UNIVERSITY OF EDUCATION WINNEBA

THE PARTICIPATION OF TEACHERS IN THE IMPLEMENTATION OF INTEGRATED SCIENCE CURRICULUM TO ENHANCE STUDENTS ACADEMIC PERFORMANCE- A CASE OF KARAGA SENIOR HIGH SCHOOL

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DECLARATION

STUDENT'S DECLARATION

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

SIGNATURE……..…….

DATE ……..

SUPERVISOR'S DECLARATION

I hereby declare that the preparation and presentation of the work were supervised in accordance with the guidelines on supervision of project report as laid down by the University of Education, Winneba.

NAME OF SUPERVISOR: REV. FR. DR. FRANCIS K. SAM

SIGNATURE……..……..……

DATE:……..……..

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DEDICATION

To my beloved wives Iddrisu Asana and Ziblila Ayisha and my beloved children Musah Mandeiya Marshan and Musah Malsara Mardia.

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ABSTRACT

The main purpose of the study was to assess the participation of teachers in the implementation of integrated science curriculum to enhance students' academic performance in the Karaga Senior High School. Descriptive research design was used for the study. Quantitative research approach was used. The population comprised of science teachers (34 science teachers) and headmasters (2 headmasters) of Karaga Senior High School. Census sampling method was used to select all the 36 respondents for the study. Questionnaire was the main instrument used to gather primary data. The data collected was analysed statistically using Statistical Package for Social Sciences (SPSS) version 18. The study concluded that the role headmasters and teachers play in the implementation of the integrated science curriculum were participating in curriculum planning, guiding and learning, and the position of guidance and counselors. The determinants of integrated science curriculum implementation were the teacher's method of teaching, the teachers' knowledge of the other disciplines, and availability of resources. The instructional methods used to improve students integrated science academic performance were laboratory/experimental method and project method. The challenges teachers face in the implementation of the integrated science curriculum were inadequate funding, inadequate social studies teachers to implement the integrated science curriculum/Manpower, poor instructional leadership, inadequate teaching and learning materials (TLMs), insufficient time allocation, and the use of poor method of teaching. The study recommended that the Ministry of Education through the Karaga district education directorate should provide adequate teaching and learning materials to facilitate the implementation of the social studies curriculum.

CHAPTER ONE

INTRODUCTION

The chapter contains the background to the study, statement of the problem, purpose of the study, objectives of the study, significance of the study, scope of the study and organisation of the rest of the study.

1.1 Background to the Study

Curriculum can be viewed as an interrelated set of plans and experiences that a student undertakes under the guidance of the school (Marsh & Willis, 2013). According to Marsh and Willis' definition of the curriculum as it encompasses the concepts of the planned, enacted and hidden curriculum that are relevant to the study context. Marsh and Willis' inclusion of 'experiences' would embody the curriculum that is enacted in the classrooms, which may differ from the planned curriculum as teachers interpret the planned curriculum through their own beliefs and experiences and as they interact with students and with the curriculum materials (Marsh & Willis, 2013).

The culture of the school and classroom (e.g., whether teachers encourage or discourage students to speak their mind in class) and the interactions among teachers, students and the physical environment are all part of the hidden curriculum that shapes the 'experiences' of the students. What a student experiences in the classroom is often a result of a complex web of interactions and transactions between the actors (e.g., teachers and students) in the classroom, the physical environment, the materials (e.g., textbooks) and the values and social norms adopted by the different actors. Given this complexity, it is not

surprising that the curriculum, or what goes into the curriculum, has been a subject of much debate and deliberations among educators through the years (e.g., Bruner, 2010; Dewey, 2016).

