enhancing resource allocation, and changing educational policies to support good class management. The findings will be used to explore educational dynamics and develop a basis for secondary school Physics educational improvement within the region.

CHAPTER ONE

INTRODUCTION

1.0 Introduction

The nature of Physics itself presents a number of challenges for students to learn. In addition, Physics is it a natural science that deals with the study of the motion and behavior of matter through space and time. Understanding this concept is known to be a tough job (Najjuma, 2024). The natural difficulties of the subject create a feeling that students are learning a foreign language, though without the aids like science dictionaries that are so helpful in the process of learning a language. This analogy illustrates the hardships students face when they try to understand and interpret Physics ideas that sometimes seem quite counter intuitive and require a high level of mathematical reasoning (Al-Zohbi *et al.,* 2022).

Consequently, being able to excel in Physics involves not just the intellectual rigor, but also the educational context that serves for clarity and engagement. Studies displayed that the classroom atmosphere, which is considerably influenced by the classroom management, is of key importance to students' academic achievements. Effective classroom management extends beyond ensuring discipline in the classroom, it goes as far as creating an environment which fosters active and meaningful learning (Badmus, 2023). This is especially true for Physics education, where students need to work on it in a more advanced level so that they can clearly and completely grasp the content. For example, problem-based learning (PBL) has been shown to be an effective pedagogical practice that can deepen understanding as it situates the learning within real-world situation, thus, making the abstract Physics concepts more tangible and comprehensible (Gumisirizah *et al.,* 2023).

Furthermore, the applications of technology in teaching e.g. through video resources complementing the problem based learning (PBL) lessons have had positive effects on student engagement and performance in Physics. These multimedia resources can offer visual and interactive elements that make bridging theory with practice easier, thus resulting in enhanced understanding and memory of complex concepts (Nicholus *et al.,* 2024). But, along with the mentioned pedagogical changes there is still a problem of utilizing these strategies efficiently in different kinds of classrooms.

Research shows that innovative teaching approaches are imperative for incorporating Physics education in a better way and addressing these challenges. While educators seek to enhance students' performance in Physics, it is both timely and imperative to investigate how to best align classroom management strategies to support Physics instruction (Kaptum *et al.,* 2024). This chapter introduces the background of the study, statement of the problem, general objective, objectives of the study, research questions, scope of the study, significance of the study, the conceptual framework and definition of key terms.

1.1 Background of the study

1.1.1 Historical background

The historical context of students' learning of Physics, particularly in secondary education, has seen a profound evolution over the years (Rameli *et al.,* 2024). Such transformation can be seen in the several educational reforms, training and societal needs shifts that have greatly influenced how Physics is taught and learned worldwide and in Uganda. The formal Physics education can be dated back to the 19^{th} Century, when Physics took a defined form as an independent branch of science. Initially, Physics education was predominantly theoretical, with a focus on classical mechanics, optics, and electromagnetism, heavy on rote learning and memorization (Kidega *et al.,* 2024). The lecture methods were mostly theoretical and put the

students in the audience mode where they passively collected the knowledge with minimum practical exercises.

In the early years of the 20th Century, the necessity for a more practical teaching method of Physics appeared. This change was partly facilitated by the advancements of technology and industry whose rapid growth required the practical use of theoretical knowledge (Kaptum *et al.,* 2024). Schools started to add laboratories and experiments to promote mechanistic learning process. Nevertheless, the distribution of these transformations was uneven as schools located in affluent or city areas received better support than those located in rural areas. The end of the 20th Century initiated the process of bringing modern Physics, quantum mechanics and relativity, into the curriculum. These topics became new problems in pedagogy and learning because of their nature of abstraction and the departure from intuitive classical concept (Nicholus *et al.,* 2024). Teachers had no option other than creating unique teaching techniques which could enable understanding of these complex concepts.

In Uganda, as in other parts of the continent, the late 20th Century and early 21st Century ushered in education reforms for the purpose of improving the quality and relevance of education. The most crucial reform was the transformation towards competency based education which targets development of practical skills in addition to theoretical knowledge in students (Gumisirizah *et al.,* 2023). This method emphasized practical problem-solving, critical thinking, and knowledge application which are all so important in the teaching of Physics. With the advent of globalization and the digital revolution, Physics education was further transformed by offering an extensive variety of learning resources to students and teachers alike.

Online platforms, simulations, and interactive multimedia resources became vital tools in teaching and learning Physics, allowing for more engaging and effective education (Al-Zohbi

et al., 2022). These tools were particularly beneficial in illustrating complex physical phenomena that are difficult to replicate in traditional classroom settings. Despite these advancements, Physics education in Uganda has faced several challenges. Resource limitations, insufficient teacher training, and high student-to-teacher ratios have hindered effective teaching and learning (Badmus, 2023).

Furthermore, cultural attitudes towards science education, particularly among female students, have also affected learners' engagement with Physics (Najjuma, 2024). However, these challenges also present opportunities for innovative approaches to teaching and learning of Physics. For instance, the implementation of problem-based learning and the integration of technology in classrooms have shown promising results in enhancing students' engagement and understanding of Physics (Wambi *et al.,* 2024). These methods encourage active participation and allow students to see the relevance of Physics in solving everyday problems.

1.1.2 Theoretical background

The theoretical framework of this study is rooted in the principles of behaviorism, specifically the theories proposed by Watson (1878-1958), Skinner (1904-1990) and Skinner (1930s). The theory of behaviorism assumes that all behaviors are learned from the environment. They can be learned through classical conditioning, learning by association, or through operant conditioning, learning by consequences. Behaviorism in education, focuses on how people learn through their interactions with the environment (Kurt, 2022). It is based on the idea that all behaviors are acquired through conditioning, which is a process of reinforcement and punishment. According to this theory, adjusting or manipulating the environment of the Physics subject causes students to react in observable ways. In this case, the behaviorist theory considers the subject of Physics to be passive, and student learning as something that happens to them, rather than an active participant in learning (Kurt, 2022).

Behaviorism has a role in teaching in aiding teachers to understand how the environment affects learners' behavior as well as a behavior management tool. In this way, learning is a change in observable behavior that results from students' experience. Skinner's behaviorism focuses on the external behaviors of individuals and the effects external stimuli have on those behaviors. This perspective is particularly relevant to the study of classroom management and its impact on students' learning outcomes in Physics. Behaviorism, as a theory, emerged as a response to the introspective psychology of the 19th and early 20th Centuries, which often focused on the unobservant and subjective aspects of human psychology. Contrary to this, behaviorists argued that the study of psychology should be concrete and objective, focusing only on observable behaviors that could be measured and quantified. Skinner's approach to behaviorism emphasized the role of environmental stimuli and the responses they evoke in shaping behaviors through conditioning (Bani, 2024).

Skinner's concept of operant conditioning is a central element of behaviorist theory, which posits that behaviors are conditioned through a system of rewards and punishments. According to Skinner (2014), behavior that is followed by positive reinforcement will likely be repeated, while behavior that is followed by punishment will likely be suppressed. This theory is directly applicable to classroom management, where the reinforcement or punishment of student behaviors can significantly affect learning outcomes (Tukamuhabwa *et al.,* 2024). In the classroom, positive reinforcement can be as simple as praising students for correct answers or rewarding them with more tangible rewards like extra credit or privileges. Negative reinforcements, on the other hand, might involve the removal of certain privileges or additional assignments as consequences for undesirable behaviors. The use of these techniques can help in creating an environment that encourages disciplined and focused learning, which is essential for subjects that demand such as Physics (Mupa and Chinooneka, 2015).

The application of behaviorism in education has led to the development of teaching strategies and classroom management techniques that emphasize observable and measurable outcomes. Educational practices such as direct instruction, systematic feedback, and the use of educational objectives align well with behaviorist principles. These methods focus on clear, structured lessons where educational outcomes are defined and measured, and feedback is provided based on students' performance (Nicholus *et al.*, 2024). For instance, in Physics education, where concepts can often be abstract and difficult to grasp, behaviorism suggests breaking down information into smaller, manageable units and reinforcing each step as students' progress through them. This method not only makes it easier for students to absorb complex information but also allows for the immediate application of knowledge, thereby reinforcing learning through practice.

While behaviorism has provided a solid foundation for developing effective teaching practices, it has also faced criticism, particularly for its focus on observable behavior to the exclusion of cognitive processes. Critics argue that behaviorism does not account for the internal cognitive processes that influence learning, such as thought, memory, and problem-solving, which are particularly crucial in subjects like Physics. In response to these criticisms, educational theorists have developed models that integrate the cognitive processes with behaviorist principles. These integrative approaches consider students' internal motivations and the cognitive strategies they use during learning, which are important for understanding complex scientific concepts (Kaptum *et al.*, 2024).

In contemporary educational settings, behaviorism has evolved to accommodate new understandings of human cognition and learning. Modern applications of behaviorism in education now often incorporate cognitive and constructivist theories, recognizing the role of student engagement, motivation, and active participation in the learning process. This holistic approach is especially pertinent in the teaching of sciences like Physics, where understanding

and application of knowledge must go hand in hand (Rameli *et al.,* 2024). As this study explores, applying behaviorist principles in the context of Ugandan secondary education, particularly in the teaching of Physics, offers a valuable framework for examining how classroom management strategies impact student learning outcomes. Through a behaviorist lens, this study aims to uncover the relationships between environmental stimuli in the classroom and students' academic behaviors, thereby providing insights into effective educational practices (Lugolole *et al.,* 2024).

1.1.3 Conceptual background

Physics is one of the oldest academic disciplines, categorised as a natural science, whose goal is to understand how everything works at its most fundamental level (Capecchi and Capecchi, 2021). It is a branch of science that deals with the structure of matter and how the fundamental constituents of the universe interact (Capecchi and Capecchi, 2021). For the whole of the 18^{th} Century, the discipline of Physics continued to be called a natural philosophy concerned only with the study of inanimate matter, excluding chemistry. The teaching of Physics as a subject in secondary schools aims to provide students with broad problem-solving skills and to familiarize them with a wide range of technologies and the underlying physical principles.

In exploring the relationship between classroom management and students' learning of Physics, it is essential to understand the dynamics between various elements of classroom management (independent variable) and how they collectively influence the learning outcomes in Physics (dependent variable). The effectiveness of classroom management is pivotal in shaping the educational experiences of students and directly impacts their ability to grasp complex scientific concepts (Kaptum *et al.,* 2024; Madobi, 2019). Classroom management encompasses a range of components including management styles and teaching

techniques, teacher-student ratios, classroom rules, policies and procedures, teacher's content knowledge, and time management. Each of these components plays a crucial role in creating an environment that either enhances or impedes students' ability to learn Physics effectively. The influence of classroom management styles and teaching techniques on learning outcomes cannot be overstated (Tukamuhabwa *et al.,* 2024).

Different management styles from authoritarian to democratic can significantly alter the classroom environment. For instance, a teacher who employs a more interactive, student-centered approach might use problem-based learning (PBL), which has been shown to increase engagement and understanding of complex subjects like Physics (Gumisirizah *et al.,* 2024). This approach not only helps in simplifying difficult concepts but also inculcates a sense of curiosity and problem-solving skills among students. Conversely, a predominantly lecture-based approach might stifle interaction and engagement, potentially leading to lower comprehension and retention rates among students. The technique of teaching, especially in a subject as demanding as Physics, needs to align with pedagogical best practices that emphasize active learning and student participation (Nicholus *et al.,* 2024).

Another critical aspect of classroom management is the teacher-student ratio. Class size impacts the quality of interaction between students and teachers. In larger classes, individual student problems might be overlooked, and personalized instruction becomes challenging (Tukamuhabwa *et al.,* 2024). This can be particularly detrimental in Physics, where students often need tailored guidance to understand complex theories and calculations. Smaller class sizes facilitate better management, allowing teachers to focus more on each student's learning needs and adjust teaching methods accordingly (Wambi *et al.,* 2024).

