UNIVERSITY OF EDUCATION, WINNEBA

USING MOTIVATION AS A TEACHING TECHNIQUE TO IMPROVE STUDENTS' PERFORMANCE IN INTEGRATED SCIENCE AT KAY-ILLIE-KLAER INTERNATIONAL SCHOOL

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POST-GRADUATE DIPLOMA

2023

UNIVERSITY OF EDUCATION, WINNEBA

USING MOTIVATION AS A TEACHING TECHNIQUE TO IMPROVE STUDENTS' PERFORMANCE IN INTEGRATED SCIENCE AT KAY-ILLIE-KLAER INTERNATIONAL SCHOOL

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A Dissertation in the Department of Educational Foundations, Faculty of Educational Studies, submitted to the School of Graduate Studies in partial fulfillment of the requirements for the award of the degree of Post-Graduate Diploma (Education) in the University of Education, Winneba

JUNE, 2023

DECLARATION

STUDENT'S DECLARATION

I, **Emmanuel Takyi Ainooson**, declare that this dissertation, with the exception of quotations and references contained in published works which have all been identified and duly acknowledged, is entirely my own original work, and it has not been submitted, either in part or whole, for another degree elsewhere.

Signature: _____

Date: Sunday, 01 October 2023

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of this work was supervised in accordance with the guidelines for supervision of dissertation as laid down by the University of Education, Winneba.

Mr. Eric Ofosu-Dwamena (Supervisor)

Signature:

Date: Sunday, 01 October 2023

DEDICATION

To my family, the Ainooson family; my mother Mrs. Faustina Arhinful Ainooson and my siblings John, Kate, Debora and Gifty, and to the memory of my beloved departed father; Mr. John Ekow Arhinful Ainooson.

ACKNOWLEDGEMENTS

I would like to express my profound gratitude to my supervisor, Mr. Eric Ofosu-Dwamena, a senior lecturer in the Faculty of Educational Studies for the immense support and patience he had for me during the course of this study.

Another appreciation goes to Dr. Joseph Appianing also, in the Faculty of Educational Studies for the corrections and support in the course of this project.

Also, I wish to express my profound gratitude to all and sundry who contributed to the successful completion of this project. God bless you all.

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ABBREVIATIONS

UNESCO: United Nations Educational, Scientific and Cultural Organizations

WAEC: West African Examination Council

ABSTRACT

The purpose of the study was to use motivation as a teaching technique to improve students' performance in integrated science at Kay-Illie-Klaer International School. An action research design was used for the study. The population of the study was 164 students in Kay-Billie-Klaer International School. The sample for this study was 80 students chosen from Forms 1, 2 and 3. The sample was made up of 36 male and 44 female students studying Integrated Science. The main instruments for the study were tests and questionnaires. The results have proven how important it is that motivational techniques or interventions such as video usage, rewards, cooperation and competition and goal setting among others can prove extremely useful in the teaching and learning of the Integrated Science subject. The achievements of students in Kay-Billie-Klaer International School have seen a significant lift, a testament to the introduction of the interventions. Based on the findings of the study, it was concluded that the use of motivation in teaching and learning Integrated Science subjects proves to be affirmative. It was recommended that Integrated Science teachers should consider using motivational techniques such as rewards, videos, cooperation and competition and goal setting to improve the achievements of students in the Integrated Science subject.

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

Integrated science is a scientific discipline that integrates a lot of different disciplines including Biology, Microbiology, Ecology, Physics, Chemistry, Earth Science, and Astronomy (Hewitt, Lyons, Suchocki, & Yeh, 2013). UNESCO sees several reasons to introduce integrated science in the educational curricula of various countries as an element in basic education. Some reasons for which they introduce it are: (1) Integrated science learning at the primary and secondary school levels can provide a good, strong basis for students to learn more integrated science-related or specialist subjects. (2) The development of modern science has led to the interdisciplinary nature of science (Oludipe, 2012; Olarewaju, 1994). Frey (2019) states that integrated science aims to fuse concepts, perspectives, and methods from several scientific disciplines to interpret scientific phenomena in our day-to-day lives. The rationale for an integrated curriculum is to show how interdisciplinary knowledge is related to one another (Yager & Lutz, 2014). The rationale explains that science education reforms should be particular about what and how to teach the content of all sciences (Physics, Biology, Chemistry, and Earth Science). Based on these, many educators have given their support to the implementation of an integrated curriculum (Zhou & Kim, 2010).

Research about integrated science has been carried out in various countries. Some studies have investigated the implementation of integrated science (Oludipe, 2012), students' perceptions of the integrated science subject (Zhang & He, 2012; Ogunkola

& Samuel, 2011), and problems related to integrated science (Otarigho & Oruese, 2013; Harrell, 2010; Nampota, 2008; Green & Osah-Ogulu, 2003). Besides these, there are several other studies inquired into, to explain the influence of integrated science learning on students', preservice science teachers' and teachers' understanding of integrated science concepts (Parmin, Nuangchalerm, & El Islam, 2019; Uyar, Demirel, & Doganay, 2018; Rubini, Ardianto, Pursitasari & Hidayat, 2018; Wei, 2018; Putica & Trivić, 2017; Thang & Koh, 2017; An, 2017; Setiawan, 2015; Cervetti, Barber, Dorph, Pearson & Goldschmidt, 2012). Some research was also used to measure the influence of integrated science learning on students' skills. These skills include scientific work independence (Parmin, Sajidan, Ashadi, Sutikno, & Fibriana, 2017), students' experience (Ebersole & Kelty-Stephen, 2017), scientific literacy (Ardianto & Rubini, 2016), students' responses (Van Hecke, Karukstis, Haskell, McFadden & Wettack, 2002), and students' level of satisfaction and self-confidence (Beichner et al. 1999).

Integrated Science is one of the core subjects being offered at the basic level in the Ghanaian Educational system. Integrated science is defined as a cumulative approach to scientific study that synthesizes the perspectives of the individual disciplines, and integrates them during all phases of the approach to a question or problem, with the results influencing policy and management decisions (Gallagher et al. 2008). The idea behind the introduction of the Integrated Science subject into the curriculum of institutions is to provide valuable insight into the various phenomena that happen in the environments around us and equip students to do their part by contributing their quota to sustain the environment for the overall benefit of mankind.

To be able to achieve the goal of contributing to their quota students must be equipped with relevant knowledge, desirable attitudes, values and relevant skills (Poatob, 2015). Integrated Science as a subject has its problems in the Ghanaian Educational system including the lack of adequate teachers and few female students pursuing careers in the discipline. However, notwithstanding these problems, the objectives of teaching the subject can, all the same, be achieved if the appropriate teaching methods, techniques and strategies are employed during the teaching and learning process.

One of the most important techniques that would completely revolutionize teaching and learning effectively is motivation. This very important technique is however almost always absent when it comes to the teaching and learning of the subject. It is therefore very necessary to review the place of motivation in the teaching and learning process of the Integrated Science subject.

Motivation, as the name suggests, is what 'moves' us. It is the reason we do anything at all. For teachers, a lack of motivation has long been one of the most frustrating obstacles to student learning. While the concept of motivation may intuitively seem fairly simple, a rich research literature has developed as researchers have defined this concept in several ways. Social scientists and psychologists have approached the problem of motivation from a variety of different angles, and education researchers have adapted many of these ideas into the school context. While there is a great deal of overlap between motivation theories, researchers differ in their identification of the underlying belief systems leading to motivational variation. Some theorists emphasise belief in oneself and one's competency, others prioritise goal orientation, and a third group argues that the difficulty of the task shapes individual motivation.

High performance is achieved by well-motivated people who are prepared to exercise discretionary effort. Even in fairly basic roles, Hunter et al (1990) found that the difference in value-added discretionary performance between 'superior' and 'standard' performers was 19 per cent. For highly complex jobs it was 48 per cent. To motivate people it is necessary to appreciate how motivation works. This means understanding motivation theory and how the theory can be put into practice.

1.1 Statement of the Problem

The problem under investigation in this research is the disinterestedness and poor performances that students of Kay-Billie-Klaer International School portray in the learning of the Integrated Science subject. This challenge is going to be corrected with the use of motivation. Many psychologists are of the view that the use of motivation enhances effective teaching and learning of any subject, and as such, the Integrated Science subject as well. Unfortunately, teachers of this subject, are yet to introduce this technique into the teaching of the subject. This explains students' disinterestedness in learning the subject. As a result, poor performances are seen in their various end-of-term exams relative to all other subjects that those same students write as well.

1.2 Theoretical Framework

The researcher believes that motivation sets the stage for cognitive engagement, as put forth by Franken (2006). Franken argues that motivation plays an important role in classroom work, and content assimilation by learners. Franken argues that motivation improves the arousal, direction, and persistence of behaviour hence it can be implored in improving content assimilation by teachers. A thorough perusal of the literature shows the role of motivation in classroom instruction.

There are many theories of motivation. These theories offer explanations for the relationship that exists between motivation and learning. Three of these theories underpins this study. These are:

1. Maslow's hierarchy of needs theory
2. Factor theory of motivation
3. ERG theory of motivation

1.2.1 Maslow's hierarchy of needs theory

Abraham Maslow developed the Hierarchy of Needs model in 1940-50s and the Hierarchy of Needs theory remains valid today for understanding human motivation, (Robbins 1996). Maslow (1954, 1970) indicated that a person has five fundamental needs: physiological, security, affiliation, esteem, and self-actualization. The physiological needs include pay, food, shelter and clothing, and good and comfortable work conditions. The security needs include the need for safety, fair treatment, protection against threats and job security. Affiliation needs include the need of being loved and accepted as part of a group. Whereas esteem needs include the need for recognition, respect, achievement, autonomy and independence. Finally, self-actualization needs, which are the highest in the level of Maslow's need theory, include realizing one's full potential or self-development.

The five needs were grouped into two by Maslow, physiological and safety needs which are described as lower and social, esteemed and self-actualization as higher. The main differential between the two is on the premises that higher-order needs are satisfied internally (within the person) whereas lower-order needs are predominantly satisfied externally (i.e. compensation etc.). He inferred that naturally in times of economic boom, most of all permanently employed workers have their lower-order

needs substantially met. Maslow by this argument concluded that one can best motivate a worker if one understands what level of the hierarchy the worker is currently on so that one can understand what motivation can be effective. However, Ololube (2006) stressed that despite Maslow's effort and insights into the theories of motivation, replicate studies failed to offer strong support for the need-based theories. Also, studies aimed at validating Maslow's theory failed to find substantiation in support of the needs hierarchy. This notwithstanding, Ololube, (2006) believes that Maslow's theory is the most widely recognized theory of motivation and perhaps the most referenced of the content theories.

1.2.2 Factor theory of motivation

The theory states that certain factors in the workplace cause job satisfaction, while a separate set of factors cause dissatisfaction and that job satisfaction and job dissatisfaction act independently of each other (Herzberg, 1959). Mensah (2011) in support adds that motivation is a psychological process which is not directly observable and numerous organizational and environmental obstacles can affect goal attainment, but it has always been important to lead employees to do what employers or customers want in the workplace for improved productivity, Robbins (1996) suggested that he came out with a Two-Theory of Motivation to explain that there were two factors driving employee satisfaction in the workplace: motivation factors and hygiene factors. Hygiene factors, if lacking in a vocational environment, can lead to workers' job dissatisfaction. The role of hygiene factors is simply to prevent workers' discontent. In other words, these factors do not lead to higher levels of motivation but, without them, there is dissatisfaction. Unlike hygiene factors, motivation factors can truly encourage employees to work hard and enjoy their jobs. Examples of hygiene factors are interpersonal relations, job conditions, career

stability, supervision, and guaranteed retirement funds. Whereas examples of Motivators are a passion for the job, social responsibility, opportunity for advancement, respect, praise, recognition, and the feeling of achievement (Herzberg, 1966). According to Herzberg, these two groups of factors are by no means connected. Therefore, managers who seek to eliminate factors that create job dissatisfaction can bring about peace, but not necessarily motivation (Robbins, 1996)

It has been observed that psychic rewards such as acknowledging teaching competence have been very effective in the area of commitment to teaching (Rosenholtz, 1989). In agreement with this, Ololube (2006) 2000 reported that extrinsic incentives, such as merit pay or effective teaching rewards have not been found to affect teacher job satisfaction and effectiveness among Nigerian teachers.