The science curriculum is of no exception. What is to be taught in science, how to teach it, how students learn it and how much time should be allocated to it are some constant issues of interest and even tussles (e.g., Driver & Oldham, 2016; Hargreaves, 2014; Marsh, 2009). Who makes these curriculum decisions and how is the curriculum negotiated and deliberated (McCutcheon, 2015) and at which points are also important areas of research that have an impact on what and how students learn. Curriculum research is indeed a very broad field. Research in the field of curricula adoption and fidelity of implementation has shown that the processes of curricula implementation could impact learning (Adey, 2014; Lee & Chue, 2013). Knowledge on the approaches to engage teachers in curricula implementation is therefore critical.

There has been growing concern throughout the country over the years about the discouraging state of teaching and learning of Integrated Science. This has arisen mainly as a result of a failure within teaching-learning contexts to illustrate the connections between classrooms Integrated Science and the environment learners come from. It has been argued that Senior High School (SHS) students must be well grounded in Integrated Science at this level for them to be able to study the core science subjects (Biology, Chemistry, Physics etc). This has resulted in a call by the West African Examination Council (WAEC) for setting up a committee to look into Integrated Science as a subject (Olarewaju, 2014). The committee recommended the following specific methods for teaching Integrated Science: a) Use of discovery teaching tactics b) The inclusion of problem solving activities (c) The

involvement of students in open ended field or laboratory exercise (Olarewaju, 2014).

The efforts of the committee were expected to bring about a change in focus in the teaching and learning of the subject. For changes to be effectively implemented in Integrated Science education, it is necessary that base line information should be available on a number of important aspects. Such aspects include, for example, how teachers view the subject, issues relating to attitudes towards the subject, Integrated Science anxiety and others.

To encourage higher order learning skills and to improve teaching and learning of Integrated Science, it is essential that students are discouraged from resorting to unnecessary retention of facts, where the sole aim is to consciously recall information in the memory so as to use it later (Cooper, Fromme, Gordon & Nicholasm, 2012). The aim therefore should be to ensure that learning environments that encourage higher order learning skills are created. It has also been argued that teachers should organize the teaching and learning context in such a way that students are more likely to follow higher order processes (Biggs, 2009). If teachers are to be entrusted with the role of ensuring that appropriate environments are created for enhancing students higher order learning skills, it is expedient that empirical research finds out the views which Science teachers hold about Integrated Science. This is paramount because educators have to find ways of injecting new knowledge into the system to bring about improvement and to share that knowledge with future generations of teachers (Hiebert, Gallimore & Stigler, 2012).

The curriculum shows the destinations of the teaching and learning process and the teacher is the person who should know where to go. Therefore, a teaching process ignoring the curriculum fails. In addition to this, the misconceptions in the teacher's perceptions of

the curriculum hinder the quality of education. Since the teacher, who is the most significant figure in interaction with students in educational settings, is directly responsible for attaining the general aims of the curriculum, their perceptions of what they are supposed to do in the class and what their role is in teaching and learning process are of utmost importance. This study therefore, assessed the participation of teachers in the implementation of integrated science curriculum to enhance students' academic performance in the Karaga Senior High School.

1.2 Statement of the Problem

The researcher realized that in Ghana, while research has focused on a number of aspects related to Integrated Science Education, there has been limited research focusing on teachers' participation in the implementation of Integrated Science curriculum. Hence, this study was embarked upon in order to know the opinions and comments of science teachers on Integrated Science curriculum implementation. The participation of teachers in the implementation process was unnecessary since they are specially trained in their interest areas hence they can help students to learn.most teachers were well versed in their subject areas so they could teach well. Statistics from the school indicates that the performance of students in Integrated Science is very poor. The school scored less than 10% in 2015, 2016 and 2017, and 18% in 2018. The current situation of Integrated Science teaching and learning in the Karaga Senior High School is a concern to all including government and the society at large. The researcher realized that many students found Integrated Science to be difficult, boring not interesting to them. Large class sizes, inadequate funding, insufficient resources, poor teaching skills and lack of support for

teachers among other factors further limit the quality of Integrated Science teaching and learning in the Karaga Senior High School. This is the problem to be investigated.