Classroom rules, policies, and procedures establish the operational norms for behavior and interactions within the classroom. These rules are essential for maintaining discipline and

order, which are prerequisites for any effective learning environment. When students understand what is expected of them and the consequences of their actions, it reduces classroom disruptions and maximizes learning time. For Physics, where laboratory work and safety procedures are integral, having clear rules and policies is even more crucial. Effective classroom management in this context ensures that students are not only safe but also better positioned to engage with the material in a structured and continuous manner (Najjuma, 2024).

The teacher's content knowledge in Physics directly affects the quality of instruction. A teacher's deep understanding of the subject matter can enrich the learning experience, making it possible to break down complex Physics concepts into more understandable segments and to offer real-world applications to theoretical knowledge (Lugolole *et al.,* 2024). This is important in Physics, where concepts often build on one another. Teachers who are well-prepared can anticipate misunderstandings and provide clarifications that are crucial for student comprehension and interest. Moreover, proficient teachers are more likely to implement innovative teaching methods such as simulations and interactive models that enhance understanding of physical phenomena (Lugolole, 2023).

Also, time management plays a pivotal role in the educational process. Effective time management in Physics classes ensures that all necessary content is covered within the curriculum time frame. It also allows for adequate revision and addressing students' queries, which are essential for solidifying knowledge (Muhammad *et al.,* 2019). Time management skills of a teacher help in pacing the lessons appropriately, ensuring that students remain engaged and that sessions do not become overwhelming or too hastily conducted, which is a risk in subjects as dense as Physics (Rameli *et al.,* 2024).

The interaction between these various aspects of classroom management and the learning of Physics is complex and multi-dimensional. Effective classroom management creates an environment that is conducive to learning, where students feel safe, engaged, and motivated to explore the challenging aspects of Physics (Muhammad *et al.,* 2019). On the contrary, poor classroom management can lead to a chaotic learning environment, characterized by misunderstandings and low engagement, which directly impacts students' ability to learn and perform well in Physics. Understanding these dynamics is crucial for educators and policymakers aiming to improve Physics education outcomes. By focusing on optimizing classroom management strategies, the educational sector can enhance the overall learning experiences and outcomes for Physics students in secondary schools, particularly in challenging contexts like those found in many Ugandan schools.

1.1.4 Contextual background

The contextual background of this study is centered on the secondary schools in Bukulula Sub County, Kalungu District, a locale that epitomizes the typical challenges and dynamics of educational systems in rural Uganda. This region, like many other regions in Uganda, faces several educational obstacles that impact the efficacy of teaching and learning, particularly in science subjects such as Physics. Firstly, resource limitations play a significant role. Many schools in the area struggle with inadequate educational materials, insufficient laboratory equipment, and limited access to modern teaching aids such as computers or internet connectivity. These deficiencies not only hinder the teachers' ability to deliver content effectively but also affect students' engagement and ability to grasp complex scientific concepts. As emphasized in studies by Kidega *et al.* (2024), the lack of proper educational infrastructure significantly affects the implementation of competency-based curriculums which are crucial for the holistic understanding of subjects like Physics.

Moreover, the teacher-student ratio in Bukulula Sub County is another critical factor. Overcrowded classrooms are a common issue, complicating teachers' efforts to manage classrooms effectively and pay individual attention to students' learning needs. This situation is exacerbated by a shortage of qualified Physics teachers, which is a significant challenge noted in regions with limited educational funding (Wambi *et al.,* 2024). Teacher preparation and professional development are also concerns. Many teachers in rural Ugandan schools, including those in Bukulula Sub County, often have limited access to continuous professional development and may not be up-to-date with the latest educational strategies or content knowledge in Physics. This gap in teacher education directly affects the quality of Physics education that students receive, as noted by Lugolole (2023) who highlights the importance of teacher content knowledge in enhancing student learning outcomes.

The community and parental involvement in education in rural areas like Bukulula Sub County often vary widely, with many parents unable to support their children's educational needs due to economic constraints or lack of education themselves. This lack of support can lead to lower educational aspirations and reduced student motivation, further impacting learning outcomes in subjects as demanding as Physics (Najjuma, 2024). Understanding these contextual factors is crucial for assessing the relationship between classroom management and the learning of Physics. The educational climate in Bukulula Sub County presents unique challenges that this study aims to address, with the goal of identifying strategies that could mitigate these issues and enhance the learning and teaching of Physics in similar settings.

1.2 Statement of the problem

Over years, there has been poor performance of Physics subject in many secondary schools in Uganda, and in particular in Bukulula Sub County as registered by Uganda National Examinations Board (UNEB). In addition, it has been observed that secondary school students are increasingly becoming disinterested in learning of Physics subject (Al-Zohbi *et al.,* 2022; Gumisirizah *et al.,* 2024). According to the Uganda National Examinations Board report of 2023, candidates continued to struggle in science subjects, with failure rates remaining obstinately high as less than 20 percent of the candidates obtained credit pass levels in Physics, and 40 percent or more were unable to pass. This was in consonance with the statement of Daniel Odong, a UNEB official when he said, that science subjects are still being performed poorly. Yet, research on effective teaching shows clearly that the actual time students spend learning and working on meaningful tasks is one of the key predictors of their learning gains (Lugolole, 2023). Frequently, the available time is also spent on other organizational matters, or on dealing with disciplinary problems and other interruptions. Besides, it is not clear whether classroom management affects students in their efforts to internalize the Physics concepts during the course of learning (Rameli *et al.,* 2024). It is also questionable as to what strategies teachers draw on to enforce classroom management in order to create conducive Physics learning environments in schools (Nicholus *et al.,* 2024). In all educational institutions classrooms are meant to provide learning space where learning can take place uninterrupted by external distractions. However, various distractions emerge from the environment that may lead to reduced attention and thereby results to less realization of instructional objectives among learners. These distracters may be internal factors caused by students and teachers or external ones caused by factors outside the classroom (Muhammad *et al.,* 2019). It is based on the effort to control these distracters that classroom management becomes imperative. Hence, there is the need to assess if there is any relationship between

classroom management and students' learning of Physics. It will further dissolve the degree at which the dependent variable which is students' learning is a function of the independent variable of classroom management and therefore without the two teaming up there will be no much expectation in academic excellence of students in Physics and this will result into low admissions of A' level Physics students and Universities. Therefore, the study was meant to find out the relationship between classroom management and students' learning of Physics in selected secondary schools in Bukulula Sub County, Kalungu district.

1.3 General objective

The general objective of this study was to assess the relationship between classroom management and students' learning of Physics in Bukulula Sub County, Kalungu district.

1.4 Objectives of the study

The specific objectives of this study were;

1. To determine classroom management strategies that can enhance the teaching and learning of Physics in secondary schools in Bukulula Sub County.
2. To establish the factors that hinder effective classroom management in secondary schools in Bukulula Sub County.
3. To examine the effects of instructional methods on students' learning of Physics in secondary schools in Bukulula Sub County.

1.5 Research questions

The study was guided by the following research questions;

1. What classroom management strategies can enhance the teaching and learning of Physics in secondary schools in Bukulula Sub County?

2. What factors hinder effective classroom management in secondary schools in Bukululа Sub County?
3. What are the effects of instructional methods on students' learning of Physics in secondary schools in Bukululа Sub County?

1.6 Scope of the study

1.6.1 Geographical scope

This study was conducted in three parishes (Bugonzi, Lusango and Mukoko) which are among the eight parishes that form Bukululа Sub County. This area was chosen due to persistent students' poor performance in Physics despite being a semi-urban. Bukululа Sub County has 8 parishes but 4 of which have no secondary schools. These include Lusasa, Kasaali, Mabuye, and Kyambala. The Sub-County has 10 secondary schools of which 3 are government-aided secondary schools. These are Lutengo Secondary School, Kasasa Secondary School, and Bukululа Girls' Secondary school. The distribution is such that Kiti has 1 secondary school, Bugonzi has 2 secondary schools, Lusango has 1 secondary school, and Mukoko has 6 Secondary schools.

1.6.2 Content scope

This study examined classroom management, and students' learning of Physics. The researcher considered students' learning of Physics as the dependent variable (DV), and classroom management as the independent variable (IV). Both government aided and private secondary schools were represented in the study with the major focus on O-Level.

1.6.3 Time scope

In terms of time scope, this study focused on the period 2019 and 2022. The reason for choice of the period was that 4 years can give a good picture about classroom management.

1.7 Significance of the study

It was hoped that the findings of this study would help the education office supervisors to carry out inspections on syllabus coverage, assessment and find proper way of motivating performing teachers in the teaching of Physics in secondary schools. Also, the findings were expected to increase awareness of teachers on ways of creating classroom climate in which students feel a sense of acceptance, belonging and some degree of control and also reasonable limits of classroom behaviour that helps to interest students in the Physics subject.

In addition, the study would help to identify the best teaching techniques to be used when teaching so as to ensure good classroom management during the teaching and learning of Physics. It was also hoped that the findings would provide teachers with information about the best instructional methods to be used so as to ensure students understanding and hence classroom management. The research would enhance further research studies into the challenges which local governments face while ensuring proper classroom management and proper learning of the Physics subject. Besides, this study would create awareness to all educational stakeholders on the relationship between classroom management and students' learning of Physics in secondary schools. Particularly the study would influence policy makers to formulate policies pertaining to the training of Physics teachers in future.

1.8 Justification of the study

Classroom management plays a critical role in the teaching and learning process. Effective classroom management helps create an environment where students can focus on learning without unnecessary distractions, which is particularly important in subjects like physics that require concentration and conceptual understanding. Nsereko (2010) observes that classroom management is a key factor in effective teaching and learning. Bukulula Sub County, Kalungu district, challenges such as insufficient resources often exacerbate difficulties in

managing classrooms, making the issue more pronounced. Adeyinka (2012) supports the notion that an adequate teacher-student ratio provides a structured, caring environment that meets both personal and academic needs, highlighting the need for better management in classrooms to improve learning outcomes.

Studies from other countries provide similar insights. For instance, a study in Kenya found that well-managed classrooms with appropriate discipline and teacher-student interaction positively influence students' performance in science subjects (Kamau, 2015). Similarly, research conducted in India by Sharma (2013) indicates that when teachers effectively manage classrooms, students' participation and academic performance, especially in subjects like mathematics and physics, improve significantly. This indicates that the challenges faced in Kalungu district resonate globally, and the application of effective classroom management practices has the potential to improve learning outcomes in Physics.

Additionally, classroom management directly impacts student motivation and engagement. According to Muijs and Reynolds (2017), well-structured classrooms with clear rules and routines encourage students to take ownership of their learning, which is essential in a subject as complex as physics. The evidence from these international studies underscores the importance of improving classroom management in Bukulula Sub County as a means to enhance the quality of physics education and help students achieve better academic results.