1.2.3 ERG theory of motivation

Olulobe (2006), Ifinedo (2003), Lawler and Suttle (1972) alluded to the fact that studies which aimed at validating Maslow's theory of needs failed to find substantiation in support of it. To bring Maslow's need hierarchy theory of motivation in synchronization with empirical research, Clayton Alderfer redefined it in his terms and called it the ERG theory of motivation. He categorized Maslow's hierarchy of needs into three simpler and broader classes of needs: Existence needs Relatedness needs and Growth needs (ERG).

The Existence needs to include basic material necessities. These are an individual's physiological and physical safety needs. Relatedness needs also include the aspiration individuals have for maintaining significant interpersonal relationships with others such as family, peers or superiors and also includes getting public fame and recognition. Maslow's social needs and external component of esteem needs fall under

this class of need. The Growth needs include the need for self-development, personal growth and advancement. Maslow's self-actualization needs and the intrinsic component of esteem needs fall under this category of need (Armstrong, 2010; Olulobe, 2006).

1.3 Perceived Problem

There is a poor performance in the Integrated Science subject relative to all other taught subjects, both core and non-core at the Kay-Billie-Klaer International School, East Legon.

1.4 Diagnosis of the Problem

1. It was observed that many students do not participate in class lessons. Students' participation is not encouraging.
2. Students most often than not score low marks in tests and end-of-term examinations as compared to all other subjects those same students write as well.
3. Students' attitudes during an Integrated Science lesson is not encouraging

1.5 Evidence of the Problem

1. During an end-of-term examination conducted by the school, about 95% of students who partook in the examinations, passed. However, about 60% of these students had grades below 3.
2. The average performances are seen during the BECE and WASSCE every year. There were 63.17% passes in 2019 and 52.53% passes in 2020 as cited by WAEC about the released WASSCE results (WAEC, 2020).

3. During an Integrated Science lesson, students are mostly seen chatting with one another to show their disinterest in the subject and as such, most often than not, scored low marks in class assessments.

1.6 Causes of the Problem

1. The wrong perception students possess about the Integrated Science subject is that it is excessively difficult and so making good grades in the Basic Education Certificate Examination (BECE) is very hard. For this reason, any student who ventures into it fully as a program at the second cycle level stands the risk of not entering into any tertiary institutions for fear of not getting adequate passes.
2. Students are not motivated at all during Integrated Science lessons.
3. The way and manner that was used in teaching the subject in much of their previous levels before getting to this level was usually the lecture technique and so made it quite difficult to follow.

1.8 Purpose of the Study

The purpose of the study was to use motivation as a teaching technique to improve students' performance in integrated science at Kay-Illie-Klaer International School.

1.9 Research Objectives

The objectives of the study include:

1. To find out how the use of motivation can raise the enthusiasm levels of students in the Integrated Science.
2. To use motivation to correct all the wrong perceptions students hold about Integrated Science.

3. To use appropriate motivational techniques as a teaching technique to improve the performance of students' in Integrated Science.

1.10 Research Questions

The study is guided by the following research questions:

1. How can the use of motivation raise the enthusiasm levels of students in the Integrated Science?
2. How can motivation as a teaching technique be used to correct all the wrong perceptions students hold about Integrated Science?
3. What appropriate motivational techniques can be applied to improve the performance of students' in Integrated Science?

1.11Significance of the Study

This research would help enhance the performance levels of Junior High School (JHS) two students of the Kay-Billie-Klaer International School to perform better in the Integrated Science subject. The nation at large would benefit greatly from this study when the findings of this study are put to effective use. This is because many students would have a renewed interest in the subject and would pursue more career opportunities in the science discipline. As a result, the deficit in science-based related careers in the country would be made up for with the incoming generation of Ghanaian students over the subsequent years ahead.

1.12 Delimitations

The study was confined to the Kay-Billie-Klaer International School at East Legon, Accra and the Ada branches. It did not consider any other schools as it completely took only the school as its only source of information for the study. The study also focused only on the Junior High School level and not the Senior High School level,

although this level equally needs motivation for effective learning of the Integrated Science subject to improve performance.

1.13 Definition of Terms

Motivation: Used to refer to a set of processes which energizes a person's behaviour and directs him/her towards attaining a certain goal.

Performance: Results achieved against specified objectives.

Pre-test: This is the initial test, written before the intervention was applied in the classroom lessons.

Post-test: This is the test written after the intervention had been used in the classroom lessons.

Objectives: Specific aims of a firm.

Collaboration: A group working together towards reaching a goal and the group is assessed as one.

Cooperation: A group working together towards reaching a goal but each person within the group is assessed individually.

Technique: Specific ways of instructing learners to promote teaching and learning to improve learners' achievement.

Assessment: Exercises ascertaining learners' achievement or competence in a lesson delivered.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter focuses on literature related to this study. Literature is reviewed under the following subheadings:

1. Nature and Meaning of Motivation
2. Theories of Motivation
3. Types of Motivation
4. Importance of Motivation
5. Measuring Motivation
6. Cultivating Motivation
7. Types of Motivational Techniques

2.1 The Nature and Meaning of Motivation

Motivation as a word has its origin in the word motive. This means the desire to attain a goal. Motivation as a terminology is viewed differently by different authorities and it largely depends on the field of endeavour of the authority. Akpan (2000) defines motivation as a state of an organism in which the energy is mobilised selectively toward the attainment of a given goal. Chauhan (1990) refers to motivation as "all those phenomena which are involved in the stimulation of actions towards a particular objective where previously there was little or no movement towards those goals" (p. 202).

From the above definitions, it could be realised that motivation is regarded as a force or energy which causes a behavioural change in an organism and causes the organism to move into action. It is also clear that motivation directs and controls organisms. This means an organism which is being moved by this force does not move haphazardly. It chooses a path and moves carefully towards a set goal. Globally, there has been an increasing concern in the education sector on how to ensure that students learn optimally at school and achieve academic excellence in their academic pursuits. In Nigeria, there has been a nationwide cry on the fallen standards of education and poor performance of pupils in mathematics. Various factors have been identified for poor academic achievement among students and these include poor study habits, laziness, ineffective classroom instructions, inadequate provision of instructional material and lack of motivation (Akpan, 2000).

Motivating students to learn in school is a topic of great concern for educationists today and motivating students so that they can succeed in school is one of the greatest challenges of this century (Awan, Noureen & Nas, 2011). Getting students to learn and sustaining their interest in what they are learning therefore should be the sole objective of teachers in the classroom. Motivation is a significantly important factor in academic learning and achievement (Elliot & Dweck, 2005). Moula (2010) observes that motivation is one of the factors that contribute to academic success; that parents and educators should strive to understand the importance of promoting and encouraging academic motivation early in life. Feldman (2005) refers to motivation as factors that direct and energize the behaviour of humans and other organisms, while Slavin (2006) sees motivation as a process that initiates, directs, and sustains behaviours to satisfy physiological or psychological needs. Motivation is also seen as what gets one going, keeps one going, and determines where one is going (Slavin,

2006). The influence of motivation on learning cannot be overstated. Motivated learners exhibit higher levels of intrinsic interest, curiosity, and self-regulation, all of which contribute to more effective and meaningful learning experiences. Motivation acts as a driving force that energizes and directs learners' efforts, leading to significant improvements in learning outcomes" (Awan, Noureen & Nas, 2011). According to Self-determination theory (Ryan & Deci, 2000), there are two types of motivation i.e. extrinsic motivation and intrinsic motivation.

2.2 Types of Motivation

Generally, there are two types of motivation. These are Intrinsic and Extrinsic motivations. Research has shown that when students are motivated, either through intrinsic or extrinsic factors, they are more likely to perceive a topic as interesting. Motivation provides the cognitive and emotional impetus for students to invest their attention and effort into understanding the subject matter, thus enhancing their overall interest and enjoyment of the topic" (Hidi & Renninger, 2006). Akpan (2000) defines intrinsic motivation as a type of motivation which is naturally related to learning. Intrinsic motivation is embedded in the process itself or in the knowledge to be obtained. A behaviour is shown based on the long-term goal set by an individual. Intrinsic motivation includes self-concepts, values, interests, etc.

Intrinsic motivation is an inner force that motivates students to engage in academic activities because they are interested in learning and they enjoy the learning process as well (Ryan & Deci, 2000). Moula (2010) explained that intrinsic motivation is the true drive-in human nature, which drives individuals to search for and to face new challenges. Their abilities are put to the test and they are eager to learn even when there are no external rewards to be won. Students with learning goals of seeking

understanding for mastery of science content and skills are said to be intrinsically motivated (Awan, Noureen & Nas, 2011; Elliot & Dweck, 2005). Ryan and Deci (2000) stated that intrinsically motivated individuals possess the following characteristics: They engage in both mental and physical activities holistically, they remain highly focused throughout these activities with clearly defined goals, they are self-critical, they self-reflect on their actions realistically, and they are usually relaxed and not afraid to fail during learning. A research study done by Stipek (2018) concluded that intrinsically motivated students learn independently and always choose to do challenging tasks. They persevere to complete the tasks they have undertaken. They integrate the knowledge acquired in school with their experiences gained from outside school. They often ask questions to broaden their knowledge and learn regardless of any external push factors or help from teachers, and they take pride in their work and express positive emotions during the learning process. When students are intrinsically motivated, driven by their interests, curiosity, and the satisfaction of learning itself, they are more likely to engage in class discussions, ask questions, and actively contribute to group activities (Pluck & Johnson, 2011). Highly intrinsically motivated students can learn new concepts successfully and show a better understanding of the subject matter (Stipek, 2018). Unlike intrinsic motivation; extrinsic motivation drives students to engage in academic tasks for external reasons.

Extrinsic motivation is however concerned with artificially connected techniques that deal with learning. Slavin (2003) stated that extrinsic motivation is the type of motivation that dwells on rewards and punishments while the latter, intrinsic motivation is self-applied, lying in the affective domain of feelings and emotional responses. In his view, Dornyei (2001) sees extrinsic motivation as doing an action to

receive an extrinsic reward or to avoid punishment, while intrinsic motivation is about an action that is done for its own sake to experience a satisfaction.

According to Desi (1975), extrinsic motivation is not part of the learning process itself but an intervention from an outside authority usually the teacher. On the other hand, Studies in Western educational contexts suggest that intrinsically motivated students display greater school engagement, information-seeking behaviour, and, consequently, academic achievement (Hidi & Renninger, 2006; Pintrich & Schunk, 2002; Ryan & Deci, 2000). From the discussion so far, it is clear that intrinsic motivation is generated internally and its effects are more long-lasting. However considering the classroom situation, the readily available tools used by teachers in the teaching and learning process sparks intrinsic motivation in students. Intrinsic motivation can only come from the students themselves when the internal force within them begins to work. The fuel however for this type of motivation comes from the teacher and that is referred to as extrinsic motivation.

2.3 Importance of Motivation

First and foremost, motivation is an orientation towards learning. Therefore, it impacts how likely a student is either to give up or push forward and how thoughtful their reflection on their learning will be. Research has consistently shown that motivated students exhibit higher levels of focus and concentration in class. When students are motivated by clear goals, a sense of purpose, and the relevance of the subject matter, they are more likely to direct their attention to the learning materials, actively participate in discussions, and absorb the content more deeply" (Hidi & Renninger, 2006). The deeper the motivation for pursuing an activity, the more likely that the student will not accept easy answers to complex questions. In short, intrinsic

motivation fosters strong and flexible critical thinking skills. On the other hand, motivation and purely extrinsic motivation lead to low interest and academic persistence.

2.3.1 Motivation fosters creativity and critical thinking

Intrinsically motivated students treat learning like play. As a result, they are more likely to flip the learning on its head to see it from a new angle. Motivated students are not more intelligent than unmotivated students, but their need to find out the answer to a question or to master a concept pushes their thinking. Intrinsically motivated students will think about questions far beyond the confines of the classroom because the presence of the teacher or the fear of a low grade is not the underlying driver for their thinking. Therefore, motivated students, underthinking longer and harder and enjoying the challenge of being confused, will ask deeper, more thought-provoking questions. Motivated students are more able to adapt learned content to new situations because they tend to reflect on underlying causes or frameworks (Awan, Noureen & Nas, 2011, Slavin, 2006, Elliot & Dweck, 2005).