1.3 Purpose of the Study

The main purpose of the study was done to assess the participation of teachers in the implementation of Integrated Science Curriculum to enhance students' academic performance in the Karaga Senior High School.

1.4 Objectives of the Study

The specific objectives of the study include was to;

1. Investigate the role of teachers and students in the implementation of integrated science curriculum in the Karaga Senior High School?
2. Identify the determinants of integrated science curriculum implementation.
3. Evaluate the instructional methods used to improve students integrated science academic performance.
4. Aassess the challenges teachers face in the implementation of the integrated science curriculum.

1.5 Research Questions

The following research questions guided the study,

1. What is the role of teachers and students in integrated science curriculum implementation?
2. What are the determinants of integrated science curriculum implementation?
3. What instructional methods could be used to improve students integrated science

academic performance?

4. What are the challenges teachers faces in the implementation of the integrated science curriculum?

1.6 Significance of the Study

In an effort to improve the teaching and learning process of Integrated Science in the Karaga Senior High School and to make the learning of the subject matter more attractive to students, this study makes the following contributions to knowledge and education. This study provides integrated science and other science educators, science curriculum planners and government with detailed information about the actual picture of Integrated Science and other science teaching, science learning and educational practices in the Karaga Senior High School and provides, cost effective ways of improving the situation. Moreover, this study can help in planning and formulating further policies for science education in Ghana.

1.7 Delimitations of the Study

The objective of the study was to assess the participation of teachers in the implementation of integrated science curriculum to enhance students' academic performance in the Karaga Senior High School. This study is geographically limited in scope to Karaga Senior High School in the Northern Region of Ghana. The study is conceptually limited in scope to the implementation of integrated science curriculum in Ghana.

1.8 Limitation of the Study

The researcher encountered numerous challenges as stated below:

Inadequate funds, the researcher needed money to finance his transportation to the school and other expenses needed to aid the research work.

Also, time was not on the side of the researcher since his research work was combined with his work as a classroom teacher.

Another problem was, some participants were not willing to give information and so the researcher has to invite other people to persuade some participants for their cooperation.

1.9 Organization of the Study

The study is divided into five chapters. Chapter One of the study is devoted to background, statement of the problem, purpose of the study, research questions, significance of the study, delimitation and definition of terms. Chapter Two of the study reviews related literature. Chapter Three provides information on participants, including sampling techniques, procedures and equipment used in both data collection and analysis. Moreover, this chapter takes into consideration the research design, description and distribution of instruments. Chapter Four looks at and explains the outcome of the study. Finally, chapter Five of the research covers a summary of findings, draws conclusions and makes recommendations of the work. As well as references and appendix.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

2.1 Theoretical Framework of the Study

Curriculum is derived from a Latin word, the root of which means “race-course.” Following this origin, curriculum is generally defined as a course of subject matter studies. On the other hand, in the modern curriculum literature there has been wide criticism for this notion. Furthermore, this notion has undergone some modifications and replacements. For this reason, today there is no one agreed upon definition for the term curriculum (Lewy, 2011). In addition to this, when the literature is examined, it is understood that the curriculum aspects change simultaneously whenever a great development exists in science, technology and society because the developments in these areas have influenced the expectations from the school and education. It should not be surprising that there is a huge emphasis in the literature on the great changes in science education appeared after World War II and during the cold war between the USA and Russia. When the course of history is considered, it is seen that there are 4 main trends following each other under the name of curriculum theory.

These trends are curriculum as a body of knowledge to be transmitted, curriculum as a product, curriculum as a process and curriculum as praxis. Curriculum as body of knowledge to be transmitted. In this old aspect, curriculum is defined as a list of subjects like syllabus or a body of knowledge to be transmitted. Education in this sense is the process by which this body of knowledge is transmitted or 'delivered' to students by the most effective methods that can be devised (Blenkin et al., 2012). This aspect dominated

the area until the 20th century. Curriculum as a product (as an attempt to achieve certain ends in students). In this aspect, education is seen as a technical exercise and the objectives are seen as a product which can be measured. It is the work of two American writers Bobbitt (2008) and Tyler (2009) that dominated theory and practice within this tradition (Kumari & Srivastava, 2005). According to Bobbitt, the curriculum is the series of experiences which children and youth must have by way of obtaining those objectives (Bobbitt, 2008). Considering the curriculum theory and practice in this way was heavily influenced by the development of management thinking and practice, the rise of which is often associated with Taylor, the main advocate of scientific management (Kumari & Srivastava, 2005).