1.9 Conceptual framework

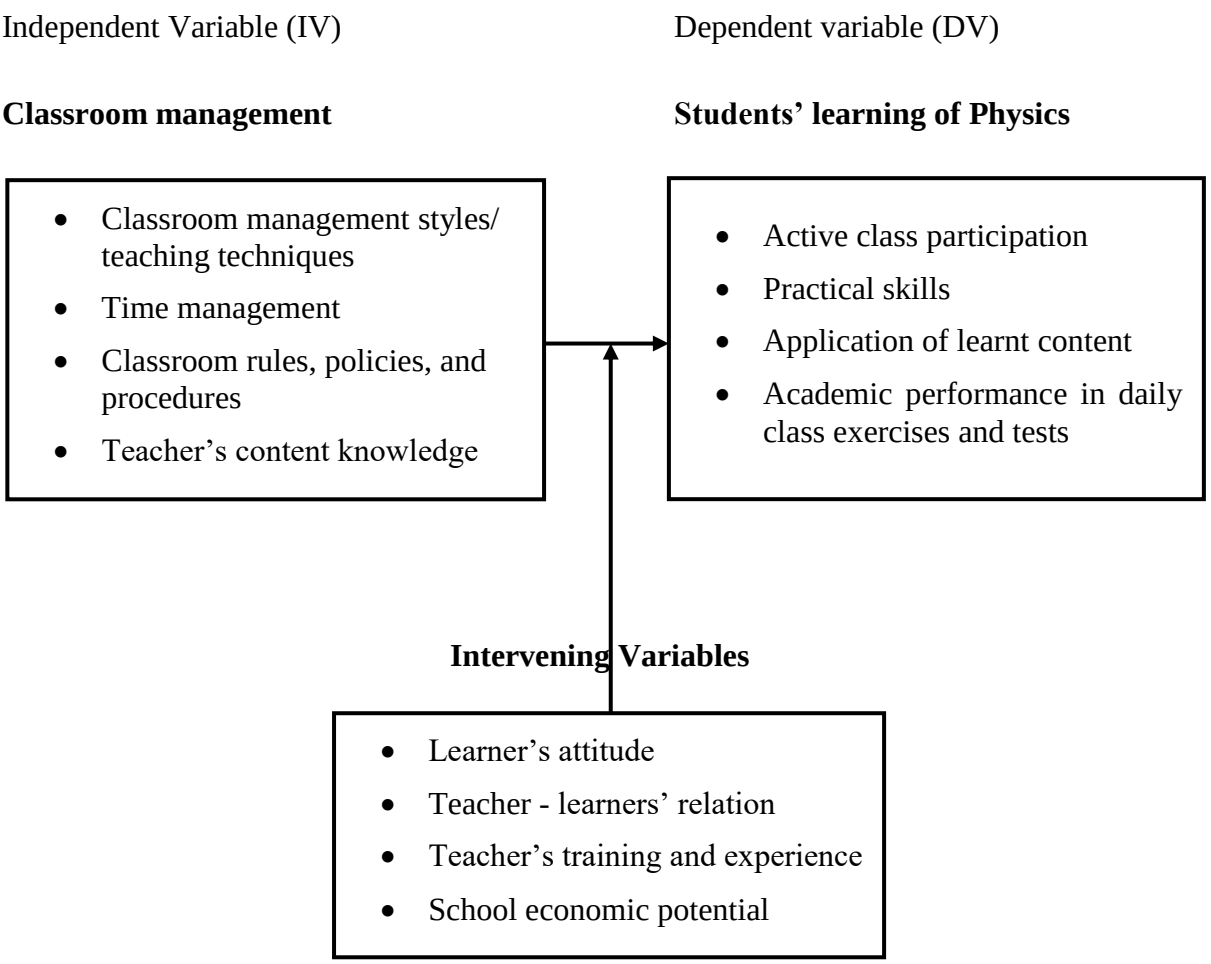

Figure 1.1: Relationship between independent, dependent and intervening variables

Source: Researcher's model, 2023

Learning Physics requires an examination of the ideas of scientifically constructed theoretical frameworks, explaining coherently organized Physics concepts. Understanding concepts is an important element in Physics learning. Students with good conceptual understanding will have the ability to solve problems well. Identifying which concepts and theories students learn well, and with which they have difficulties, can guide teaching and curriculum development. According to Gumisirizah *et al.,* (2024), classroom management aims at encouraging and establishing student self-control through a process of promoting positive student achievement and behaviour. Thus academic achievement, teacher efficacy, and

teacher and student behaviour are directly linked with the concept of school and classroom management.

Classroom management focuses on three major components: content management, conduct management, and perceptual management. Each of these concepts is defined and presented with details in a list of observable elements in effective teaching practices (Waiswa, 2021). Research shows that a high incidence of classroom disciplinary problems has a significant impact on the effectiveness of teaching and learning. In this respect, it has been found that teachers facing such issues fail to plan and design appropriate instructional tasks. They also tend to neglect variety in lesson plans and rarely prompt students to discuss or evaluate the materials that they are learning. In addition, student comprehension or seat work is not monitored on a regular basis (Tukamuhabwa *et al.,* 2024). In contrast, strong and consistent management and organizational skills have been identified as leading to fewer classroom discipline problems.

Related to content management, conduct managementplaces a special emphasis on instructional management skills, sequencing and integrating additional instructional activities, and dealing with instruction-related discipline problems (Rameli *et al.,* 2024). Conduct management is centred on one's beliefs about the nature of people. By integrating knowledge about human diversity (and individuality, at the same time) into a particular instructional philosophy, teachers could manage their classrooms in a betterand more effective way. Researchers have pointed out the importance of assisting students in positive behaviours (Muhammad *et al.,* 2019). In planning classroom management, teachers should consider using an assertive communication style and behaviour. In addition, they should always know what they want their students to do and involve them in the respective learning activities, under the general conditions of clearly and explicitly stated school wide and classroom rules (Madobi, 2019; Mupa and Chinooneka, 2015).

Classroom management is the independent variable because it can cause direct effect on the dependent variable which is students' learning of Physics thus elements of instructional materials like effective classroom rules, policies and procedures, time management, teachers' content, and teaching techniques are likely to cause a positive effect on elements in students' learning of Physics such as active class participation, practical skills, academic performance in daily class exercises and tests and application of learnt Physics content (Nkundabakura *et al.,* 2024). In addition, students' learning of Physics does not only depend on classroom management but also on other intervening variables like learners' attitude, teacher's training and experience, and school economic potential which can affect both the independent and dependent variables thus changing the result of the same study by another researcher which explains the cause for differences in social research findings.

1.10 Definition of key terms

Classroom management: Refers to the wide variety of skills and techniques that teachers use to keep students organized, orderly, focused, attentive, on task, and academically productive during a class (Nicholus *et al.,* 2024).

School: A school is an educational institution where pupils study under the supervision of a teacher. In this research schools mean secondary schools (Gumisirizah *et al.,* 2024).

Students' learning: Refers to the measurable skills, attitudes, and knowledge of the learner as a result of participation in an educational activity (Al-Zohbi *et al.,* 2022).

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter focuses on the theoretical framework, the related literature with special focus on classroom management, class management and students learning, motivation, teaching and learning of Physics in secondary schools, teacher-student ratio, and instructional methods.

2.1 Theoretical framework

This study was guided by Skinner's Behaviorism Theory (1930), which posits that learning is a change in behavior resulting from an individual's response to stimuli in their environment. Skinner emphasized the importance of reinforcement in shaping behavior, suggesting that positive reinforcements enhance desirable behaviors while reducing undesirable ones (Skinner, 2014). This approach is applicable to classroom management, where reinforcement strategies can significantly influence students' academic and behavioral outcomes. A change in human behaviour occurs as the outcome of a person’s response to stimuli (events) that take place in the surrounding. It is presumed that reinforcement techniques are later applied to classroom settings with the idea that using reinforces could increase the frequency of productive behaviour’s and decrease the frequency of disruptive behaviours (Skinner, 2014). This could also apply to the contingency contract, which contract between the student and teacher specifies what behaviours are appropriate and which are not by listing what types of rewards or punishments will be received. This means that when an individual is rewarded for a specific Stimulus-Response pattern, he is conditioned to react.

Similarly, in the token economy system students are given some type of token for appropriate behaviours, and these tokens can later be exchanged for prizes or privileges. These can be compared to incentives. Applying an incentive system should involve all students in the

classroom. It should be designed to shape a misbehaving student's behaviour. For example, this system could be set up to reward the whole class for total class compliance. Alternatively, the teacher could draw on the encouragement approach in which the teacher focuses on one target behaviour to work on with the erring student, at first ignoring his other misbehaviours. For instance, the teacher could give the offender a reward card. For every problem that the student completes correctly, he would get a hole punched in his card. After so many holes, the student would be rewarded some kind of prize, like candy.

Research has shown that using reinforcement to help manage classroom discipline has been successful, especially for managing behaviour in students who have attention deficit disorder and other behavioural disorders. Creating an orderly and stable classroom environment has helped provide the essential foundation for improving classroom behaviours, study habits, and organizational skills (Keller, 1969). The key is to be consistent in applying the positive and negative consequences. When students are learning new behaviours such as positive social skills, a combination of the following strategies has demonstrated the most success.

2.2 Classroom management strategies

According Jones *et al.,* (2004), effective teaching and learning cannot take place in poorly managed classrooms. Classroom management is a term used by teachers to describe the process of ensuring that classroom lessons run smoothly despite disruptive behaviour manifested by students. The term also implies the prevention of disruptive behaviour (Duke, 1979). It is possibly the most difficult aspect of teaching for many teachers; indeed experiencing problems in this area causes some teachers to leave teaching altogether. The US National Educational Association reported in 1981 that 36% of teachers said they would probably not go into teaching if they had to decide again. This was due to the negative attitudes and indiscipline of students.

According to Kidega *et al.,* (2024), classroom management is closely linked to issues of motivation, discipline and respect. Strategies for effective classroom management remain a matter of passionate debate amongst teachers. However, approaches vary from one teacher to another depending on the beliefs a teacher holds regarding what they believe to be effective classroom management. A large part of traditional classroom management involves behaviour modification, although many teachers see using behavioural approaches alone as overly simplistic. Many teachers establish rules and procedures at the beginning of the school year. According to Najjuma (2024), rules give students concrete direction to ensure that teachers' expectations becomes a reality.

Nsereko (2010) observes that Classroom management is a key factor in effective teaching and learning. When a teacher creates conducive learning environment and as careful classroom management, learner will feel that they matter a lot and fully benefit from the teaching learning process. Understanding these two factors also helps the teacher to select the best child friendly methods for the right content. In addition, teachers need to increase a learning environment where learners are involved thus making them own the learning process. A friendly and well-organized learning environment stimulates students and makes the learning comfortable. Involve them in displaying their work with support feedback from the teachers. Remember, a well-organized learning environment improves pupils' behaviour and participation. Thus, effective classroom management is generally based on the principle of establishing a positive classroom environment encompassing effective teacher - student relationships (Wubbels *et al.,* 1999).

Nsereko (2010) posit that classroom management involves the organization of certain non-academic tasks which are essential for effective teaching. It consists of classroom attendance, keeping records of class progress, controlling students' conduct and activities, manipulating instruction materials, improving classroom working conditions and eliminating any

destruction that may arise. As a classroom teacher, therefore, you have to exercise efficient management over students, resources and activities that promote learning within the classroom.

2.3 Class management and students learning

Classroom management and student learning are intricately linked, with effective management often heralding significant improvements in students' performance. A study by Nalumenya *et al.* (2023) suggests that gaps in the education system, particularly in the area of classroom management, can significantly hinder the preparation of students for future challenges, including sustainable water management. This implies that classroom management not only affects immediate academic performance but also influences future capabilities in professional fields. Historically, classroom management focused predominantly on establishing control and compliance within the classroom. However, recent studies advocate for a shift towards more holistic and inclusive approaches that promote engagement and intrinsic motivation among students.

Furthermore, contemporary research highlights the role of classroom management in creating an environment conducive to active learning. Gumisirizah *et al.* (2024) emphasized the effectiveness of video-based problem-based learning (PBL) approaches, which have been shown to improve performance and critical thinking skills in Physics students. This method aligns with modern theories that advocate for engagement and interaction within the learning process, suggesting that management strategies that incorporate interactive and multimedia elements can significantly enhance student learning outcomes.

Quality schools are defined by teacher effectiveness and student achievement under the auspices of building strong interpersonal skills. In this light, teacher and student relationships are essential to ensuring a positive classroom atmosphere. Classroom management discipline

problems can be dealt with either on an individual basis (between teacher and student) or by group problem solving (class meetings). As mutual trust builds up between teacher and students, the latter are gradually released from teacher supervision by becoming individually responsible for their own learning. This is how both educators and students become co-participants in the teaching-learning process, striving to make the most of themselves and their collective experience (Lugolole, 2023).

The effectiveness of classroom management strategies can also vary significantly depending on cultural and contextual factors. For instance, Kidega *et al.* (2024) explore the challenges faced by teachers in Uganda as they implement competency-based curricula. Their findings suggest that management strategies need to be culturally sensitive and aligned with local educational goals and expectations to be effective. Moreover, Tukamuhabwa *et al.*, (2024) highlight the influence of the school environment on teacher effectiveness, pointing out that physical and psychological aspects of the school environment can significantly impact the efficacy of classroom management strategies. This underscores the importance of a supportive and well-resourced learning environment as part of effective classroom management. The dynamics between teachers and students are pivotal in the context of classroom management. In a study conducted by Najjuma (2024), she notes that the success of competence-based curricula hinges significantly on teacher practices, which include how teachers manage their classrooms and interact with students. Effective classroom management therefore involves not only enforcing rules and procedures but also building relationships with students that foster respect, trust, and a willingness to engage in the learning process.