2.3.2 Motivation cultivates resilience and self-assurance

When a student is truly engrossed in a task, they have less cognitive and emotional energy to focus on social image. Individuals who engage in intrinsically motivating activities report that their self-consciousness and other stressors tend to fade for the period of the activity. Motivated students are also more able to emotionally 'bounce back' from a low grade on a test or harsh criticism from a teacher or peer. Because intrinsically motivated students are not driven by fear of failure or criticism, they are less likely to disengage in such circumstances. With that said, every student does feel

the demotivating effects of negative feedback, even if driven students experience them to a lesser extent (Akpan, 2000; Moula, 2010; Hidi & Renninger, 2006)

The agency may be defined briefly as a sense of purpose and autonomy in striving after one's goals. Agency and motivation are inextricably linked concepts because, as a student becomes more driven to reach a goal, they consequently develop a stronger sense of purpose in directing their energy towards that goal. When it comes to educational attainment, highly motivated students find a way to forge their path and tend to be sceptical of the limitations set by others. As professionals, motivated individuals also tend to be sceptical of established ideas or rules of the field, and instead constantly challenge themselves by experimenting with new ideas (Ryan & Deci, 2000).

2.4 Cultivating Motivation

While the above theories may differ in emphasis, each can support student motivation through the following practical applications.

2.4.1 Practise a growth mind-set

Students who feel like they will improve through hard work will exert more effort than those who believe that their success is based on intelligence. Teaching students to use the phrase 'yet' when explaining their gaps in knowledge helps to move them away from this deterministic orientation. For example, if a student says 'I can't do that', suggest that 'you can't do that, YET'. Making a conscious effort to provide wait time also removes the pressure of needing to be the first to find the answer. When students come to realise that their teacher will always wait 5 seconds or so before calling on a student rather than always calling on the first hand, they will be more likely to engage with the struggle of thinking through the problem. Finally, by

keeping the emphasis on progress rather than scores, a growth mindset pushes students to continually challenge themselves and reflect on their improvement. Even small improvements and successes can help to spur a student's motivation (Awan, Noureen & Nas, 2011).

2.4.2 Encourage self-efficacy

Moula (2010) students who are paralysed by low academic self-confidence will struggle to drive their motivation. A sense of competence is enhanced through optimal challenges. These are also referred to as 'just right' challenges because they are difficult enough to be just above the student's current ability to work independently but easy enough for the student to follow along with the teacher. As the student practises this new skill or concept, the teacher slowly removes their structured support, making it more and more difficult. This slow removal of support, paired with positive reinforcement and opportunities to receive support along the way, keeps students at this level of optimal challenge as they improve. Consistent small successes will further enhance motivation.

In addition, most of us can relate to the value of being reassured of one's competence to learn a skill or concept. Students often base their view of their competence on how they believe their teacher views them. Therefore, teacher observations of student effort encourage a sense of competence, as well as pointing out how far the student has come in their learning. When students have a firm sense that they are regarded as competent, they will be more likely to treat learning like play, making mistakes and taking risks. Threats and unyielding deadlines tend to diminish this orientation towards play-like learning (Akpan, 2000; Moula, 2010; Hidi & Renninger, 2006).

2.4.3 Normalise the struggle

Students may give up because they falsely believe that, if they were going to succeed, it would be easy. Teachers can disentangle this misconception by providing examples of failures that well-known individuals overcame along their journey towards success. Emphasising the value of asking for help may catch students who are falling behind and becoming disengaged from the material. One phrase that may be useful when students seem to lose motivation for a difficult task is: 'This is new, this is hard, and if you get it wrong the first time then the challenge is simply to figure out why and to carry on (Hidi & Renninger, 2006, Ryan & Deci, 2000).

2.4.4 Minimise competition when there is one right answer

Pressure to compete tends to diminish motivation unless the two students are and perceive themselves to be equally competent: if a student at the top of the class is pitted against a student who is struggling, the latter student may feel that there is no reason to try. This is not to say that class or school-wide competitions should be avoided. When broader competitions are more open-ended, students can creatively self-guide their projects and will feel a stronger sense of intrinsic motivation (Slavin, 2006; Hidi & Renninger, 2006).

2.4.5 Develop optimally challenging, mastery-oriented goals

Differentiating tasks so they are appropriately challenging allows students to maintain optimal engagement. When students are working just within their current ability, they are drawn in by their curiosity to find the answer and spurred by the belief that they can find the answer. Teachers can also encourage students to set authentic learning goals rather than performance goals. Students can practise using mastery-orientation language when writing weekly, monthly, or long-term goals. Goals that begin 'to learn', 'to understand', or 'to master [a particular skill]' support this orientation, while

goals such as ‘to get a grade’, ‘to earn more points than last quiz’ or ‘to meet my parent’s goal of’ all express performance goals. Teachers can reinforce mastery-orientation by modelling it in their goal-setting (Awan, Noureen & Nas, 2011, Slavin, 2006, Elliot & Dweck, 2005).

2.4.6 Create a quiet space

Despite the popular idea that fidgets or music support student focus, brains generally need quiet or ambient noise to stay engaged. Higher-level brain functions such as creativity and critical thinking are inextricably linked to a state of flow, so students who are constantly interrupted will never be able to reach this level of highly motivated thinking. Therefore, independent and collaborative work should occur at separate times, or in separate spaces if they must occur simultaneously (Awan, Noureen & Nas, 2011).

2.4.7 Avoid tangible rewards

Some learning is simply not particularly interesting, and no amount of differentiation can make every learning experience enjoyable for every student all of the time. External rewards such as long-term career goals and teacher approval are realistic external rewards that teachers can use. However, when deciding whether to use external motivation, it is important to keep certain principles in mind. Tangible rewards are often counterproductive, and the more external the reward, the less inherently valuable the student will find the activity. Even when students complete an activity for the inherent value they see in it, and are given an unexpected reward, they later regard their motivation for doing the activity as more extrinsically motivated than students who were not given a reward (Ryan & Deci, 2000; Slavin, 2006.

2.4.8 Acknowledge but don't dwell on potential hurdles

Students who believe that they can succeed are more likely to reach their goals. However, students must consider what may go wrong to avoid being emotionally devastated when they encounter setbacks. Letting students know that they will encounter setbacks and that they are entirely normal, takes away some of their stings at the moment. In addition, students who consider hurdles before taking on a challenge can make a plan regarding how to continue moving forward. It is deeply valuable to emphasise to students that obstacles will always come up, but that what is important is to learn from these obstacles rather than dwell on them (Awan, Noureen & Nas, 2011, Slavin, 2006, Elliot & Dweck, 2005).

2.5 Measuring Motivation

Moula (2010) periodically evaluates students' social-emotional learning serves the dual purpose of informing the teacher of their students' progress and wellbeing, and prompting students to practise self-awareness. While formal school-wide social-emotional assessments are valuable for collecting comprehensive data, these measures are time-consuming and cannot practically be implemented more than once or twice each year. For these formal assessments, one reliable measure with strong evidence of validity is the Panorama Social-Emotional Learning Survey. However, on a fortnightly or monthly basis, teachers can informally gauge student motivation by asking the following questions:

How often do you do the following? Write a 1-10 next to each response (1=Not Often; 10=Very Often)

1. Choose to work above and beyond what is expected
2. Stick with a task until it is completed

3. Attempt to solve problems that others have difficulty with
4. Hurry through assignments
5. Ask questions to better understand difficult concepts
6. Try to avoid competitive situations
7. Put forth minimum effort
8. Do something over again just to get it right

These questions are suitable for verbal or written check-ins. When scoring written check-ins, items 4, 6, and 7 should be reverse-scored.

It is also prudent to consider not only the level of motivation a student has but their form of motivation. Is the student more intrinsically or extrinsically motivated, or somewhere in between? With this knowledge, we can use the above strategies to nudge the students towards more internal motivation by developing their sense of competency and control over their learning, as well as doing what we can to draw students in with interesting content (Elliot & Dweck, 2005; Ryan & Deci, 2000).

2.6 Types of Motivational Techniques

According to Chauhan (1990), to answer the question of how to motivate students to learn and also to sustain the students' interest in the course of study, psychologists have developed some common techniques which may be used by some classroom teachers to motivate students in their work. Below are some common techniques which may be used in classroom teaching and learning situations.

2.6.1 The use of praise

The desire to be praised is human inherent, more especially when an achievement is attained. Moula (2010) argues that the ability to praise is largely a matter of personal

orientation that causes one to see others clearly and to understand them. Akpan (2000) observed that intermittent use of praise is as effective as those given for every person's actions. Teachers should try to relate the use of praise to the teaching and learning process.

2.6.2 Setting of goals

In his view, McClelland (2017) suggested that teachers should describe and set goals that the learner would attain. According to Chauhan (1990), goal setting is an important component of human motivation. Teachers should not fail to set goals for both individuals and the class which are achievable. When students have a rewarding goal they may be willing to sacrifice their immediate pleasure and endure suffering to achieve the goal. In a study by Awan, Noureen and Nas (2011), they found that by implementing motivational techniques, such as setting clear goals, providing meaningful feedback, and creating a supportive learning environment, students' motivation levels increased significantly, leading to a noticeable improvement in their class participation.

2.6.3 Feedback

Research findings show that positive feedback from teachers in this area affects student motivation. Borich (2011) argues that positive feedback can be a motivating factor in his research, and teacher praise motivates him to imitate what he sees in his students, so getting positive feedback is confidence building. For this reason, a student will want to praise again when he is praised by a teacher, and he will continue to be more willing to do the same. According to Akpan (2000) when students are given periodic opportunities for evaluating their work, they make higher test scores

than those who do not follow this procedure. This leads to the point that teachers need to give feedback to students on their performance.

2.6.4 Novelty

Certainly, new things create interest in individuals. Chauhan (1990) opines teachers must introduce novelty into their teaching. The novelty has an advantage when the teacher points out the link between the new and the old ones. He uses the familiarity produced by this link to show enthusiasm or the extension of knowledge into new areas. Teachers should present lessons in different manners in other to bring novelty to their teaching.

2.6.5 Use of competition and cooperation

Gillies (2003a) also stresses that students working together are more motivated to achieve than they would be when working individually. A thoughtful and intentional use of competition has its place in the transformative classroom. Competitive contexts offer unique learning and growth opportunities. Chauhan (1990) also argues that "teachers should bear in mind that competition should involve a degree of equality among contestants and even where there is some equality of competitors. Teachers should strive for friendly rivalry rather than breed interpersonal antagonism (Gillies, 2003b)."

Competition according to Chauhan and Com may be of three categories:

a. Interpersonal competition among peers often encourages spirited rivalry.
b. Group competition where each can contribute and is involved in the group's success is a stronger motivation.
c. Competition with self with one previous records can be effective and is highly recommended by mental hygienists

2.6.6 Curiosity

Students must have high curiosity in the learning process because curiosity includes intrinsic motivation, which has an excellent potency to improve learning outcomes (Pluck & Johnson, 2011). Teachers must recognize that motivation is a fundamental driver of student learning. They have the power to ignite students' curiosity, interest, and passion for the subject matter by employing motivational techniques such as relevance, active learning experiences, and acknowledging students' accomplishments. By doing so, teachers can create an environment conducive to optimal learning and achievement" (Akpan, 2000; Moula, 2010; Hidi & Renninger, 2006).

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter considers the methods and techniques used in gathering information. The method and techniques include research designs, population, sample, sampling technique, intervention, data collection procedures, method of data presentation and analysis

3.1 Research Design

The study employed action research as the research design. Action research is a systematic approach to solving practical problems through a collaborative process of planning, action, and reflection (Creswell & Creswell, 2018). It involves identifying an issue, gathering data, implementing interventions, and evaluating the results to inform future action. This type of research is often conducted in real-world settings and involves stakeholders who are affected by the problem being addressed.

Action research can be applied in a wide range of settings, including education, healthcare, social work, and community development. It has been used to address a variety of issues, including improving student achievement, reducing health disparities, and promoting social justice. However, there are also some challenges to conducting action research, including the need for a high level of engagement and commitment from stakeholders, as well as the potential for bias and subjectivity in the research process. Overall, action research is a valuable approach to solving complex problems and promoting positive change in real-world settings. By engaging

stakeholders in a collaborative process of planning, action, and reflection, action research can lead to more sustainable solutions and greater social impact (Cohen, Manion & Morrison, 2008).