Taylor's all three elements in management which are greater division of labour with jobs being simplified; an extension of managerial control over all elements of the workplace; and cost accounting based on systematic time-and-motion study were involved in this conception of curriculum theory and practice, especially in many training programmes (Kumari & Srivastava, 2005). In addition to this, Tyler shared Bobbitt's emphasis on rationality and relative simplicity in his curriculum theory and he based his theory on four fundamental questions as follows:

1. What educational purposes should the school seek to attain?
2. What educational experiences can be provided that are likely to attain these purposes?
3. How can these educational experiences be effectively organized?
4. How can we determine whether these purposes are being attained? (Tyler, 2009, p.1)

Like Bobbitt, he also placed an emphasis on the formulation of behavioural objectives. Since the real purpose of education is not to have the instructor perform certain activities

but to bring about significant changes in the students' pattern of behaviour, it becomes important to recognize that any statements of objectives of the school should be a statement of changes to take place in the students (Tyler, 2009).

2.2 The impact of Curriculum on Scientific and Ttechnological literacy

In this section, scientific and technological literacy, constructivism, student centered teaching strategies and alternative assessment, which emerge as relatively new emphases when the curriculum is analyzed are focused on. The 1990 UNESCO World Conference on Education for All maintains that science education should aim at forming a world community which consists of scientifically and technologically literate citizens (UNESCO, 1999; see also Donnelly, Jenkins & Layton, 2014). Moreover, the idea above is frequently emphasized as the vision, goal and one of the main principles, scientific literacy and technological literacy seem to be a single, combined concept. On the other hand, when the literature is considered, though scientific literacy and technological literacy appear to be in a mutually transitional and close relationship, the definitions which differentiate these two concepts are used more frequently.

2.2.1 Scientific literacy

According to BouJaoude (2012) “defining scientific literacy is a complex task. This definition should reflect current understandings of the nature of science and its purposes. Moreover, it has to befit the social and cultural environments in which science is constructed and taught” (p.141). The difficulty with defining scientific literacy makes it a concept over which an intensive controversy still takes place. Therefore, there is not any

widely accepted definition for scientific literacy. The Centre of Unified Science Education (CUSE, 2014) provides one of the earliest detailed frameworks of scientific literacy. According to CUSE (2014), there are 7 dimensions of scientific literacy. These 7 dimensions are considered in terms of both scientifically and technologically literate person. This framework defines a scientifically literate person as one who:

1. understands the nature of scientific knowledge,
2. applies appropriate science concepts, principles, laws, and theories in interacting with his/her universe,
3. uses processes of science in solving problems, making decisions, and furthering his/her own understanding of the universe,
4. interacts with the various aspects of his/her universe in a way that is consistent with the values that underlie science,
5. understands and appreciates the joint enterprise of science and technology and the interrelationships of these with each other and with other aspects of society,
6. develops a richer, more satisfying, and more exciting view of the universe as a result of his/her science education and continues to extend this education throughout his/her life,
7. develops numerous manipulative skills associated with science and technology. (CUSE, 2014, p.1, cited in UNESCO, 2008)

In addition to the traits above, National Science Teachers Association (2012) suggests that a scientifically literate person has to understand both the limitations and the usefulness of science and technology. Also he or she needs to know sources of scientific and technological information and how to use this information while making decisions (BouJaoude, 2012). Different from the efforts mentioned, some researchers try to define a

scientifically literate person from a very different perspective by associating scientific literacy with language literacy. For example, Eckstein and Koch (2015) emphasize that scientific literacy makes it necessary for the reader to be actively and critically engaged in the interpretation of the meaning of a given science text.