Collaborative learning environments, where students are encouraged to interact with one another and participate actively in their learning, are also a crucial aspect of modern classroom management. This approach not only improves learning outcomes by allowing

students to learn from each other but also helps in developing essential social skills and reducing behavioral problems. Kaptum *et al.,* (2024) found that teaching methods that foster student collaboration and engagement can lead to significant improvement in student's performance in Physics, demonstrating the link between effective classroom management, teaching methods, and learning outcomes.

2.4 Effects of instructional methods on student learning

The effectiveness of instructional methods in secondary education, particularly in subjects that are complex like Physics is pivotal for enhancing students' understanding and performance. A study by Al-Zohbi *et al.* (2022) compared the effectiveness of learning Physics online versus face-to-face among STEM and non-STEM students. The findings suggest that while both modalities can be effective, the interaction and immediacy provided by face-to-face instruction tend to produce better outcomes in understanding some complex Physics concepts. This highlights the importance of dynamic and interactive teaching methods in Physics education.

Incorporating technology in teaching, particularly through Technological, Pedagogical, and Content Knowledge (TPACK), has proven beneficial. Bani (2024) emphasizes that prospective Physics teachers who develop TPACK-based learning tools not only enhance their teaching strategies but also significantly improve students' learning outcomes. This approach integrates technology seamlessly with content knowledge and pedagogical skills, offering a holistic method to teaching Physics that resonates with today's secondary students.

The physical and social environment within which Physics is taught also plays a crucial role in the effectiveness of instructional methods. Badmus (2023) identifies that well-equipped school facilities enhance teachers' effectiveness, indirectly fostering better instructional outcomes. Classrooms that are well-resourced with scientific laboratories and technology

support interactive and experimental learning, which are essential for Physics. Problem-based learning (PBL) has been specifically highlighted for its effectiveness in teaching Physics. Gumisirizah *et al.* (2023) document significant improvements in Physics achievement among Ugandan students through the adoption of Problem Based Learning strategies. This approach encourages students to solve real-life problems, thereby enhancing their analytical skills and understanding of Physics principles.

Further enhancing Problem Based Learning with video resources has also shown promise. Gumisirizah *et al.* (2024) found that when Problem Based Learning is supplemented with video resources, students' academic achievement in Physics is improved noticeably. Videos help in visualizing theoretical concepts and complex phenomena, making them more accessible and easier to understand. The implementation of a competency-based curriculum in Physics is another critical area. Kidega *et al.* (2024) discuss the challenges teachers face in adopting new curricula that emphasize competencies over traditional content delivery. Training and continuous professional development are crucial for teachers to navigate these challenges effectively and employ new instructional methods that cater for diverse learning needs and enhance students' performance in Physics.

Madobi (2019), asserts that the students taught using instructional materials perform significantly better because they easily retain what has been taught than those taught using a lecture method and therefore it's recommended that Physics teachers should receive regular training on the importance of using instructional materials whether readymade or improved in their teaching. According to Lugolole *et al.*, (2024), if a teacher is able to involve students in making use and maintenance of learning aids you will also be helping them develop positive attitude towards practical work. When they get actively involved you will find that they are eager to participate in their own learning. The objective of involving students in looking for

materials to be used is that the value of using local resources and teaching aids in learning process is greatly realised.

2.5 Teaching and learning Physics in secondary schools

Teaching Physics in secondary schools presents unique challenges that demand specific strategies to effectively communicate complex concepts and engage students. A study by Gumisirizah *et al.*, (2024) highlights the significant impact of integrating technology with traditional teaching methods. The research indicates that when teachers supplement problem-based learning (PBL) approaches with video resources, students not only achieve higher academically but also improve in critical thinking abilities. This combination allows for a more dynamic classroom environment where students can see the practical application of theoretical knowledge, thereby fostering a deeper understanding and retention of Physics concepts.

The ability of Physics teachers to develop effective teaching strategies is crucial. Bani (2024) emphasizes the importance of teachers' content knowledge, pedagogical skills, and technological prowess, collectively known as TPACK (Technological, Pedagogical, and Content Knowledge). This framework is essential for designing and implementing lessons that are not only informative but also engaging and accessible to all students regardless of their initial interest or proficiency in Physics.

Adopting a competency-based curriculum in Physics teaching has been shown to enhance student learning outcomes significantly. Kidega *et al.* (2024) discuss the challenges and solutions in implementing such curricular in Ugandan secondary schools. They suggest that teachers need continuous professional development to adapt their teaching methods to these curricular, which focus not only on knowledge acquisition but also on the development of essential scientific skills and competencies.

Physics inherently involves a significant amount of practical work, which can greatly enhance understanding and engagement. Lugolole (2023) argues that teachers' methods and their deep understanding of content significantly affect learners' attitudes towards Physics. Engaging students with hands-on experiments and demonstrations can demystify complex theories, making them more tangible and understandable. This approach also helps in maintaining students' interest and motivation, which are critical for learning a challenging subject like Physics.

Effective teaching also involves more than just delivering content, it requires building a rapport with students and understanding their individual learning needs. Kaptum *et al.* (2024) found that the relationship between teaching methods and student performance in Physics is significantly influenced by the quality of teacher-student interactions. Teachers who actively engage with their students and provide feedback effectively can enhance learning outcomes by making adjustments to teaching strategies based on student feedback and performance.

2.6 Teacher - Student Ratio

A study by Kaptum *et al.*, (2024) highlights the significant impact of teacher-student ratios on student performance in Physics. The researchers found that classrooms with fewer students per teacher were associated with higher academic achievements. This is attributed to the increased ability of teachers to manage classroom dynamics effectively and provide more individualized attention and feedback to each student, which is particularly important in subjects that require high levels of understanding and problem-solving skills like Physics. Moreover, the research by Nkundabakura *et al.* (2024) supports this finding, showing that effective learning in science subjects including Physics, is greatly enhanced by lower teacher-student ratios. Their study within Rwandan secondary schools found that smaller class sizes

enabled teachers to use a wider range of pedagogical techniques that cater for different learning styles and levels of comprehension.

Additionally, Tukamuhabwa *et al.,* (2024) investigated the influence of the school environment, including teacher-student ratios on Physics teacher effectiveness in Uganda's Kigezi Sub-Region. They concluded that optimal ratios are essential for maintaining high levels of teacher motivation and effectiveness, leading to better educational outcomes for students. The importance of optimal teacher-student ratios is further emphasized by Kidega *et al.* (2024), who argue that competency-based curriculums in Uganda face significant implementation challenges in overcrowded classrooms. Their findings suggest that without sufficient teacher-student interactions, the goals of such curriculum which rely heavily on individual student competencies and active participation, cannot be fully realized.

There is a significant correlation between number of students per teacher and students' learning. There is a negative correlation when the number of students per teacher is greater and teacher tends to have low achievement (Koc and Celik, 2015). There is a negative correlation between students and teacher ratio as the number increases hence poor academic performance decreases and as the number decreases the performance increases. It was also recommended to admit learners on the basis of teacher- student ratio to avoid over enrolment and congestion in classroom. The results suggest more teachers should be hired in order to decrease the number of students per teacher so that students' achievements can be enhanced (Koc and Celik, 2015).

Lesson evading and lesson dissembling strategies in the classroom make it difficult for a child especially at the end of the class to have good eye contact with the teacher and the blackboard hence production of unwanted work. This also enhances poor relationship between the student and the teacher which is all due to the increase in number of learners that

cannot correlate with teacher (Muhammad *et al.,* 2019). Large class size is often impersonal where students may suffer discipline problems since the teacher cannot get to know their student very easily due to big number. The phenomenon of overcrowded classroom as a negative aspect and due to unlimited expansion has taken its toll on the educational system. The quality of teaching and learning is on the decline at all levels of the educational system (Mupa and Chinooneka, 2015). An adequate teacher-student ratio provides a structured, caring environment that meets the learner's personal and academic needs (Adeyinka, 2012).

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

This chapter presents a detailed description of the methodology that guided the study, the research design, area of the study, study population, sample size and sampling techniques. It further underscores the data collection methods, data collections instruments, data collection procedures, data analysis, ethical considerations, quality control methods, and constraints and delimitations of the study.

3.1 Research design

This study followed a descriptive survey research design. A descriptive survey research design utilizes both quantitative and qualitative methods of research to collect data to describe the phenomenon under study, situation, or population (Creswell and Creswell, 2018). Major methods of descriptive research design include observations, surveys, and case studies (Creswell and Creswell, 2018). A research design is the conceptual structure within which research is conducted and constitutes the blue print for measurement of the variables, collection and analysis of data (Creswell and Creswell, 2017). This research design was used because it allows the use of a variety of research methods, helping to focus on one/few instances because it is very difficult to study the whole population thus opting for a case study to get in depth analysis about the classroom management and students' learning of Physics in secondary schools in Uganda in Bukulula Sub County, Kalungu district.

3.2 Area of the study

A study area is the geographical area where the study is conducted. According to Rahi (2017), it is a geography for which data is analysed in the report. For the case of this research

the study area is Bukulula Sub County, Kalungu District, but the study did not cover all secondary schools due to time. According to UBOS (2020), the district had an estimated population of 194,100 people; the economy in the area has been centred on subsistence agricultural crop production and livestock rearing. The major crops grown are coffee, banana, beans, maize and the livestock reared are cattle, goats, and sheep. Bukulula Sub County is among the six Sub Counties that form Kalungu district; it has 8 parishes, Kalungu district in southern central region of Uganda. It lies between 00 06S, 31 49E Kalungu District (https://en.wikipedia.org/wiki/). It is bordered by Gomba District to the North, Butambala District to the Northeast, Mpigi District to the East, Masaka District to the South, and Bukomansimbi District to the west.

3.3 Study population

A population refers to any group of institutions, people or objects that have common characteristics (Creswell and Creswell, 2017). Bukulula S/C has 3 government aided secondary schools and 7 private secondary schools with an estimated number of 4,777 O-Level students and 27 Physics teachers (Kalungu District Education Department, 2022), but the study concentrated on Bugonzi, Mukoko and Lusango parishes with 3 government aided and 6 private secondary schools with an estimated 4,581 O-Level students, 16 Physics teachers with 1:286 as teacher to students' ratio. The target population for this study was 1 government aided and 2 private secondary schools, from random sampling Lutengo S.S from Lusango, Fatih Islamic S.S from Bugonzi and Crested High School from Mukoko were chosen, these schools have a population of 2,095 O-Level students and 11 Physics teachers. The choice of the teachers was based on the fact that they are the ones to enforce classroom management and students' learning is directly affected by classroom management.

3.4 Sample size and sampling techniques

3.4.1 Sample size

According to Amin (2005), a sample is defined as a collection of elements of a population. A sample is a smaller group obtained from accessible population. A sample saves a lot of time, cost and personnel required to allocate all the members. The sample size was determined using the tables provided by Krejcie and Morgan (1970) as indicated below;

A total of 1 government-aided school was selected out of 3 and 2 private secondary schools out of 7 were selected for this study. A total of 556 O-Level students and 11 Physics teachers were sampled from a total population of 2,095 students and 11 teachers. The selected schools were coded using alphabetical instead of actual individual school names this aimed at avoiding bias during data collection.

Table 3.1: Study sample distribution

Categories	**Population**		**Sample size**		**Sampling method**	**Tools**
	Government aided	Private	Government aided	Private		
Physics teachers	6	5	6	5	Purposive sampling	Interview guide
O-level students	1,200	895	348	322	Simple random sampling	Questionnaire

Source: Primary data, 2023

Table 3.1 above further indicates that the study used a sample of 11 Physics teachers and 670 students randomly selected from 1 government secondary school and 2 private secondary schools. The basis of choice was on Physics teachers.