3.2 Population

The target population of this study was all JHS students in Kay-Billie-Klaer International School.

3.3 Sample and Sampling Technique

The sample for this study was 80 students chosen from Forms 1, 2 and 3 of Kay-Billie-Klaer International School. There were 36 males and 44 females who are all studying Integrated Science as a core subject. Depending on the nature of a population and the information desired through sampling from it, there are many ways in which the sample may be drawn; these are discussed in texts on sampling techniques (Schreuder, Gregoire & Wood, 2003; Cochran, 2009; Gregoire & Valentine, 2008).

As discussed by Gregoire and Valentine (2008), before a sample can be drawn from a population, it is necessary to have available a 'sampling frame', that is, a mechanism that identifies and locates the sampling units within the population. It may be a 'list sampling frame' whereby a list of every sampling unit has been compiled, or it may be an 'area sampling frame' that consists only of a map of the area containing the sampling units. Perhaps the most basic method of sampling is 'simple random sampling', where every member of a population has the same chance of being included in the sample and where all possible samples of a given size have the same chance of selection. Cluster sampling is one method that has been used in these circumstances. It involves dividing the population into recognisable 'clusters' (say, streets within a city suburb) and then sampling from the clusters (say, the houses in a

street) (Cochran, 2009; Schreuder, Gregoire & Wood, 2003; Gregoire & Valentine, 2008). However, this is inappropriate if it is desired to take a simple random sample of individuals from the population; cluster sampling generally involves varying chances of selection for the population members, rather than equal chances as required for a simple random sample.

The researcher used the classification of students as a baseline for simple random sampling. This was because all the classes have the same characteristics such as the subjects they are offering and the level of performance as well. Therefore, choosing some students from among them, may not result in disadvantaging the unchosen ones and adversely affect the study. Simple random sampling affords every individual in a sample population who could potentially be involved in a study, an equal chance of being selected to be part of the study.

The researcher also settled on the use of a classification system because it was far easier to deal with students of the same level (JHS), offering the same subjects. Simple random sampling was used to select some students out of the lot. Ballot papers were prepared and used, some of the ballot papers bore the inscription "NO" while others had "YES". Students of all JHS classes took part in the balloting and all those who picked a "YES" ballot were included in the study. These were 80 students in all, forming about 50% of the total population of JHS students. All of the teachers were chosen to be part of the study to get their varied responses on the matter.

3.4 Intervention and Procedures Used

The problem identified during my two months of observation of the students as well as information gathered from interviews conducted fell in line with each other. The problem is classified as follows:

3.4.1 Poor performance

Though the majority of the students passed their examinations in the subject, as many as about 45% of the selected population had grades between 4 -7, which cannot be said to be good results.

3.4.2 Lack of interest

An observation carried out shows that only a few students make contributions during Integrated Science lessons, the majority of them sit unconcerned, lose focus and play around. Students would sit absent-mindedly in the classroom as teaching and learning occurred and not be concerned at all. They had less interest in the subject, compared to other subjects.

3.4.3 Wrong notion

During a free period, only a handful of students were observed carrying Integrated Science textbooks. Many of the students were observed reading other subject-based textbooks. This attested to the fact that students perceive other subjects as much more understandable and easier compared to the Integrated Science subject, therefore they devote much attention to the reading of these subjects.

3.5 Interventions

The interventional measures were embarked upon bearing in mind the various problems identified early on. Poor performance: Results of any kind serve as an essential instrument used in collecting data on the performance of a single individual. The researcher used knowledge of the result as a motivational technique. Due to the seriousness of this problem, the researcher devoted two periods every month to the implementation of this measure.

During the last two periods of the last week of the month, a class test is organized covering the topic treated so far. The papers were promptly scored, results were recorded and positions were given based on individual performance. After the outcome is pasted in the classroom for the student to see and assess their performance, those who have been doing well were always happy and received praise from their colleagues.

Those who did not do too well have not been too happy. Gradually keen competition was generated, as those who were at the bottom of the ranking were striving to shoot up to the top, while those at the top were always trying hard to maintain their position. This measure went a long way to cause the student to be studious in the Integrated Science subject. Hence great improvement in the second and subsequent terms.

3.5.1 Lack of interest

Interest is a very powerful force that drives any organism to a higher height. The absence of this force means no meaningful achievement can be recorded. Considering all these important valves of interest, the researcher used all her Integrated Science periods in implementing this. As a matter of procedure, the research did not go straight to all the lessons she thought. She rather used stories and gave clues where by students used these clues to come out with the topic to be treated. This by and large helps to capture the attention of the students. Again, the researcher presented her lesson in such a manner that the student was always anxious to know what is contained in the next stage of the lesson.

The teacher deliberately declined to answer some of the questions posed by students. She rather taxed them to find the answers and report them to the class in the next period. This measure consciously drew the student to the mainstream teaching and

learning process. Students were no longer sitting on the fence but rather always involved in the lesson to know what it contained. In a nutshell, the interest of the children has been whipped up in the subject.

3.5.2 Wrong notion

The wrong notion among the students concerning the subject of Integrated Science is that it is a difficult subject and since they try to understand, their efforts remain futile and so they would not spend their time reading it, and would rather read more understandable subjects. For this reason, students did not spend a lot of time or attach much seriousness to the study of the subject and hence poor performances were seen.

As an interventional measure, the researcher employed the setting of goals to arrest this problem. The researcher gave assignments to the students from time to time, and the scope of the study was always made known to the student as well. They were made to read their assignments in class. A person with a well-researched presentation was given an acknowledgement in class. Again, he or she is also exempted from that week's school duties. A challenge is therefore thrown to the other students to do a better presentation the following week to be accorded the same privilege.

Before any class test is conducted, the teacher made each student write down the marks they will obtain in the pending test. Those who were able to meet this target were very happy. Those who were not able to meet the target tried hard to make it another time. The more they were involved in this exercise, the more they realized that Integrated Science is not as difficult a subject as they thought it to be. This measure went a long way to help students do away with the wrong notion they had about the subject.

3.6 Data Collection Procedure

The three Integrated Science teachers were given questionnaires which sought to find out from them the types of motivational techniques they have been using when teaching, and the strengths and weaknesses inherent in their techniques. Standardized questionnaires were used. This help to guide the responses of the teachers towards a purposeful goal. This made data collection and analysis very easy.

Nevertheless, open-ended questions were included to help explore the thought of the teacher as to how motivational techniques can be designed to suit JHS students. The main purpose of the questionnaires was to support the researcher's observation. The result corroborated the information obtained by the researcher through her observation.

3.6.1 Observation

The researcher used observation to help the researcher to observe the participation of students in the Integrated Science subject. The teachers were also observed during the teaching and learning periods to ascertain the types of motivational techniques used. A few of the students and the teachers were interviewed during the recess periods. This was to enable the researcher to know how many of the students plan and give preference to the study of the Integrated Science subject.

3.8 Method of Data Analysis

The information gathered using the questionnaires and the achievement made in getting Kay-Billie-Klaer International School students to appreciate the Integrated Science subject more with the use of motivational techniques was discussed through the use of tables and descriptive procedures.

CHAPTER FOUR

RESULTS AND FINDINGS

4.0 Introduction

This chapter focuses on the data collected before and after the implementation of the intervention; which in this case was screen time and candy introduced during the lesson. Students were allowed to watch videos selected by the teacher to give more understanding to the topic under discussion and those who managed right responses when questions were asked of them, were given candy to cause them to repeat that behaviour often.

4.1 Demographic Characteristics of Students

Figure 1 provides an analysis of students' sex.

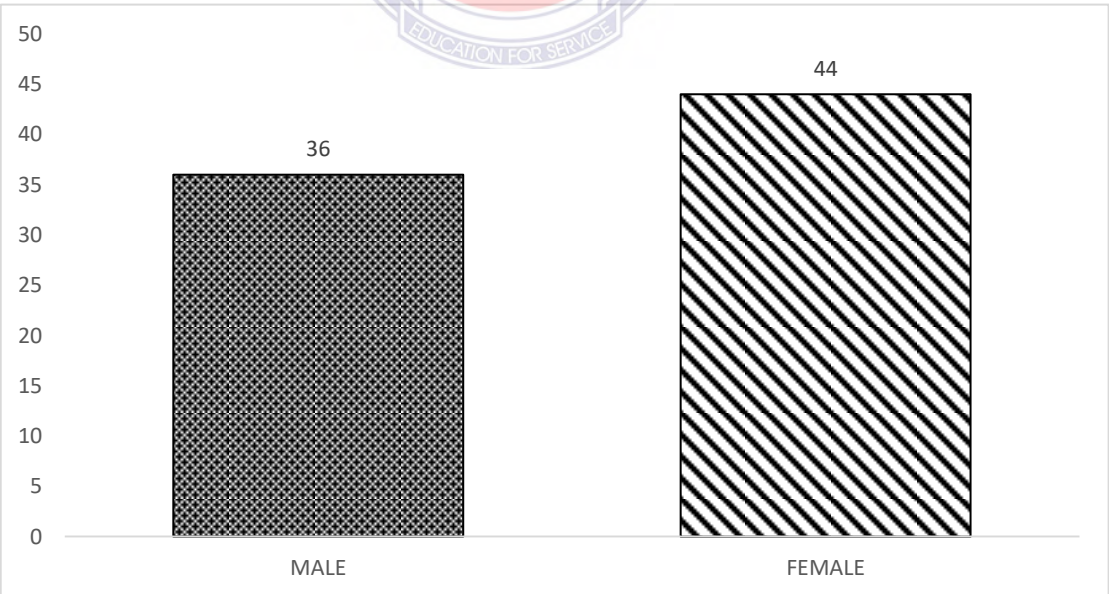

Figure 1: Sex
Source: Field survey, 2023

The research carried out in Kay-Billie-Klaer International School to investigate whether motivation improves the learning of Integrated Science once applied, targeted a population of 80 Junior High School students, of which 36(45%) are males and 44(55%) are females.

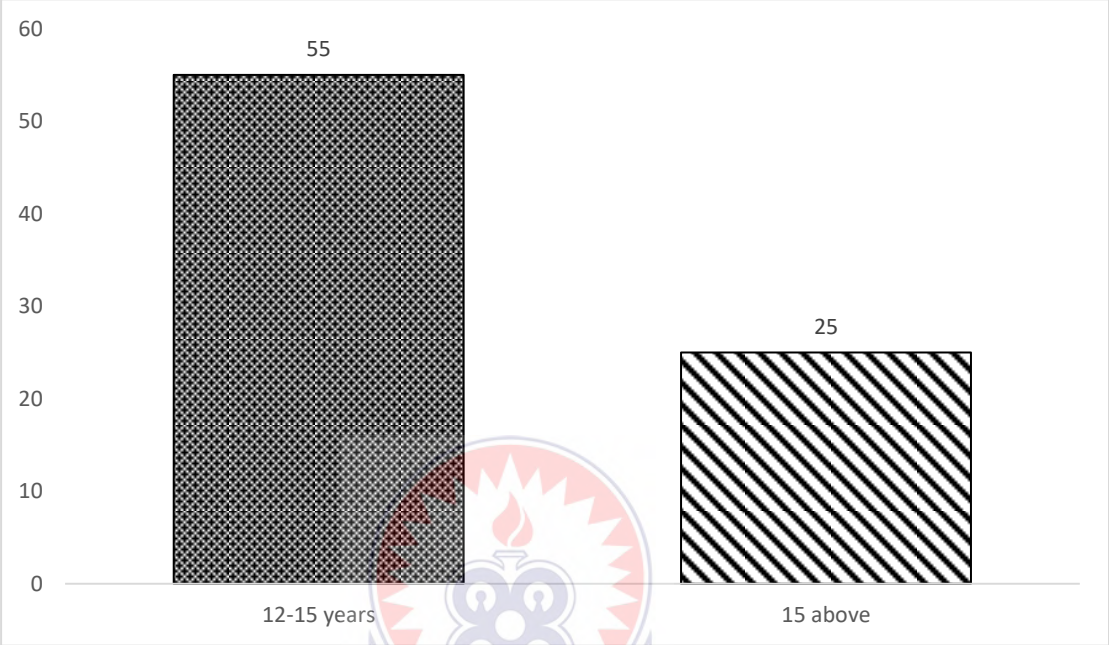

Figure 2: Age
Source: Field survey, 2023

Figure 2 indicates the ages of the students who form the target population of the research. Results indicate that 55(68.75%) students of the target student population involved in the exercise were between the ages of 12 and 15 years, while 25(31.25%) students of them were above 15 years.