A scientifically literate person has to adopt a critical stance toward science texts and improve his or her ability to interpret these texts from a theoretical perspective (Eckstein & Koch 2015). When the literature is analyzed, it is seen that the definition of scientific literacy has been generally made through the traits of scientifically literate person. Still, there have been some efforts to define scientific literacy. Hurd (2015) defines scientific literacy as "the intellectual skills and knowledge essential for one to make responsible decisions or take cognitive action in situations that require an understanding of science and technology" (p. 88). Sutman (2016, cited in Akgül, 2014) argues that scientific literacy is not dependent upon any specific science content or process knowledge. Scientific literacy covers the abilities and willingness of a person to continue to learn science content, to develop science processes by him- or herself, and to communicate the results of this learning experience to other people. In contrast to Sutman, Mayer (2007) argues that scientific literacy is dependent upon specific amounts of science content knowledge.

Mayer (2007) defines scientific literacy as the knowledge of the substantive content of science which is related particularly to understanding the interrelationships among people and how their activities influence the world around them (Mayer, 2007). So far, with a general look, it is clear that while scientific literate person is defined through a broad set of characteristic traits, scientific literacy as a term is generally defined in a rather limited way. This relative limitedness in the definition of scientific literacy has been overcome with the

help of current reform efforts.

Scientific literacy is defined by Project 2061 (American Association for the Advancement of Science (AAAS), 2010) as the ability to use scientific knowledge and ways of thinking for personal and social purposes. According to Project 2061: Scientific literacy has many facets. These include being familiar with the natural world and respecting its unity; being aware of some of the important ways in which mathematics, technology, and the sciences depend upon one another; understanding some of key concepts and principles of science; having a capacity for scientific ways of thinking; knowing that science, mathematics, and technology are human enterprises, and knowing what that implies about their strengths and limitations (AAAS, 2010).

In a similar vein, the National Science Education Standards in the US define scientific literacy as "the knowledge and understanding of scientific concepts and processes required for personal decision making, participation in civic and cultural affairs and economic productivity" (National Research Council (NRC), 2016, p. 22). In addition, NRC standards both describe a vision of the scientifically literate person and set criteria for science education, which emphasize the inquiry nature of science within the science content standards.

2.2.2 Technological Literacy

It is stated in several sources that another dimension of scientific literacy, which is accepted as one of the most important aims of modern science education, is an individual's understanding of technology and of the mutual interaction between technology and science and society (AAAS, 2013; Bauer, 2016). Gagel (2007), after studying on a large amount of

information on technological literacy from several fields, provides common elements of a long-lasting and inherent technological literacy that can keep up with the fast and constant changes in technology. Technological literacy from Gagel's perspective includes "knowledge about the details of individual technologies and about the process of technology development. Moreover, it includes a holistic understanding of the context of technology in terms of history and culture and its adaptability based on initiative and resourceful thinking. Finally, it includes four generalized competencies:

(a) accommodate and cope with rapid and continuous technological change, (b) generate creative and innovative solutions for technological problems, (c) act through technological knowledge both effectively and efficiently, and (d) assess technology and its involvement with the human life-world judiciously".

"The elements provided by Gagel can be seen in other technological literacy descriptions. According to Prime (2008), technological literacy consists of knowledge and skills. Problems that might be solved with the help of technology, important technologies, social and cultural effects of technology, prerequisite knowledge from other disciplines such as mathematics, and the form or structure of technological knowledge are the basic knowledge areas. In addition to this, technological literacy includes three skills, which are manipulative and cognitive skills such as evaluation, analytical thinking, creativity, problem solving, research, analysis, design and affective skills such as the capacity to act for the right reason and exhibit concern for moral and ethical implications of technological choice, and attitudes (e.g. independence and interdependence, caring, environmental concern, social responsibility, and positive work habits)".