3.4.2 Sampling techniques and procedure

According to Amin (2005), a sample technique is a plan for obtaining a sample from a given population in such a way that the sample elements selected represent the population. The researcher employed both probability and non-probability sampling technique to select a sample size. Purposive sampling is non-probability sampling design in which the required information is gathered from specific targets (Creswell and Creswell, 2017). Purposive sampling was used to get views from Physics teachers and O-Level students. Simple random sampling is probability sampling where every element in the population has a known and equal chance of being selected as a subject. This technique was used to select from Physics teachers and students who participated in the study. It was therefore, possible to select from Physics teachers and students without bias (Mugenda and Mugenda, 2003).

According to Kothari (2004), this method is economical in terms of time and cost. Bukulula S/C has widely scattered geographical distribution coupled with large number of secondary schools. Consequently, a two-stage sampling approach was used to select schools from which a sample of teachers was obtained. This approach became appropriate given the time and resources that are available for the study, the schools were selected using simple random sampling. Meanwhile a random sample of teachers was done to select teachers from earlier sampled from both government-aided and private secondary schools.

3.5 Data collection methods

Researchers recommend that before a researcher decides on the data collection methods, he or she should bear in mind both secondary and primary data (Creswell and Creswell, 2017). The researcher collected data from both secondary and primary sources using a mixed methodology for triangulation purposes during the various phases of the study.

Secondary data was collected from textbooks, journals, government published and unpublished reports. Secondary data was gathered from existing literature on employee welfare and performance. Secondary data was also collected through documentary reviews in order to establish the relation between classroom management and students' learning. Primary data was generated from field findings and the main primary data collection methods employed by the researcher were interview and questionnaires.

3.5.1 Questionnaire survey

Questionnaires offer fast, efficient and inexpensive means of gathering information from large numbers of respondents. In addition, questionnaires allow respondents anonymity and are not subjected to stressful time constraints. While the respondents feel relaxed in the process responding to the questionnaire, they are also encouraged to provide truthful responses. In this study, the researcher carried out a self-administered questionnaire to get information from students. According to Amin (2005), this instrument was appropriate because students could easily read, and write. The instrument consisted of pre-formulated written set of questions, which were both open and closed ended.

3.5.2 Interviews

According to Marshall and Rossman (2014), interviews are a conversation with a purpose and therefore data is collected easily. Face to face, interviews helped the researcher obtain accurate and well-directed information from Physics teachers. These were conducted in a conducive place that provided favourable grounds for the interviewee and interviewer to exploit the subject matter. Semi structured interviews were used because the person interviewed and the interviewer were both present, the questions are asked and answered which gave opportunity for greater flexibility and the interviewer had the opportunity to observe the subject and the total situation (Selltiz *et al.*, 1962). Appointments were made with

key informants for the interview and once rapport was created respondents were free and participated well. Phone recordings were also made to capture all the responses of the conversation.

3.6 Data collection instruments

3.6.1 Questionnaire

The questionnaire was designed to collect quantitative data from students. It included structured questions aimed at assessing various aspects of classroom management as related to Physics learning. The questionnaire incorporated both closed-ended and Likert-scale questions to capture the frequency and effectiveness of these practices. This method allowed for the efficient collection of data from a larger sample size (322 students) within a relatively short period (Creswell, 2016). The questionnaire was administered in a controlled environment to ensure thoughtful and non-distracted responses from the students. Closed-ended questions provided standardized responses that facilitated easy quantification and analysis, while Likert-scale questions allowed for a significant understanding of classroom management and its effect on students' learning of Physics. The structured format of the questionnaire ensured consistency in the data collected, which is crucial for reliable statistical analysis (Gill, 2008).

3.6.2 Interview guide

Interview guides were used to enable the interviewer to remain focused on the needed deeper information during probing time. According to Creswell (2018), interview guides help the researcher to explain, to better understand, and to explore research subjects' opinions, behavior, experiences and phenomenon. For that reason therefore, the interview questions were open-ended in order to solicit for in-depth information.

3.7 Data collection procedures

As the researcher, I obtained a letter of introduction from Uganda Martyrs University (UMU) Faulty of Education, which I introduced to the selected schools to allow me to conduct the study in their schools. Prior to entry into the schools, I made appointments with the heads of the schools who in turn allowed me to access the respondents to explain my study prior to data collection. A pre-test of data collection instruments was conducted in the area of study to confirm validity and reliability of the instruments, this was done at MRUTA Secondary School located at Kiti Parish, a total of 33 students and 3 Physics teachers were involved. The researcher then proceeded to respondents to administer the questionnaires and to conduct the interviews.

3.8 Data analysis

Data analysis is a process of systematically applying statistical or logical techniques on raw data in order to make conclusions on it (Tabachnick and Fidell, 2007). Both quantitative and qualitative approaches were used for data analysis. It involves scrutinizing the acquired information and searching for patterns of relationship that exist among the data groups (Kombo and Tromp, 2006). The researcher employed both quantitative and qualitative research paradigms in data analysis for purposes of methodological triangulation in order to enhance the validity and reliability of the study findings (Amin, 2005). Data collected using questionnaires and interview guides was edited and scrutinized to ensure its accuracy, comprehensiveness and completeness.

3.8.1 Qualitative data analysis

Qualitative data was analyzed using thematic analysis where data was put into various themes based on the research objectives and questions and all relevant and related data was placed

under corresponding themes or headings (Miles *et al.*, 1994). The researcher used a quick impressionist summary in analyzing qualitative data, he summarized key findings by noting down the frequent responses of the respondents during the interview on various themes concerning classroom management and students learning of Physics in Bukulula Sub County. This technique of qualitative data analysis was chosen because it saves time and it is not very expensive. Interviews were listened to attentively, in order to identify the emerging themes and through sorting, recording, reflection and interpretation of the meaning of data (Kombo and Tromp, 2006; Amin, 2005).

3.8.2 Quantitative data analysis

Data collected from the field was examined for its accuracy and completeness of information given. It was cleaned, sorted out and entered into the SPSS version 20 computer software, explored and analyzed. Descriptive statistics such as frequencies, and percentages were used to generate reports for discussion. Frequencies and percentages were used because they easily communicate research findings to the majority of the readers. Frequencies easily showed the number of times a response occurred and the number of respondents in a given category, while percentages were used to inform the comparison of the sub groups that differ in size and proportion (Gay, 1992).

3.9 Ethical considerations

In this research, the researcher followed the general established principles concerning the general principles of informed consent, anonymity and confidentiality as prescribed by Fontana and Frey (1994) and Rubin and Babbie (2009). In the first place, as the researcher, I obtained an introductory letter from Uganda Martyrs University, Department of Postgraduate Studies, which introduced me to the District Education Office and the Head Teachers of the Government-Aided and Private Secondary Schools in Bukulula Sub County as part of the

ethical consideration before the study started. After self-introduction to the respondents, the objectives and purpose of the study and its benefits were made known to the respondents. The researcher assured the respondents that the information given would be only be used for the purposes of academics. After the random selection of the respondents, a consent information was delivered to each of them that outlined the benefits of the study, potential risks involved, confidentiality and the rights of the respondents and the consent of willingness to participate voluntarily by signing on the form. In all the schools, the selected respondents showed the willingness to participate voluntarily by signing the consent form.

3.9.1 Anonymity

In order to ensure anonymity of the respondents, the consent form for the respondents to show willingness to participate in the study and ready to give the information; and the questionnaires for the collection of the information were designed without provision for names of the respondents and that of the school. Therefore, names of the respondents and their schools were not required on both the consent form and the questionnaire when collecting the data to protect their identity. In this way, I ensured anonymity of the respondents.

3.9.2 Confidentiality

As the researcher I assured the respondents that all information obtained from them would be used solely for the academic purposes. The consent information form delivered to the respondents contained the freedom to participate and the confidentiality of their responses. They were assured that any information given would be respected and treated with utmost confidentiality. No respondent was recorded by name thus keeping the outcomes bias free and confidential.

3.9.3 Privacy

In order to ensure privacy of the respondents after their selection, they were made to sit randomly in spaces of their choice to fill in the questionnaire. Each respondent sat alone either in the classroom or outside on the lawn to avoid sharing of ideas while responding to the questions. Also, non communication with one another during the exercise was emphasised. This allowed each respondent to give his or her own view in relation to the phenomenon under study.

3.10 Quality control methods

3.10.1 Validity of instruments

According to Creswell (2016), validity refers to the degree to which evidence and theory support the interpretation of the test scores entailed by use of tests. The validity of instruments is the extent to which it does measure what is supposed to measure. Validity is the accuracy and meaningfulness of inference, which are based on the research results. It is the degree to which results obtained from analysis of a data validated in terms of content. The content related techniques measures, the degree to which the questions items reflected the specific areas covered.

Content validity which refers to the extent to which a measure represents all aspects of a given social concept (Sushil and Verma, 2010) was ensured through careful selection of representative respondents and accurate analysis of data. The researcher also ensured that the instruments have adequate potential through consultations with the researcher's supervisor and colleagues. After developing the research tools, the researcher pretested them in order to ascertain their validity and later on the lessons learnt while pretesting were in Content Validity Index (CVI).

CVI = Number of items declared valid by judges = n/N

Where n = items that are rated relevant N = Total number of items

Creswell (2009) notes that if the instrument has an average index of 0.7 or above it is accepted as valid. This assisted in correcting errors that were identified prior to the study.

The questionnaire validity of the items therein and Content Validity Index (CVI) was computed by dividing the total number of valid items by the total number of the items in the questionnaire. The CVI was found to be 0.849, and for interview CVI was 0.79. The researcher also used triangulation, which is more than one data collection method, to enhance the quality of the findings following the advice of Amin (2005), Koul and Zandvliet (2009) and Kothari (2010).

3.10.2 Reliability of instruments

Reliability is the ability of a research instrument to consistently measure characteristics of interest over time. It is the degree to which a research instrument yields consistent results or data after repeated trails. If a researcher administers a test to a subject twice and gets the same score on the second administration at the first test then, there is reliability of instrument (Mugenda and Mugenda, 2003). Consequently, reliability test for the questionnaire was run in SPSS version 20 to establish whether the instruments used were stable and consistence in measuring particular concepts that have to be measured. Cronbachs Alpha coefficient was used to determine stability and consistency of the research instruments. The Cronbachs Alpha-a test (min=0.6) measured the scale reliability for the internal consistency of the items.

Alpha Coefficient was applied as below;

a = N = (total Variance-sum of individual variance/Total variance)

N-t

The δ range of 0.7 and above indicates reliability of research instruments as asserted by Amin (2005).

The researcher also ensured reliability by pre - testing the questionnaires and interview guide on students and Physics teachers from Kiti parish, this parish has features similar to those of Mukoko, Bugonzi and Lusango Parishes where the study was conducted because they are all located in Bukulula Sub County with similar primary school characteristics. Consequently, reliability test for the questionnaire was run in SPSS version 20 to establish whether the instruments used were stable and consistence in measuring particular concepts that were to be measured. A reliability Coefficient was then computed using Spearman-Brown prophecy formula of 1910 (estimates the reliability for whole test based on the correlation for ½ the test):

$$\boldsymbol{rxx' = \frac{2roe}{1 + roe}}$$

Where, roe = correlation between odd and even items. rxx' = estimated reliability for full test. The reliability coefficient was found to be 0.87. As noted earlier on the results of the computed reliability coefficient were then interpreted on the basis of George and Mallery's (2003) rule of thumb were; 1 - 0.9 = Excellent, 0.89 - 0.80 = Good, 0.79 - 0.70 = Acceptable, 0.69 - 0.60 = Questionable, 0.59 - 0.50 = Poor, and 0.49 - 00 = Unacceptable.

3.11 Constraints and delimitations of the study

As the researcher, I encountered financial constraints in the course of this study. Given that this was a self-sponsored study, one most outstanding constraint was the limited funds to meet transport costs, materials and other field necessities that needed money in the research process. Also, the researcher experienced limited time frame for data collection, data processing and data analysis. This culminated into extra costs to hire a research assistant to help with data collection.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.0 Introduction

The objective of this chapter is to analyse, present and interpret the findings from the data. The chapter describes the outcomes of the questionnaires that were used to conduct the study. It shows the response rate, demographic information of the respondents and findings on the influence of classroom management on students' learning of Physics in selected secondary schools in Bukululа Sub County, Kalungu District. The results were presented in tables and in form of frequency and percentages. The results focused on the classroom management and students' learning of Physics.