4.2 Analysis of Pre-Test, Intervention and Post-Test

Students were made to take a test (a pre-test) to ascertain their achievement levels in the topics of Chemical Compounds and Acids, Bases and Salts. An intervention was introduced to help students better understand the chosen topics. Another test (a post-test) was conducted to confirm students 'significant improvement in achievements in the chosen topics.

4.2.1 Pre-test

Students were given a test on chosen topics in the Integrated Science curriculum; Chemical Compounds and Acids, Bases and Salts, with a total score of 100%. All 80 students targeted at the Junior High School level of Kay-Billie-Klaer International School partook in the test. Students performed averagely with 52(65%) passes and 28(35%) students not making the pass mark. Of the 65% of students who made the pass mark, 12(15%) students made grade A, 20(25%) students made grade B, 8(10%) students made grade C, 12(15%) made grade D, and 28(35%) students who made below grade D were not counted among the passes. This agrees with the statistics as presented by WAEC where passes in the Integrated Science subject on a yearly bases is average for all the partakers in the BECE and WASSCE with general passes, between the 50% and 65% mark, with only a handful of high achievers. Figure 3 are graphical representations of the pre-test scores.

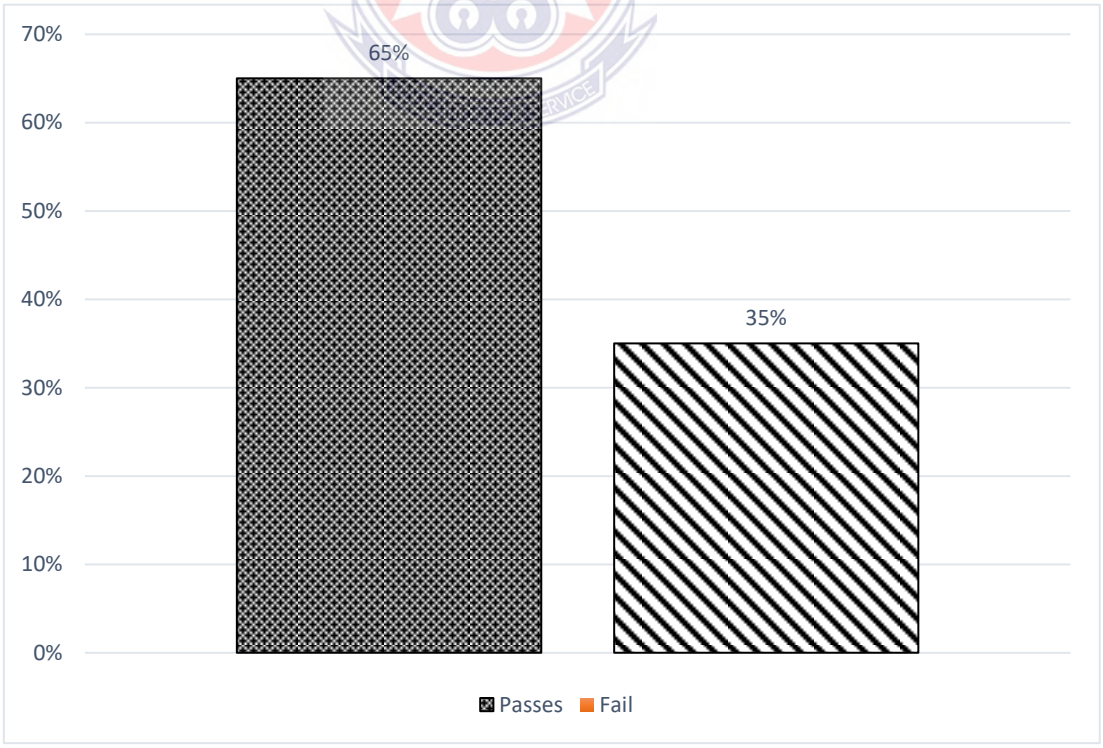

Figure 3: Pre-test achievement scores
Source: Field survey, 2023.

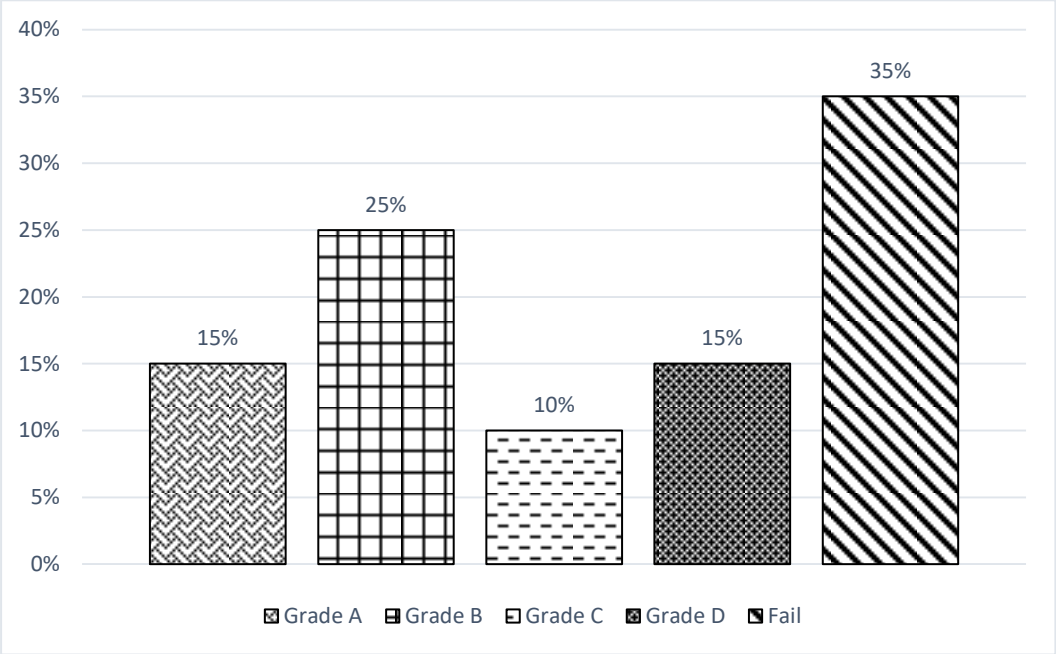

Figure 4: Pre-test achievement scores in detail
Source: Field survey, 2023.

4.2.2 Intervention

Students were taken through these topics again for a week, this time videos were introduced during the lessons to help students further understand the concept of the topic being taught. Students who contributed often during the course of the lessons were given candy as a motivation to keep them answering more questions; a positive reinforcement to ensure that behaviour is repeated while those who answered questions correctly were also rewarded with candy as well. This sparked a healthy competition, as students who could show more candy as awards for the rightest answers provided in class, could boast of their achievements in class to other students of the school with the toffees as evidence. The teacher also promised a healthy reward to the highest achiever in their tests and exams. This got students challenging each other about how they would be the ones to get that award. A healthy competition was generated among the students to the extent that academically weak students were now forming groups with academically strong ones, to improve their achievements as well.

They also wanted a chance to win some candy in class to show others of their achievements. The teacher also took advantage of the groups formed by the students and provided questions for the groups to answer as a unit, for which the achievement scores of the group, would be awarded to each individual, as part of their continuous assessment scores, and then any student who was reported to have not participated at the same level as the others, would get lower scores.

With the introduction of the video and the candy, students' class participation significantly improved as well as their achievements in the test after. Students were also advised to set goals for themselves before the Integrated Science lessons; little short-term goals such as;

i. They were going to be quiet and pay attention in class, no matter how their mates distracted them, all through the lesson.
ii. They were going to ask their teachers as many questions as they could to ensure they understood and followed what was being taught.
iii. They were going to set reasonable, achievable goals (scores) for their achievement tests and exams and strive to hit those targets and goals set.

4.2.3 Post-test

Students were made to take another test on the same topics after the intervention. The results showed a significant improvement in students' achievements, from contributions and answering questions in class to doing much better on the test. figure 5 below shows the post-test results.

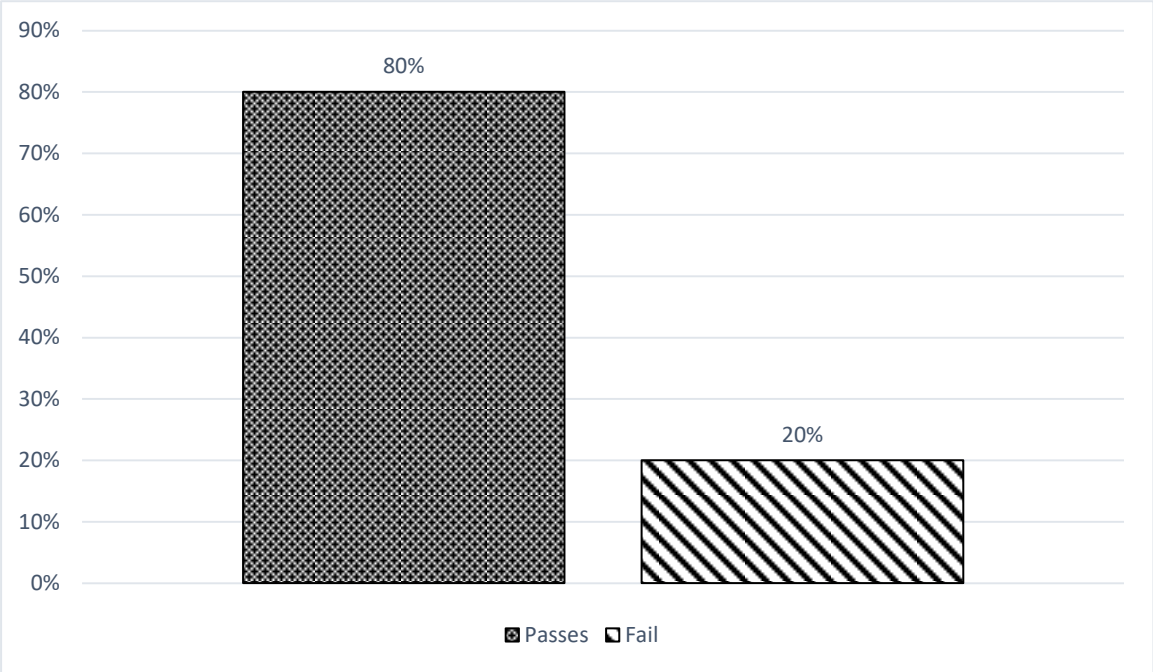

Figure 5: Post-test achievement scores
Source: Field survey, 2023.

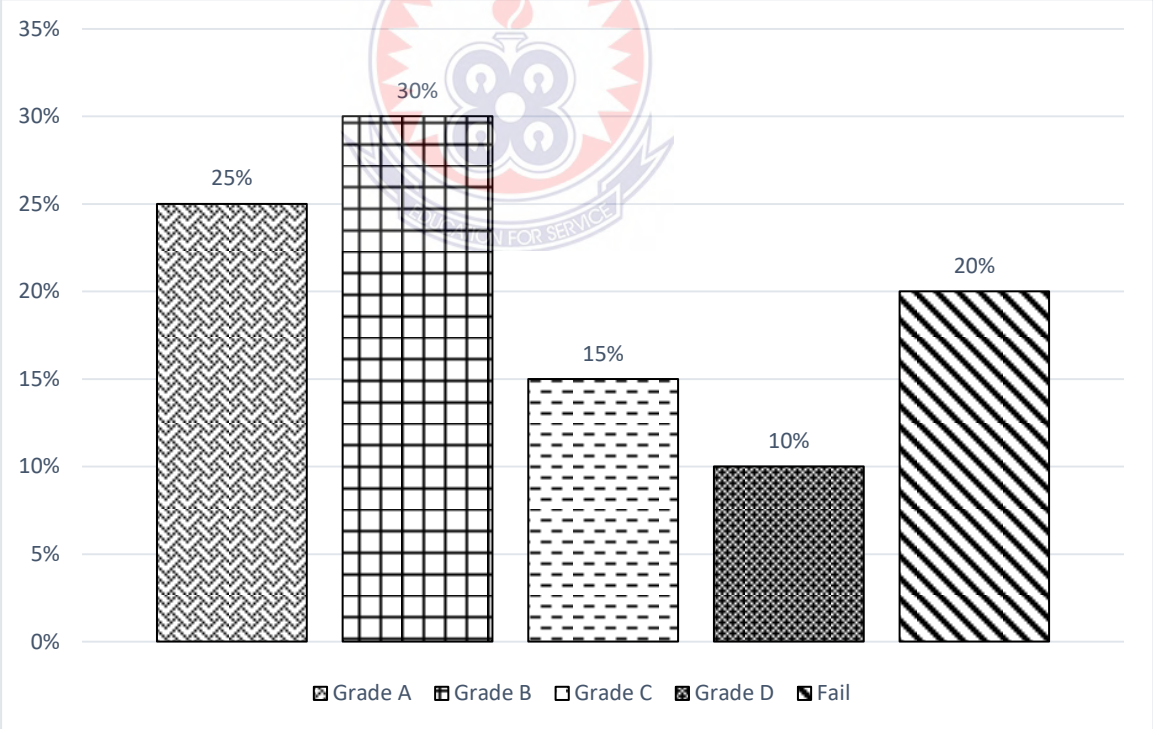

Figure 6: Post-test achievement scores in detail
Source: Field survey, 2023.