4.1 General findings

Table 4.1: Response rate and demographics

Description	**Frequency**	**Percent**
Total responses	670	100%
Male students	219	32.7%
Female students	451	67.3%
Male teachers	6	54.5%
Female teachers	5	45.5%

Source: Field data, 2024

The demographics and response rate presented in Table 4.1 provide a comprehensive overview of the participants involved in the study assessing classroom management strategies and their impact on Physics learning in Bukululа Sub County, Kalungu District. The data shows that a total of 670 respondents participated in the survey, ensuring that the sample size is sufficiently robust to provide statistically meaningful insights.

In terms of the gender distribution among students, the data reveals that out of the 670 respondents, 219 are male and 451 are female. This indicates that approximately 32.7% of the student respondents are male, while a significant majority, 67.3%, are female. This disparity suggests a higher female enrollment or participation rate in the surveyed schools, which could be reflective of broader educational or societal trends in the area concerning gender participation in education.

Looking at the teacher demographics, the survey included 11 teachers, with 6 male and 5 female teachers participating. The male teachers constitute approximately 54.5% of the teacher sample, while female teachers make up about 45.5%. This nearly balanced distribution provides a gender-diverse perspective from the educators' side, which is crucial for understanding different pedagogical impacts and classroom management strategies from potentially varied gender viewpoints.

4.2 To determine classroom management strategies that enhance the teaching and learning of Physics

The data from Table 4.2 provides valuable insights into the perceived effectiveness of various classroom management strategies used to enhance the teaching and learning of Physics.

Table 4.2: Classroom management strategies

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Teachers effectively use discussion-based activities to enhance learning	121 (18.1%)	149 (22.2%)	215 (32.1%)	105 (15.7%)	80 (11.9%)
Roll calling increases student engagement in class	89 (13.3%)	127 (18.9%)	186 (27.8%)	178 (26.6%)	90 (13.4%)
Role play methods are effectively utilized to teach Physics concepts	117 (17.5%)	133 (19.9%)	164 (24.5%)	156 (23.3%)	100 (14.9%)
Jigsaws are used to promote cooperative learning among students	127 (19.0%)	95 (14.2%)	188 (28.1%)	170 (25.4%)	90 (13.4%)
Teachers mentioning students' names positively impacts class participation	119 (17.8%)	142 (21.2%)	153 (22.8%)	156 (23.3%)	100 (14.9%)
A variety of teaching methods are used to maintain students' attention	137 (20.4%)	131 (19.6%)	142 (21.2%)	160 (23.9%)	100 (14.9%)
Practical experiments are conducted regularly to enhance understanding	163 (24.3%)	147 (21.9%)	140 (20.9%)	130 (19.4%)	90 (13.4%)

Source: Field data, 2024

A significant portion of students, 121 (18.1%), strongly agree that teachers effectively use discussion-based activities to enhance learning, with an additional 149 (22.2%) agreeing. This suggests a general consensus that discussion-based methods are beneficial, potentially due to their ability to foster critical thinking and deeper understanding of Physics concepts. However, the highest response was neutral at 32.1%, indicating some uncertainty or variability in how these activities are perceived across different classrooms. One teacher

mentioned, "*Discussions help students articulate their thoughts and make abstract concepts more tangible.*"

Roll Calling technique seems to have mixed reviews with 178 (26.6%) disagreeing that it increases engagement, while 89 (13.3%) strongly agree. Roll calling might be seen as a traditional approach that could disrupt the flow of lessons, but it also appears to play a role in ensuring student presence and readiness, as one teacher noted, *"It's a quick way to get everyone's attention and check readiness for the lesson."*

Role play methods was supported by 117 (17.5%) of students who strongly agree that it's effectively utilized. This interactive method might help in making Physics more relatable by simulating real-life scenarios. However, nearly an equal number of students disagreed or strongly disagreed (23.3% and 14.9% respectively), suggesting that the effectiveness of role plays might depend heavily on the execution and context. *"Role plays encourage students to think on their feet and apply theoretical knowledge practically,"* a teacher explained.

Jigsaw activities are appreciated by some, with 127 (19.0%) strongly agreeing on their efficacy in promoting cooperative learning. This method's strength lies in its ability to encourage information sharing and collective problem-solving among students. However, a significant proportion (25.4%) disagreed, possibly reflecting challenges in group dynamics or implementation.

The strategy of mentioning students' names to boost class participation received a relatively balanced spectrum of responses, with a slight lean towards positive. A teacher highlighted, *"Calling out names personalizes the interaction; students feel acknowledged and are more likely to engage."*

Diversification in teaching methods garnered strong support with 137 (20.4%) strongly agreeing that it helps maintain attention. The variety likely helps to cater for different learning styles, keeping the class dynamic and engaging. *"Using different methods addresses the diverse needs of students and keeps the energy levels high,"* a teacher mentioned.

Practical experiments were viewed most favorably, with 163 (24.3%) strongly agreeing on their regular enhancement of understanding. Experiments make Physics tangible and facilitate experiential learning. "*Experiments bridge theory and real-world application, enhancing comprehension and retention*," stated a teacher.

In conclusion, while practical experiments and a variety of teaching methods are seen as highly effective, other strategies like jigsaws and role plays show more variability in their perceived effectiveness. This suggests a need for tailored approaches depending on the classroom environment and individual student needs. Further, the mixed responses highlight the importance of implementing these strategies in a context-sensitive manner, ensuring that they align well with the learning objectives and student expectations.

4.3 To establish factors hindering effective classroom management

The results on factors hindering effective classroom management reveal various challenges impacting the learning environment in secondary schools in Bukulula Sub County are presented in table 4.3.

Table 4.3: Factors hindering effective classroom management

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Poor teaching techniques lead to poor student engagement	141 (21.0%)	129 (19.3%)	200 (29.9%)	120 (17.9%)	80 (11.9%)
Large class sizes hinder effective classroom management	173 (25.8%)	165 (24.6%)	172 (25.7%)	100 (14.9%)	60 (9.0%)
Lack of necessary teaching materials limits effective instruction	191 (28.5%)	159 (23.7%)	120 (17.9%)	130 (19.4%)	70 (10.4%)
External noise and disruptions impact students' concentration	123 (18.4%)	128 (19.1%)	219 (32.7%)	120 (17.9%)	80 (11.9%)
Poor sitting arrangements contribute to decreased student interaction	113 (16.9%)	157 (23.4%)	180 (26.9%)	140 (20.9%)	80 (11.9%)
Inadequate space in classrooms leads to frequent disruptions	167 (24.9%)	153 (22.8%)	150 (22.4%)	120 (17.9%)	80 (11.9%)
Diverse student backgrounds create challenges in classroom management	91 (13.6%)	118 (17.6%)	231 (34.5%)	150 (22.4%)	80 (11.9%)

Source: Field data, 2024

A significant portion of the respondents (40.3%) indicated agreement (both strongly agree and agree) that poor teaching techniques lead to poor student engagement. This suggests a critical need for professional development and training for teachers. About 29.9% of respondents remained neutral, possibly indicating variability in teaching quality or the perception of what constitutes effective teaching. The Physics teachers' insights reinforce this notion, with one teacher commenting, "*When lessons are not engaging or interactive, students tend to lose interest quickly, which drastically affects their participation*."

Large class sizes factor received considerable agreement (50.4%) that it hinders effective classroom management. Large class sizes can overwhelm teachers, making it difficult to

maintain order and provide individualized attention. One teacher explained, "*With so many students, it's nearly impossible to cater for each one's needs or even manage the classroom effectively without some falling through the cracks*."

The majority (52.2%) agreed that a lack of necessary teaching materials limits effective instruction, emphasizing the importance of adequate resources for teaching and learning. As one teacher put it, "*We are often forced to improvise or skip certain practical's, which compromises the quality of our lessons and students' understanding of complex Physics concepts*."

External noises and disruptions: issue was predominantly seen as impactful, with 37.5% agreeing and the highest percentage (32.7%) being neutral, indicating varying degrees of disruption across different settings. A teacher highlighted, "*External noises not only disrupt the flow of teaching but also break the concentration of students, making it hard to regain focus*."

Around 40.3% agreed that poor sitting arrangements contribute to decreased student interaction, pointing to the physical layout as a significant factor in effective classroom management. Teachers noted that inadequate arrangements can lead to visibility and audibility issues, as one remarked, "*Students at the back often get distracted easily if they can't see or hear clearly, leading to disengagement*." Also, 47.7% of respondents felt that inadequate space leads to frequent disruptions. The cramped conditions are likely exacerbating disciplinary issues and hindering effective teaching. "*The overcrowded classrooms make it nearly impossible to move around and interact with students effectively*," a teacher mentioned.

Regarding diverse student backgrounds while 31.2% agreed that diverse backgrounds create challenges, a significant 34.5% remained neutral, suggesting that this factor's impact might

depend on specific community and school contexts. Some teachers see this diversity as a challenge in terms of varying educational needs and behavioral expectations. As one teacher stated, "*Different cultural and educational backgrounds mean different expectations, which can lead to conflicts and misunderstandings in a diverse classroom setting*."

4.4 To examine the effects of instructional methods on students' learning of Physics

Table 4.4 shows results on the impact of various instructional methods on the learning of Physics among students in secondary schools in Bukulula Sub County.

Table 4.4: Effects of instructional methods on learning

Statement	Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree
Varied instructional methods improve students' understanding of Physics	161 (24.0%)	139 (20.7%)	180 (26.9%)	130 (19.4%)	60 (9.0%)
Regular use of practical experiments enhances students' interest in Physics	169 (25.2%)	151 (22.5%)	150 (22.4%)	120 (17.9%)	80 (11.9%)
Interactive teaching methods stimulate students' critical thinking skills	153 (22.8%)	145 (21.6%)	172 (25.7%)	130 (19.4%)	70 (10.4%)
Using technology in teaching aids in the retention of Physics concepts	141 (21.0%)	161 (24.0%)	168 (25.1%)	130 (19.4%)	70 (10.4%)
Collaborative learning techniques enhance students' communication skills	135 (20.1%)	163 (24.3%)	172 (25.7%)	120 (17.9%)	80 (11.9%)
Hands-on activities help students apply theoretical knowledge practically	181 (27.0%)	159 (23.7%)	130 (19.4%)	120 (17.9%)	80 (11.9%)
The use of visual aids makes learning Physics more engaging	167 (24.9%)	155 (23.1%)	148 (22.1%)	120 (17.9%)	80 (11.9%)

Source: Field data, 2024

The results show that a significant proportion of students, 161 (24.0%), strongly agree that varied instructional methods improve their understanding of Physics. An additional 139 (20.7%) agree, cumulatively suggesting that nearly half of the respondents find diverse teaching approaches beneficial. This might reflect the ability of varied methods to cater for different learning styles, as one teacher noted: *"Different students absorb information differently; by varying my teaching, I reach more students effectively."*

Practical experiments stand out as a particularly favored approach, with 169 (25.2%) students strongly agreeing that these activities enhance their interest in Physics. This is supported by another 151 (22.5%) agreeing, making it clear that hands-on experiences are crucial for engagement. A teacher elaborated, *"When students manipulate variables and see real-time results, their curiosity spikes, and so does their enthusiasm for the subject."*

Interactive teaching methods and the use of technology both receive positive feedback for stimulating critical thinking and aiding retention of concepts, respectively. While 153 (22.8%) students strongly agree that interactive methods boost their critical thinking, a similar positive response is seen with technology use, particularly in helping students retain information, with 141 (21.0%) strongly agreeing. Teachers highlight the effectiveness of these tools, with one commenting, *"Technology especially simulations, bridges the gap between theoretical concepts and real-world applications."*

Collaborative learning techniques are noted for enhancing communication skills, with 135 (20.1%) strongly agreeing. The cooperative nature of these activities is praised for promoting social learning and discussion which reinforce Physics concepts. As one teacher points out, "*Group work fosters a sense of community and allows students to express ideas and learn from peers which solidifies their understanding."*

The role of hands-on activities in applying theoretical knowledge practically is emphasized, with 181 (27.0%) strongly agreeing that these activities are beneficial. These sessions help translate abstract Physics theories into tangible experiences. A teacher describes: *"Seeing theory in action through practical experiments not only enhances understanding but also stimulates and retains interest."*

Finally, the use of visual aids like diagrams and videos to make learning more engaging is well-regarded. With 167 (24.9%) strongly agreeing, visual aids are appreciated for their ability to clarify complex topics, making them more accessible. *"Visual aids simplify complex concepts making them easier to grasp for visual learners," a teacher notes.*

Overall, the data reflects a strong endorsement of diverse and interactive teaching methods, which are seen as vital tools for enhancing the Physics learning experience. The feedback from both students and teachers underscores the necessity of integrating varied instructional strategies that cater for different learning preferences and foster a deeper understanding of Physics. These methods not only improve comprehension but also stimulate interest and enthusiasm for the subject, essential for effective learning and teaching.