The percentage of students who managed Grade A increased significantly to 20(25%) students as against the 12(15%) students in the pre-test, 8(10%) students increase.

Grade B numbers also improved significantly by 4(5%), from 20(25%) students in the pre-test to 24(30%) students in the post-test. Grade C numbers increased from 8(10%) students in the pre-test to 12(15%) students in the post-test, as the students there climbed the ladder from Grade D and the FAIL grade into higher grades, while others further climbed into Grades A and B. Grade D achievements were maintained at 8(10%) students in the pre-test and post-test. Occupants of the FAIL grade moved up into higher grades, causing the number of students in the FAIL region to significantly reduce from 28(35%) students in the pre-test to 16(20%) students in the post-test after a week of the application of the intervention.

4.3 Questionnaire Data Analysis

Data from the distributed questionnaires are analysed graphically and descriptively. Below are all the graphs of the data from the questionnaire distributed to learners.

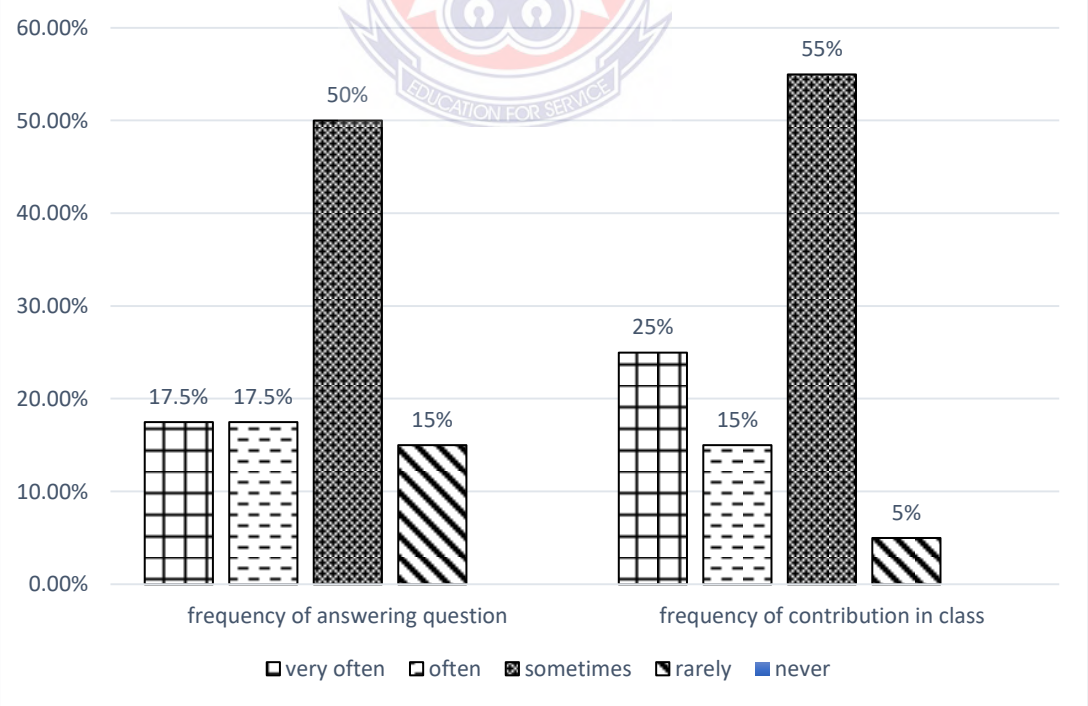

Figure 7: Pre-test: Frequency of answering questions and making contributions
Source: Field survey, 2023

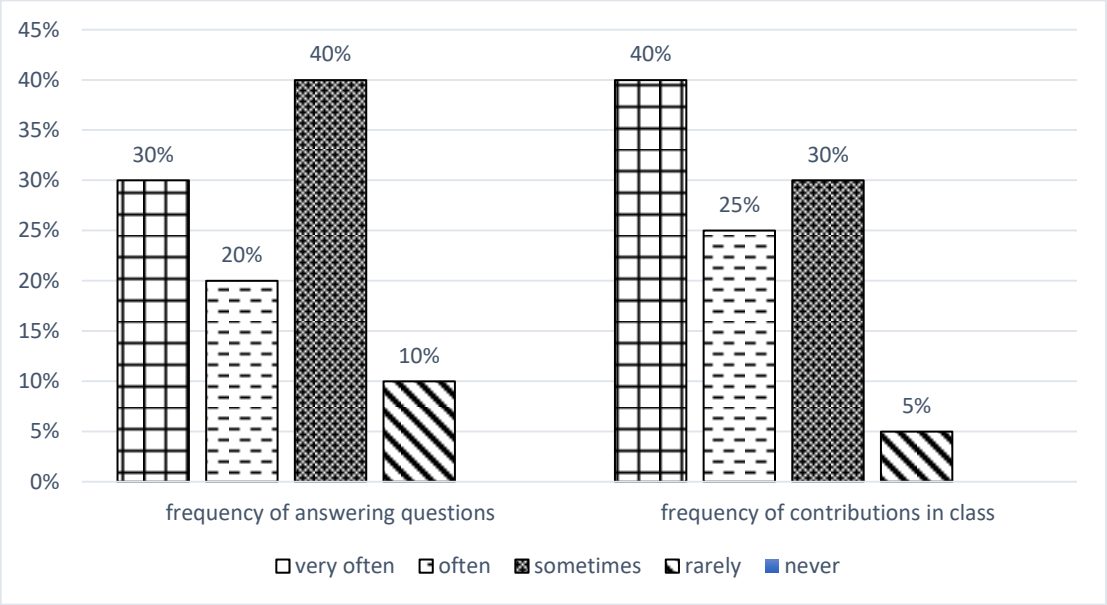

Figure 8: Post-test: Frequency of answering questions and making contributions
Source: Field survey, 2023

The investigation revealed the frequency of how the students answer questions and make contributions during lessons. Results show that all respondents have at least once answered questions in class, as none of the students was recorded to have ever answered a question nor contributed to class discussions. In the pre-test period, the situation was not very encouraging as only a few students showed interest in anything the teachers taught by way of asking questions and making contributions. There were 14(17.5%), 14(17.5%), 40(50%) and 12(15%) of the students who were recorded as very often, often, sometimes and rarely answering questions frequently in class respectively. Also, 20(25%), 12(15%), 44(55%) and 4(5%) of the students made contributions in this order respectively; very often, often, sometimes and rarely. No student was recorded as never making any form of contribution in class, nor answering questions at all. There were more students who less frequently participated actively in lessons frequently than there were students who actively did in the pre-test phase.

Furthermore, 24(30%), 16(20%), 32(40%) and 8(10%) of the students in the post-test phase were believed to be frequently involved actively in lessons by asking questions in the following varying degrees respectively; very often, often, sometimes and rarely. This is a dramatic improvement on the pre-test phase, made possible by the intervention (video and candy). Again, 32(40%), 20(25%), 24(30%) and 4(5%) of the students recorded very often, often, sometimes and rarely made contributions respectively, also a dramatic improvement in the pre-test phase, testament to the motivational technique introduced. The graph, therefore, very rightly proves that the intervention introduced made all the difference in the students' in-class attitudes during the Integrated Science lessons. The results confirm Pluck and Johnson (2011), by implementing motivational techniques, such as setting clear goals, providing meaningful feedback, and creating a supportive learning environment, students' motivation levels increased significantly, leading to a noticeable improvement in their class participation.

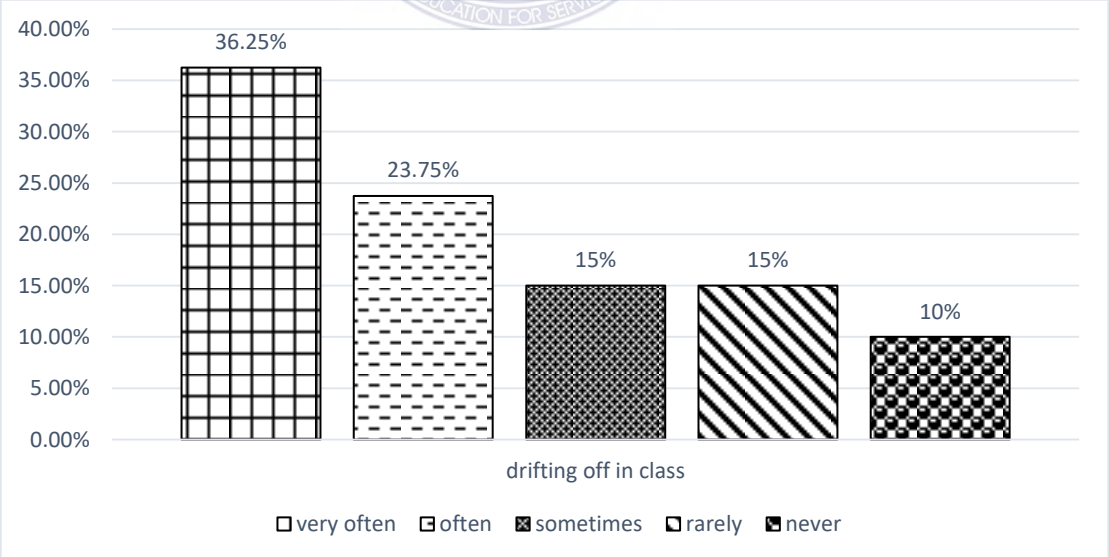

Figure 9: Pre-test: Students drifting off during lessons
Source: Field survey, 2023

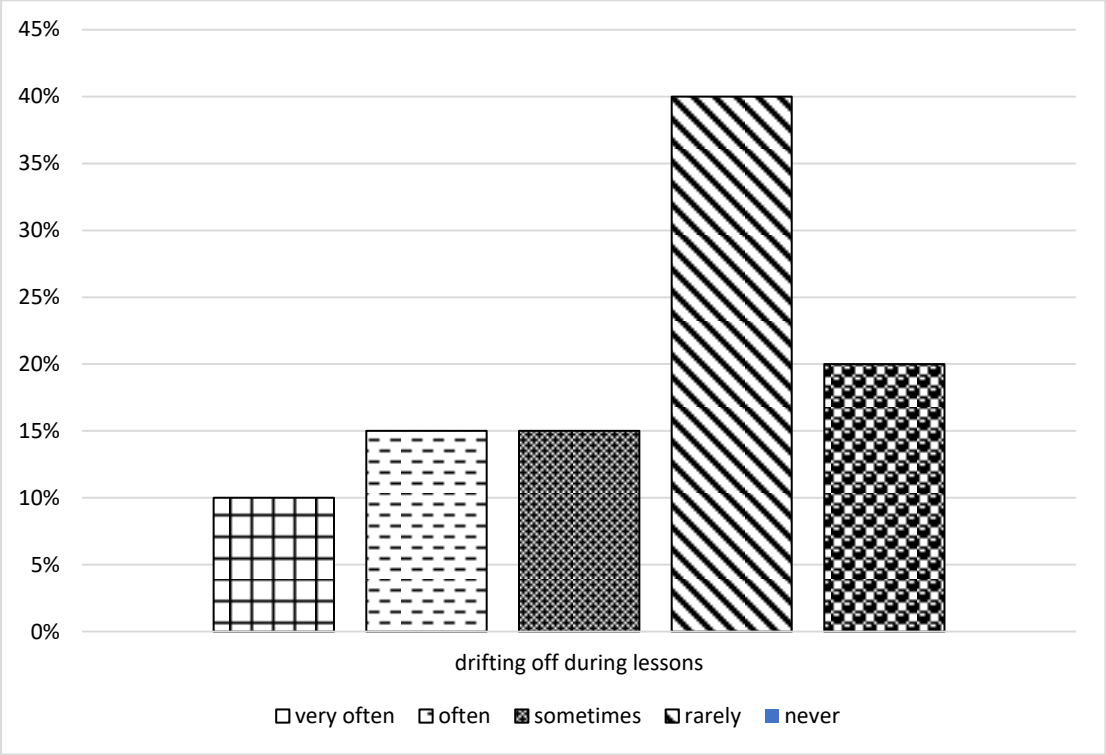

Figure 10: Post-test: Students drifting off during lessons
Source: Field survey, 2023

Students answered questions on their focus during lessons, whether they drift off when lessons are ongoing or they can maintain their focus all through. Results in the above graphs indicate two time periods for which students had to consider before providing an answer to the question. In the pre-test phase, 29(36.25%) of students recorded that they very often drifted off during lessons, 19(23.75%) of the students said they often drifted off, 12(15%) claimed they drifted off sometimes while the same number said they rarely drifted off. There were 8(10%) who gave the surety that they never drifted off in class; they could maintain their focus all through.

In the post-test phase, there were dramatic changes as just a meagre 8(10%) of the students agreed they were still drifting off despite the introduction of the interventions, a big reduction from the previous 29(36.25%). Those who claimed they often drifted off also fell from 19(23.75%) to 12(15%), which is a significant

reduction. Those who mentioned they sometimes drifted off, maintained their number at 12(15%). Also, 32(40%) now mentioned they rarely drifted off as against their previous 12(15%), which is very encouraging and 16(20%) said they never drifted off at all, an increase from the previous 8(10%). The post-test results showed students were moving from a state where they often drifted off during lessons, to a situation where they could be in tune, and on the same wavelength with their teachers, from the beginning of the lessons to the end, a world of difference made by the motivational techniques introduced in the lessons. Research has consistently shown that motivated students exhibit higher levels of focus and concentration in class. When students are motivated by clear goals, a sense of purpose, and the relevance of the subject matter, they are more likely to direct their attention to the learning materials, and actively participate in discussions (Awan, Noureen & Nas, 2011).

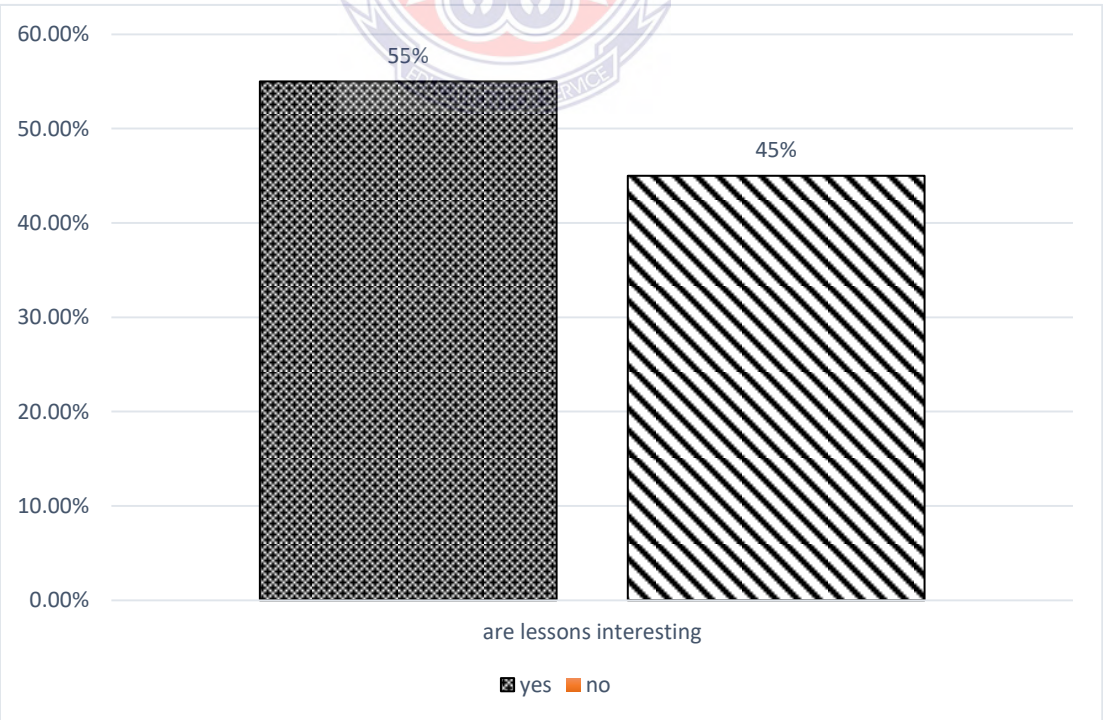

Figure 11: Pre-test: Are lessons interesting?
Source: Field survey, 2023

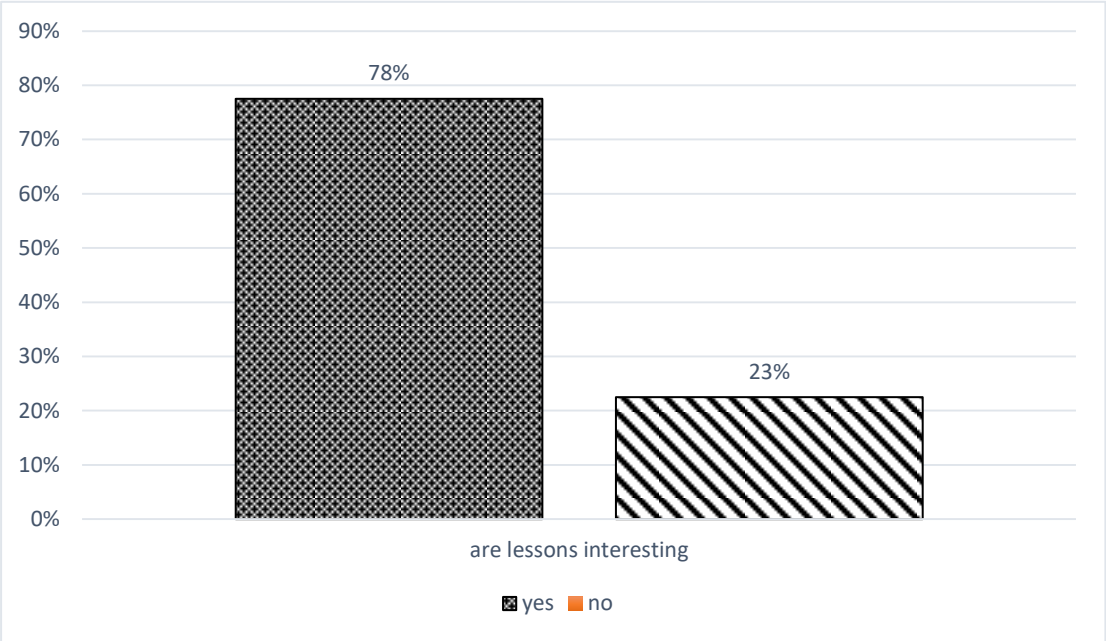

Figure 12: Post-test: Are lessons interesting?
Source: Field survey, 2023

Students iterated in the questionnaire about their lessons, and how interesting their Integrated Science lessons are. Students answered the question on two fronts, as demanded by the questionnaire. The first part looked at how lessons were delivered before the introduction of the intervention (motivation). Students were divided into two groups, almost down the middle concerning their numbers, with 44(55%) agreeing that lessons were interesting while the other 36(45%) of the students said otherwise that, the lessons were not interesting.

After the intervention (motivation) was introduced, there was a landslide yes, in the response to the same question, as 62(77.5%) of the students agreed that, bringing in the videos and candy, added a touch to the lessons that made students want to get involved more. Lessons all of a sudden became interesting and students wanted to play their part by contributing and asking questions in class. There were 18(22.5%) of the students who still maintained that Integrated Science lessons were still not interesting, irrespective of the motivational techniques introduced by their teachers.

Research has shown that when students are motivated, either through intrinsic or extrinsic factors, they are more likely to perceive a topic as interesting. Motivation provides the cognitive and emotional impetus for students to invest their attention and effort into understanding the subject matter, thus enhancing their overall interest and enjoyment of the topic (Hidi & Renninger, 2006).

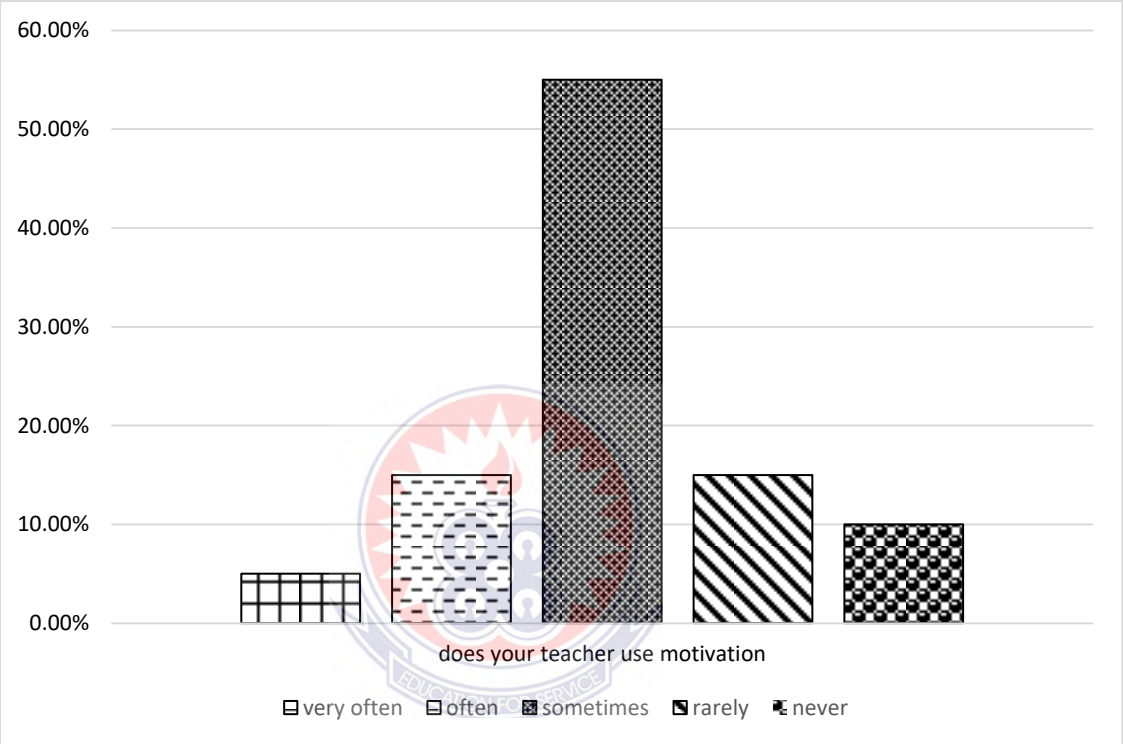

Figure 13: Does your teacher use motivation?
Source: Field survey, 2023

Concerning whether teachers used motivation or not, students had different things to say. There were 4(5%) of the students who revealed that their Integrated Science teachers used motivation very often in the teaching of the subject, 12(15%) mentioned that their teachers often use motivation in their lessons, and a whopping 44(55%) said their teachers sometimes used motivation in teaching the Integrated Science subject, 12(15%) of the students mentioned that the teachers rarely used motivation while none of the students mentioned that their teachers never used any form of motivation. So it could be gathered that the Integrated Science teachers used motivation but as to

how often they do, is what each student had something different to say. But from the look of the graph above, the view of the students who said teachers rarely used motivation and those who mentioned, teachers never did are likely to reflect the situation in the school as students' achievements in the pre-test revealed that fact. Poor performances from the students made it clear that they were not following the lessons and as such did not understand what was taught to them, so came away with less or no understanding at all. It could be gathered that the teachers not using any form of motivation could cause that situation.