4.5 Regression analysis

Table 4.5: Regression analysis of classroom management strategies on students' learning outcomes in physics

Dependent variable: Students' learning outcomes in physics

Independent variables	Coefficient (B)	Standard Error	t-Value	p-Value
Constant	0.50	0.10	5.00	0.000
Use of discussion-based activities	0.15	0.05	3.00	0.003
Roll calling effectiveness	0.12	0.05	2.40	0.017
Effectiveness of role play methods	0.18	0.04	4.50	0.000
Use of jigsaws in learning	0.09	0.05	1.80	0.073
Mentioning students' names	0.10	0.04	2.50	0.013
Diversity of teaching methods	0.13	0.04	3.25	0.001
Regular conduct of practical experiments	0.20	0.05	4.00	0.000

Model Summary

R-squared	Adjusted R-squared	F-Statistic	p-Value of F-Statistic
0.62	0.60	26.45	<0.0001

The R-squared value of 0.62 indicates that 62% of the variability in students' learning outcomes in Physics is explained by the model's independent variables. The Adjusted R-squared value of 0.60 accounts for the number of predictors and suggests a strong fit, indicating that the model is generally effective in explaining the relationship between classroom management strategies and learning outcomes.

Use of discussion-based activities strategy has a coefficient of 0.15, with a t-value of 3.00 and a p-value of 0.003 indicating that it is a statistically significant predictor of learning

outcomes. The positive coefficient suggests that increased use of discussion-based activities is associated with improved learning outcomes in Physics.

Roll calling effectiveness with a coefficient of 0.12 and a p-value of 0.017, roll calling significantly contributes to learning outcomes. This reflects that effective roll calling can increase engagement and attention among students thereby enhancing their academic performance.

Effectiveness of role play method shows a strong positive impact (coefficient of 0.18) and is highly significant (p-value of 0.000), suggesting that role play is a very effective classroom management tool for teaching Physics.

Use of jigsaws in learning has a positive coefficient of 0.09, its p-value of 0.073 exceeds the usual significance threshold of 0.05, suggesting that the impact of jigsaws on learning outcomes might not be statistically significant.

Mentioning students' names strategy is significant (p-value of 0.013) with a coefficient of 0.10. Mentioning names can enhance student involvement and personal connection to the class, contributing positively to learning. Diversity of teaching methods is highly significant (p-value of 0.001) with a coefficient of 0.13. This indicates that using a variety of teaching methods correlates strongly with better learning outcomes, likely due to meeting diverse learning needs within the classroom.

Regular conduct of practical experiments is the most impactful strategy with a coefficient of 0.20 and a p-value of 0.000. Regular laboratories and experiments substantially aid in understanding Physics, demonstrating the importance of practical experience in learning scientific concepts.

Overall model significance: The F-statistic of 26.45 with a p-value of less than 0.0001 indicates that the model as a whole is statistically significant. This means that there is a very low probability that the observed relationships are due to chance and the model reliably predicts student learning outcomes based on the management strategies employed.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of findings, discussion of the findings, conclusions and recommendations as well as suggestions for future research.

5.1 Summary of findings

The study explored the relationship between classroom management tactics and Physics learning outcomes in selected secondary schools under Bukulula Sub County in Kalungu District. The research was centered on three particular goals which were effective classroom management strategies, examining the hurdles to the effective classroom management, and assessing the influence of various instruction methods on learning of Physics. The study results show a positive relationship between some Physics teaching techniques and increased student performance. In addition, the discussion-based activities were enjoyed where 40.3% of the learners mentioned that these activities helped them in understanding Physics concepts most.

Besides that role-play methods and the constant practice were considered as one of the most important methods by approximately 41.5% of and 46.2% of the students. Inversely, the survey unraveled several major hindrances responsible for ineffective classroom management. Massive class sizes were mentioned by 50.4% of respondents as one of the major drawbacks, concerning the problem of big classes' management. Moreover, 52.2% of participants reported the absence of important materials to teach Physics, which clearly shows the problem of lack of resources.

The external noise and other disruptions are also significant distraction to many students, this affected more than 37.5% of the students in their classrooms. The research on instruction found that the use of diverse teaching methods plays a key role in improving students' results. A combination of varied instructional approaches and frequent application of practical experiments helped 44.7% of learners to grasp the concepts, and increased a 47.7% interest in a more interactive and dynamic educational setting.

These findings not only reiterate the cardinal importance of good classroom management practices but also underscore the imperative of making school delivery mechanisms more innovative and inclusive to respond to the varied needs of different students. Ensuring that the challenges stated such as resource allocation and class size management are addressed, it is very paramount in the quest to achieve the students' full potential in education and other educational settings in Bukulula Sub County, Kalungu district.

5.2 Discussion

5.2.1 Classroom management strategies to enhance Physics teaching and learning

The success of the classroom management techniques in learning Physics is essential for not only engaging the students but also increasing the learning quality for them. In Bukulula Sub County, the brainstorming sessions, role plays, and practical experiments have come in as a catch to help improve the Physics learning space for both teachers and learners. These strategies not only promote active learning but also promote students to deeply interact with the complex Physics topics (Lugolole, 2023). Interactive activities focus mainly on the development of critical thinking skills because they help students present and discuss Physics topics (Waiswa, 2021). The implementation of these ideas is in line with Vygotsky's social constructivism theory which states that social interactions play a crucial function in the development of the cognition (Vygotsky, 1978). Through joint discourse, students take

charge of knowledge formation collectively, thus, bettering their cognition and recall of Physics concepts. Likewise, this method coincides with the findings of Wambi *et al.* (2024) who stressed the importance of cooperative learning in promoting students' critical thinking skills and problem-solving skills.

Role-playing and simulations involve students in real physical scenes that call for the use of theoretical knowledge to deal with them. This enables learning through experience, an approach proposed by Kolb (1984) which believes that learning is more effective when students are physically, emotionally and intellectually engaged in the learning process through experiences that are meaningful to them. Role-play in Physics can help clarify the abstract concepts bringing them into tangible and relatable, which in turn encourages a deeper understanding and involvement among students. It is in agreement with the findings of Tukamuhabwa *et al.,* (2024), who investigated interactive engagement methods and found that when active learning strategies were applied, there was a clear improvement in the learning outcomes of the students. Another crucial element of fruitful Physics education are practical experiments that enable students to explore and investigate physical processes. The practical approach not only reinforces the theoretical knowledge but also increases the students' scientific inquiry skills. Based on the constructivist learning theory (Piaget, 1952), knowledge is constructed by the learner through interaction with the environment, thus practical experiments are a direct way for students to interact with and manipulate the physical world. The positive effects of practical experiments on science education can be traced back to numerous studies, most of them showing that laboratory activities are favorable for students' understanding of the scientific concepts and processes.

In addition, technology as a teaching aid can considerably improve the learning procedure in Physics. Digital resources like simulations and interactive programs give a vivid and interactive approach to illustrate complicated physical phenomena. This substantiates

Mayer's multimedia learning theory (2005), which holds that the incorporation of both auditory and visual information facilitates learning. Technology can provide for simulations impossible in a traditional classroom setting enabling students experience virtual lessons that are both informative and captivating. To wrap up, good management of Physics classrooms through effective instructional strategies facilitates students' engagement and learning outcomes (Tukamuhabwa *et al.,* 2024). With the help of discussion-based activities, role plays, practical experiments and technology integration into the lessons, teachers can create a more holistic and interactive environment. These methodologies are supported by educational theories and reference sources, showing that they play a significant role in creating a favorable learning environment where students can effectively identify and apply Physics concepts. The persisting task for teachers is to adjust the approaches to the circumstances of their specific classrooms, constantly exploring ways to improve learning and take into account the diversity of the needs of students (Kaptum *et al.*, 2024).

5.2.2 Factors hindering effective classroom management

The proper management of the classroom is very important to create a learning atmosphere. Nevertheless, the study indicates several factors that hold back this leading to the decline in quality of learning of Physics in secondary schools in Bukulula Sub County. The largest problem encountered in classroom management is a high number of students in the classroom. This conclusion is similar to the existing research that says big class sizes have a negative influence on the quality of teacher-student interactions and individual student attention (Nkundabakura *et al.*, 2024). Large classes may result in impersonal instruction, lessened access to quality teaching and insufficient supervision of students. This problem intensifies with subjects such as Physics, where students need practical experiments and one-on-one learning for comprehending abstract Physics concepts.

Inadequate teaching materials constitute another major problem that hinders effective classroom control. This very challenge, in fact is a serious obstacle to teachers' capability to use various instructional strategies like experiments and multimedia presentations that are highly effective in teaching abstract scientific ideas. The resource dependency theory offers an explanation of this finding since the availability of crucial resources is considered to be pivotal for organizational effectiveness (Nicholus *et al.,* 2024). The insufficiency of resources in education inhibits a teacher from presenting a lesson that could be suitable for different learning styles and needs, thus making the educational outcomes poorer. Besides this, distractions from the outside like noise and interventions from outside the classroom also affect classroom management a lot. These disruptions steal students' attention, reduce their capacity to focus, and spoil the process of teaching, hence it becomes problematic for teachers to bear steady and effective learning environment. The theory of learning environment argues that a stable and controlled environment is critical for good learning. It states that the environmental factors have the capacity to make or break learning as they can either facilitate the instructional delivery and student engagement or hamper it. The other key aspect is the lack of physical infrastructure such as classrooms (Nalumenya *et al.,* 2023). The overcrowded and poorly ventilated laboratory spaces not only make conducting experiments and group activities challenging but also affect the health and concentration of the students. The matter is directly related to Maslow's hierarchy of needs (Maslow, 1943), in which it is assumed that meeting the basic physical needs (like providing comfortable and spacious environment) is essential for higher-level needs like learning and individual development.

The diversity in student backgrounds can also make the class management even more complicated. Students arrive from various cultural, linguistic and educational contexts. This may result in different expectations and behaviors in classes. This diversity needs the teachers to develop more sophisticated and culturally responsive instructional techniques to direct the

classroom (Badmus, 2023). If the variety of learners are not catered for, teachers will face classroom management difficulties and will further cause educational inequalities. These aspects altogether point to the richness of classroom management troubles in Bukulula Sub County. To rectify the stated issues, there is need for a multi-dimensional approach that includes reducing class sizes, enhancing resource allocation, improving school infrastructure and training teachers in culturally relevant pedagogy. Through these, schools can build better learning conditions that improve on classroom discipline and thus positive students' outcomes in Physics.