Teachers must recognize that motivation is a fundamental driver of student learning. They have the power to ignite students' curiosity, interest, and passion for the subject matter by employing motivational techniques such as relevance, active learning experiences, and acknowledging students' accomplishments. By doing so, teachers can create an environment conducive to optimal learning and achievement (Akpan, 2000; Moula, 2010; Hidi & Renninger, 2006).

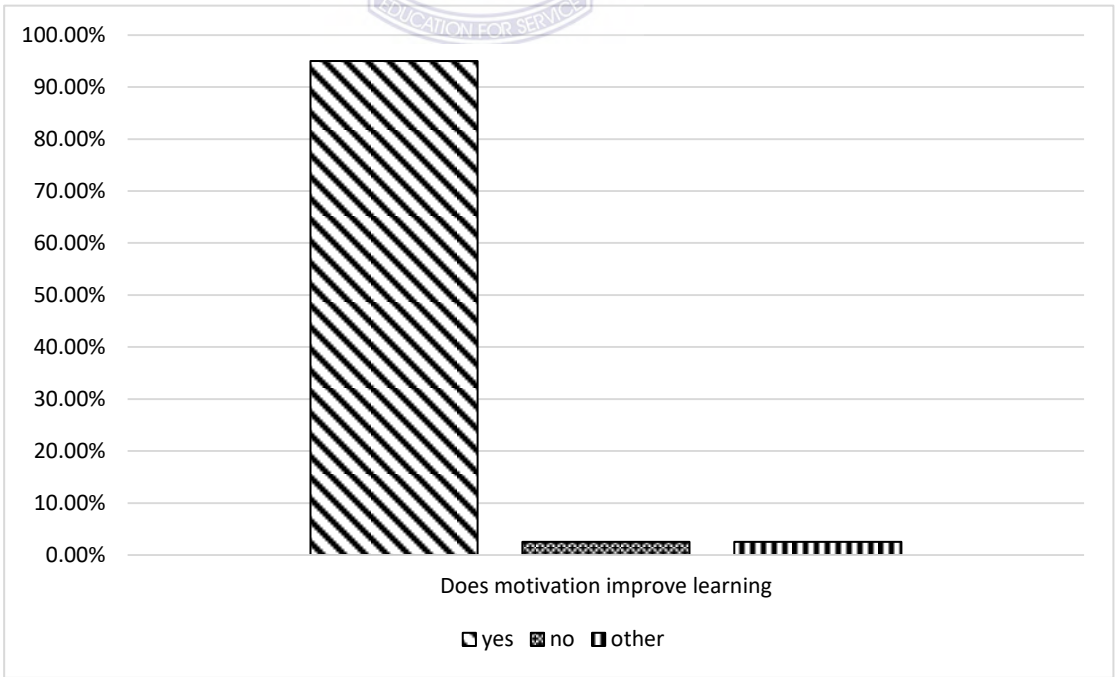

Figure 14: Does motivation improve learning?
Source: field survey, 2022

There were 76(95%) of the students agreed that motivation improves learning and helps improve test scores of every student once used during lessons. Also, 2(2.5%) of them disagreed that motivation improves learning while another 2(2.5%) of them had other thoughts on the matter. The 76(95%) of the sample responded in the affirmative that motivation does improve learning had the evidence from the study backing their claim strongly, as there was a significant number of students who improved after its introduction in lessons. The influence of motivation on learning cannot be overstated. Motivated learners exhibit higher levels of intrinsic interest, curiosity, and self-regulation, all of which contribute to more effective and meaningful learning experiences. Motivation acts as a driving force that energizes and directs learners' efforts, leading to significant improvements in learning outcomes (Slavin, 2006).

Figure 15: Has motivation improved your test score?
Source: Field survey, 2023.

All 80(100%) of the students believe that motivation improves learning and once employed by teachers, students' achievement certainly improves significantly. They

say so based on the evidence of their significant improvement in Integrated Science topics where they had low achievements before, but after the introduction of the interventions (motivation), their achievements improved. Motivation acts as a driving force that energizes and directs learners' efforts, leading to significant improvements in learning outcomes (Slavin, 2006; Elliot & Dweck, 2005).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the research findings, conclusions and recommendations on effective ways of using motivational techniques to improve the study of the Integrated Science subject.

5.1 Summary

The purpose of the study was to apply the use motivation as a teaching technique to improve students' performance in integrated science at Kay-Illie-Klaer International School. An action research design was adopted for the study. The study employed quantitative approaches through the use of pre-test, post-test and self-developed questionnaires. A sample of 80 students was randomly selected for the study. Descriptive graphs were used in analysing and presenting the data. The following research questions guided the study;

1. In what possible ways can the enthusiasm levels for the study of the Integrated Science subject be raised among students?
2. What wrong perceptions are held by students about the Integrated Science subject?
3. What appropriate motivational techniques can be applied in the teaching and learning of the Integrated Science subject to enhance the performance of students in the Integrated Science subject?

5.1.1 Summary of findings

The statistical result demonstrated that students' achievements in the Integrated Science subject significantly improved, which is proven by the records as shown by the graphs. Students' participation during the lessons proper also greatly improved. Students began to enjoy the lessons and it showed in the contributions and questions from students, greatly increasing in frequency. Each student wanted to show the others how well they were doing, by asking more and answering more questions than the others which in the end, would earn them, prizes from the teacher. Students' demeanour also spoke greatly of their liking for the lessons as compared to the disinterested nature they exhibited before. The interventions that were applied proved extremely useful in turning the Integrated Science life of the students around completely. Students were taught to use goal setting, cooperation and competition in the study of the subject, and it proved to be a game changer. It completely revolutionized the way students saw the subject, increased their interest in the subject and made them develop the eagerness to want to learn the subject. Performances corresponded to the change, as students have begun to see improved scores in tests and exercises respectively.

The interventions introduced can be described as successful per the changes they brought over the course of a week. Students now cooperate and compete with one another as well, contribute and answer questions, focus and listen attentively in class and are happy to be in the Integrated Science classroom. This has made a previously boring, difficult, unattractive subject that they wanted nothing to do with, become one that they would never miss and one that they would love to further pursue at higher levels of education.

5.2 Conclusion

Based on the findings of the study, the study proved the usage of motivation in the study of the Integrated Science subject in the affirmative. Overall performances of students in the subjects improved significantly as most students climbed up the ladder in terms of their performances; from a relatively lower mark to a higher mark. This proves how Integrated Science achievement will improve greatly once this approach is used and becomes a mainstay in the study of the subject across the country. Furthermore, the study has revealed that cooperation and competition as an intervention, can greatly benefit students' academic lives once used in the classroom. Students' interest soars with the introduction of these interventions. Goal setting also improves students' achievements and has them looking to make a mark in the Integrated Science subject with their performances and achievements. This research would also serve as a good basis for even further research on how much more, students' achievements can be improved further.

5.4 Recommendation

Based on the findings of the study, the following recommendations were made;

1. Teachers should use rewards as motivation to elevate students' enthusiasm in the Integrated Science subject.
2. Integrated Science teachers should consider using motivational techniques such as rewards, videos, cooperation and competition and goal setting to improve the achievements of students in the Integrated Science subject.

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APPENDICES

A

PRE-TEST AND POST-TEST RESULTS

The tables below represent all the figures as used in this Action Research. Tables 1-15 represent figures 1-15 respectively.

DEMOGRAPHIC CHREMATISTICS OF STUDENTS

Sex

	male	female
sex	45.00%	55.00%

Age

	12-15 years	above 15 years
age	68.75.00%	31.25%

PRE-TEST, INTERVENTION AND POST-TEST

Pre-test Achievement Scores

	Passes	Fail
Test Scores	65%	35%

Pre-test Achievement Scores in Detail

	Grade A	Grade B	Grade C	Grade D	Fail
Test Scores	15%	25%	10%	15%	35%

Post-test Achievement Scores

Post-test	Passes	Fail
Test Scores	80%	20%

Post-test Achievement Scores in Detail

	Grade A	Grade B	Grade C	Grade D	Fail
Test Scores	25%	30%	15%	10%	20%

Frequency of answering questions

Pre-test	very often	often	sometimes	rarely	never
Frequency of answering questions	17.5%	17.5%	50%	15%	
Frequency of contributions in class	25%	15%	55%	5%	

Frequency of answering questions

Post-test	very often	often	sometimes	rarely	never
frequency of answering in questions	30%	20%	40%	10%	
frequency of contributions in class	40%	25%	30%	5%	

Drifting off during lessons

pre-test	very often	often	sometimes	rarely	Never
drifting off in class	36.25%	23.75%	15.00%	15%	10.00%

Drifting off during lessons

post-test	very often	often	sometimes	rarely	never
drifting off during lessons	10%	15%	15%	40%	20%

Are lessons interesting?

pre-test	Yes	no
are lessons interesting	55.00%	45.00%

Are lessons interesting?

post-test	Yes	no
are lessons interesting	77.5%	22.5%

Does your teacher use motivation?

	very often	often	sometimes	rarely	never
does your teacher use motivation	5.00%	15.00%	55.00%	15.00%	10%

Does motivation improve learning?

	yes	no	other
does motivation improve learning	95.00%	2.50%	2.50%

Has motivation improved your test score?

	yes	no
has motivation helped to improve your test scores	100%	0%

B

QUESTIONAIRE FOR STUDENTS

Introduction: This form is strictly for academic purposes only. No participants are required to write their name and no information written on this form will be made public. It will only take about 5 minutes to complete this questionnaire. Answer all questions to the best of your knowledge. The first part (sections B - D) of the form is for pre-test usage only. The second part (sections E - F) of the form is for post-test usage only.

SECTION A: DEMOGRAPHIC CHARACTERISTICS OF STUDENTS

1. Sex

Male

Female

2. Age

12 - 15 years

Above 15 years

SECTION B: POSSIBLE WAYS OF RAISING THE ENTHUSIASM LEVELS OF STUDENTS IN THE INTEGRATED SCIENCE SUBJECT.

3. Do you think Integrated Science lessons are interesting?

Yes

No

4. How often do you answer questions during Integrated Science lessons?

Very often

Often

Sometimes

Rarely

Never

6. How often do you make contributions during Integrated Science lessons?

Very often

Often

Sometimes

Rarely

Never

7. Do you find yourself drifting off during Integrated Science lessons?

Very often

Often

Sometimes

Rarely

Never

SECTION C: USING APPROPRIATE MOTIVATIONAL TECHNIQUES TO ENHANCE THE PERFORMANCE OF STUDENTS IN CLASSROOM LESSONS, TESTS, END OF TERMS EXAMINATIONS AND THEN FINALLY THE BASIC EDUCATION CERTIFICATE EXAMINATION (BECE)

8. Does your teacher use any form of motivation during Integrated Science lessons?

Very often

Often

Sometimes

Rarely

Never

9. Do you think motivation improves learning?

Yes

No

10. How does motivation improve learning?

_____

_____

_____

_____

SECTION D: MEANS OF CORRECTING ALL THE WRONG PERCEPTIONS STUDENTS HOLD ABOUT THE SUBJECT.

9. Do you think motivation improves learning?

Yes

No

10. How does motivation improve learning?

_____

_____

_____

_____

SECTION E: (POST-TEST USAGE ONLY) FIND ALL POSSIBLE WAYS OF RAISING THE ENTHUSIASM LEVELS OF STUDENTS IN THE INTEGRATED SCIENCE SUBJECT.

11. Do you think Integrated Science lessons are interesting?

    Yes

    No

12. How often do you answer questions during Integrated Science lessons?

    Very often

    Often

    Sometimes

    Rarely

    Never

13. How often do you make contributions during Integrated Science lessons?

    Very often

    Often

    Sometimes

    Rarely

    Never

14. Do you find yourself drifting off during Integrated Science lessons?

    Very often

    Often

    Sometimes

    Rarely

    Never

SECTION F: (POST-TEST USAGE ONLY) USING APPROPRIATE MOTIVATIONAL TECHNIQUES TO ENHANCE THE PERFORMANCE OF STUDENTS IN THEIR CLASSROOM LESSONS, TESTS, END OF TERMS EXAMINATIONS AND THEN FINALLY THE BASIC EDUCATION CERTIFICATE EXAMINATION (BECE)

15. Do you think motivation has helped improve your test scores?

    Yes

    No