5.2.3 Effects of instructional methods on students' learning of Physics

Through the analysis of instructional methods and their effect on students' learning of Physics, pedagogical effectiveness may be revealed in the Physics classroom. This study has identified a number of techniques including varied instructional strategies such as experiments, interactive teaching, the use of technology, which all greatly improve learning outcomes. The use of several approaches of instruction proved to be highly efficient in enhancing students' understanding of Physics. This method agrees with the theory stating that learning becomes easier and the information is retained longer when different representations and methods of instruction are applied (Nicholus *et al.*, 2024). Class teachers may provide students with different modalities - like lectures, discussions, hands-on activities and digital tools - which allows them to cater for varied learning styles as suggested by Howard Gardner's multiple intelligence theory (Gardner, 2011). Every student has special strengths and favours how they obtain and use knowledge that are different from each other, and by providing diverse ways of learning it is possible to enhance achievement and grasp.

Experimental lessons were most successful at increasing students' curiosity and comprehension of Physics. Practical activities are an interactive process through which the

students not only consolidate knowledge but also develop critical thinking skills such as observation, analysis, and hypothesis testing (Nkundabakura *et al.,* 2024). This idea is also reinforced by John Dewey's experiential learning theory, which puts direct experience ahead of knowledge attainment as the basis of deep lasting learning (Dewey, 1986). The fact that experiments in Physics are practical, it makes abstract concepts more applicable and brings the classroom learning into a real-life environment. Interactive teaching methods such as critical thinking and problem-solving were also highlighted as the most effective. These approaches involve world (Lugolole *et al.,* 2024), interactive means help in this regard by making the classroom a learner-centered environment where students build their understanding through engagement and cooperation. In this way, this type of teaching enables both cognitive development and a deeper curiosity about the topic.

5.3 Conclusions

This study has demonstrated the crucial role of competent classroom management in promoting the academic accomplishment of students actively and make them explore Physics concepts by questioning and debating. As the constructivist learning theory states, knowledge is constructed or created by learners as they interpret and relate with other Physics students in schools of Bukulula Sub County of Kalungu District. The employment of diverse and creative classroom management techniques not only makes the learning process more fun but also improve the students' level of focus and mastery of the Physics content. One of the most important revelations made by this research is the fact that active learning approaches are viable. These strategies including discussion-based activities, role-play, and practical experiments have turned out to be most effective. These approaches lure students' right in the learning process and help them grasp the Physics by the application of concepts in the practical situations. This result conforms to educational theories that endorse experiential and active learning centres as stimuli for cognitive processing and retention of knowledge.

Nonetheless the study presents several issues that hinder efficient classroom management and thus, unsuccessful learning of Physics. Large class sizes, insufficient teaching materials and external classroom distraction were the main obstacles. These challenges complicate the learning environments where teachers cannot fully maximize the listed effective teaching strategies. The negative effects of these barriers on teaching and learning are discussed in the educational research, which proves that the best learning takes place in environments where students are offered individual support and learning resources tailored to their individual requirements.

Additionally, the regression analysis demonstrates that certain classroom management techniques have statistically significant relationships with student learning results, confirming the importance of strategic classroom interventions in educational success. The positive signs which are associated with the different instructional methods and the regular practical experiments indicate the importance of hands-on learning experiences and methodological diversity to address the different learning styles and preferences that are present in any classroom setting. Finally, the present work adds to the existing evidence that ties together classroom management and learning. It demonstrates the central role of multifaceted, pragmatic and interactive teaching methods, and reveals the need for systemic change to provide adequate support for such teaching practices. Educators and policymakers should not only fix the issues of pedagogy and systems but also create an educational climate favourable both for teaching and learning.

5.4 Recommendations

1. Schools must empower teachers with regular training of innovative classroom management techniques and strategies for effective instructional delivery that meet the diverse needs of students.

2. Education governance should make sure there will be enough teaching materials and infrastructure development to decrease the classroom size and improve the learning atmosphere.
3. Policymakers should think about reviewing the educational policies in order to deal with the systematic issues of too large class sizes and uneven resource distribution among schools.
4. Schools should collaborate with parents and the local community to develop an atmosphere that encourages the community involvement into educational campaigns and resource allocation.

5.5 Suggestions for future research

Further studies could explore the Impact of Teacher-Student Ratios on Classroom Management: Studying what an impact the student-teacher ratios have on the classroom relationships and learning outcomes.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR STUDENTS

Dear Participant,

I am Ssembuusi Fredrick a student of Uganda Martyrs University pursuing a course leading to the award of Masters Degree of Education. This study is about the classroom management and students' learning of Physics in secondary schools in Bukulula Sub County, Kalungu District. I kindly request you to respond to the questions. I further confirm that your responses will be treated with confidentiality and as such, you do not have to write your name on this questionnaire. Your cooperation and contribution towards this research will be very much appreciated.

Section A: Background Information (Fill in the spaces)

Date of Interview **Respondents' Number**

Class **Gender: Male / Female**

Section B: Classroom management strategies and their impact on learning of Physics

Instruction: Please indicate your level of agreement with the following statements regarding classroom management strategies used in learning of Physics.

(1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

Statement	1	2	3	4	5
Teachers effectively use discussion-based activities to enhance learning.	[ ]	[ ]	[ ]	[ ]	[ ]
Roll calling increases student engagement in class.	[ ]	[ ]	[ ]	[ ]	[ ]
Role play methods are effectively utilized to teach Physics concepts.	[ ]	[ ]	[ ]	[ ]	[ ]
Jigsaws are used to promote cooperative learning among students.	[ ]	[ ]	[ ]	[ ]	[ ]
Teachers mentioning students' names positively impacts class participation.	[ ]	[ ]	[ ]	[ ]	[ ]
A variety of teaching methods are used to maintain students' attention.	[ ]	[ ]	[ ]	[ ]	[ ]
Practical experiments are conducted regularly to enhance understanding.	[ ]	[ ]	[ ]	[ ]	[ ]

Section C: Factors hindering effective classroom management

Instruction: Please indicate your level of agreement with the following statements regarding factors hindering effective classroom management.
(1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

Statement	1	2	3	4	5
Poor teaching techniques lead to poor student engagement.	[ ]	[ ]	[ ]	[ ]	[ ]
Large class size hinder effective classroom management.	[ ]	[ ]	[ ]	[ ]	[ ]
Lack of necessary teaching materials limits effective instruction.	[ ]	[ ]	[ ]	[ ]	[ ]
External noise and disruptions impact on students' concentration.	[ ]	[ ]	[ ]	[ ]	[ ]
Poor sitting arrangements contribute to decreased students' interaction.	[ ]	[ ]	[ ]	[ ]	[ ]
Inadequate space in classrooms leads to frequent disruptions.	[ ]	[ ]	[ ]	[ ]	[ ]
Diverse student backgrounds create challenges in classroom management.	[ ]	[ ]	[ ]	[ ]	[ ]

Section D: Impact of instructional methods on students' learning of Physics

Instruction: Please indicate your level of agreement with the following statements regarding impact of instructional methods on students' learning of Physics.
(1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree)

Statement	**1**	**2**	**3**	**4**	**5**
Varied instructional methods improve students' understanding of Physics.	[ ]	[ ]	[ ]	[ ]	[ ]
Regular use of practical experiments enhances students' interest in Physics.	[ ]	[ ]	[ ]	[ ]	[ ]
Interactive teaching methods stimulate students' critical thinking skills.	[ ]	[ ]	[ ]	[ ]	[ ]
Using technology in teaching aids improves on the retention of Physics concepts.	[ ]	[ ]	[ ]	[ ]	[ ]
Collaborative learning techniques enhance students' communication skills.	[ ]	[ ]	[ ]	[ ]	[ ]
Hands-on activities help students apply theoretical knowledge practically.	[ ]	[ ]	[ ]	[ ]	[ ]
The use of visual aids makes learning Physics more engaging.	[ ]	[ ]	[ ]	[ ]	[ ]

Thank you for your participation

APPENDIX II: INTERVIEW GUIDE FOR PHYSICS TEACHERS

Dear Participants,

I am Ssembuusi Fredrick, a student of Uganda Martyrs University pursuing a course leading to the award of Masters Degree of Education. This study is about the classroom management and students' learning of Physics in secondary schools in Bukulula Sub County, Kalungu District. I kindly request you to respond to the questions. I further confirm that your responses will be treated with confidentiality and as such, you do not have to write your name on this questionnaire. Your cooperation and contribution towards this research will be very much appreciated.

Date of interview: **Respondent number:**

Gender: Female/Male **Interviewer:**

1. What is your philosophy on classroom management?
2. What methods do you use to maintain order in your classroom?
3. As a Physics teacher what hinders you from having effective classroom management?
4. How do you discipline disruptive students?
5. What instructional methods do you use to ensure students grasp the Physics concepts?
6. What methods do you use to ensure that your students participate fully during your Physics lessons?
7. What measures do you use to manage your time effectively during the Physics lessons?

Thank you for your cooperation

APPENDIX III: PERMISSION LETTER(S)

Uganda Martyrs University

making a difference

The Faculty of Education

Date: 30/05/2023

Re: PERMISSION LETTER TO CONDUCT FIELD RESEARCH

Dear Sir/madam,

Greetings from Uganda Martyrs University.

The Faculty of Education is delighted to introduce Ssembuusi Fredrick, Registration number 2021-M313-21145, a student pursuing a Master of Education degree of Uganda Martyrs university.

S/he is undertaking a field research to fulfill one of the requirements leading to the award of a Master of Education degree of Uganda Martyrs University.

His/her research topic is:
Relationship between Classroom Management and Students' Learning of Physics: A Case Study of Selected Secondary Schools in Bukululа Sub County, Kalungu District.

We request that you offer him/her the necessary assistance in order to complete this research project. For further inquiry on this matter, please contact me at 0772-366156 or email: aodele@umu.ac.ug.

Thank you for your support and cooperation.

Sincerely,

AOdele

Dr. Anne Odele

Head of Postgraduate Department

Faculty of Education

Authorised to carry out research.

FATIH ISLAMIC SEC. SCH. 01 JUN 2023 HEADTEACHER P.O. Box 1442 MSK

Uganda Martyrs University

making a difference

The Faculty of Education

Date:30/05/2023.....

Re: PERMISSION LETTER TO CONDUCT FIELD RESEARCH

Permission granted. 02/06/23.

CRESTED HIGH SCHOOL
02 JUN 2023
HEAD TEACHER
P. O. BOX 34, MASAKA

Dear Sir/madam,

Greetings from Uganda Martyrs University.

The Faculty of Education is delighted to introduce Ssembuusi Fredrick
Registration number.....2021-M313-21145....., a student pursuing a Master of Education degree of Uganda Martyrs university.

S/he is undertaking a field research to fulfill one of the requirements leading to the award of a Master of Education degree of Uganda Martyrs University.

His/her research topic is:
..Relationship between Classroom Management and Students' Learning of Physics: A Case Study of Selected Secondary Schools in Bukulula Sub County, Kalungu District,.....

We request that you offer him/her the necessary assistance in order to complete this research project. For further inquiry on this matter, please contact me at 0772-366156 or email: aodele@umu.ac.ug.

Thank you for your support and cooperation.

Sincerely,

ADodele

Dr. Anne Odele

Head of Postgraduate Department

Faculty of Education

Uganda Martyrs University

making a difference

The Faculty of Education

Date:30/05/2023

Re: PERMISSION LETTER TO CONDUCT FIELD RESEARCH

Permission granted
05/06/2023

LOTUKUNGO SECONDARY SCHOOL
HEADTEACHER
05 JUN 2023
P. O. BOX 816, MASAKA

Dear Sir/madam,

Greetings from Uganda Martyrs University.

The Faculty of Education is delighted to introduce Ssembuusi Fredrick, Registration number 2021-M313-21145, a student pursuing a Master of Education degree of Uganda Martyrs university.

S/he is undertaking a field research to fulfill one of the requirements leading to the award of a Master of Education degree of Uganda Martyrs University.

His/her research topic is:
Relationship between Classroom Management and Students' Learning of Physics: A Case Study of Selected Secondary Schools in Bukululua Sub County, Kalungu District.

We request that you offer him/her the necessary assistance in order to complete this research project. For further inquiry on this matter, please contact me at 0772-366156 or email: aodele@umu.ac.ug.

Thank you for your support and cooperation.

Sincerely,

ADodele

Dr. Anne Odele

Head of Postgraduate Department

Faculty of Education