Just as technology involves more than computers and the Internet, technological

literacy involves more than hands-on skill in using technology (Bugliarello, 2010). In line with this idea, the International Technology Education Association (ITEA) (2007) provides another definition. According to ITEA, technological literacy is much more than the ability to use technological tools. Technologically literate individuals use systems-oriented thinking when they come into contact with the technological world and they are conscious of the effects of that contact on individuals, society and the environment. Moreover, technological literacy means the ability to use, manage, assess and understand technology. In addition, the North Central Regional Educational Laboratory (NCREL) (2003) defines technological literacy as, knowledge about what technology is, how it works, what purposes it can serve, and how it can be used efficiently and effectively to achieve specific goals (Bunkhardt et al., 2013).

2.2.3 Constructivism

In the curriculum it is stated that "although other learning approaches such as behaviorist approach and cognitive approach are not rejected, in order for students to achieve learning outcomes in the curriculum, teaching strategies and learning experiences should concentrate on the constructivist approaches as much as possible" (MNE, 2006). Constructivism is a theory of learning established as a reaction to the faulty aspects of behaviorist and cognitive learning theories. Before defining constructivism, it is necessary to explain these two previous theories briefly.

2.2.4 Behaviorist approach

Behaviorist theories that dominated the psychology during the first half of the 20th century are based on the philosophical views of Aristotle, Descartes, Lock and Rousseau on the nature of learning. These theories emphasize that by changing the environment the desired behavior can be achieved. In addition to the names above, among the pioneers of behaviorist approach are Pavlov, Watson, Thorndike and Skinner (Demirel, 2007). In this approach, learning is explained on the basis of action-reaction principle. Cognitive processes are not given much importance. Therefore, according to this approach, there is no difference among learners in terms of understanding. In the universe there is stable knowledge and the aim of education is to transfer this knowledge exactly to students and students are supposed to receive this knowledge without questioning. In addition to this, according to behaviorist approach, learning is an observable change in the behaviors of the individual. Objectives are determined for students and they are expected to fulfill these objectives and organize their behaviors accordingly. Moreover, education focuses on external conditioning (Deryakulu, 2011).

2.2.5 Cognitive Approach

The theorists of cognitive approach, in which Piaget, Bruner, Vygotsky and Guilford are the pioneers, by emphasizing the complexity of human behavior, claim that "action-reaction" principle in the behaviorist approach is unsatisfactory in explaining learning (Demirel, 2007). According to this approach, knowledge, which is perceived through sensory organs from outside environment, is processed in the brain just like a computer processing data. This knowledge processing has 2 main elements: The first one is

knowledge storages formed in the memory and the other one is cognitive processes that help the knowledge to be transmitted to other memories (sensory, short-term and long-term) and that involve cognitive activities (Senemoğlu, 2010).

The psychologists in favor of this opinion believe that learning is the result of our effort to give meaning to the events and situations around us and thus we use all mental tools we have (Demirel, 2007). Demirel states that, according to this approach, the basic opinions below are adopted:

1. Learner is not a passive receiver of external stimuli but he/she is the one who assimilates them and actively forms behaviors.
2. Learner is the one who takes the responsibility of his/her own learning, and he/she does not receive what is given as it is but discovers the meaning of what is given.
3. Learner is the person who chooses the suitable ones among the different pieces of knowledge and processes them.
4. Learner, even if it is a principle that is aimed to be acquired by him/her, has to give meaning to that principle by trying to find the meaning of it, relating it to other principles and associating it with the principles he/she has learnt before.

2.3 Teachers' areas of specialization and curriculum implementation

Area of specialization is the course; subject or specific field a teacher studied or majored in while undergoing the teacher training programme. It is common knowledge that a teacher cannot give what he does not have. In the Ghanaian school system; due to lack of teachers in some subject areas, any teacher could be assigned to teach any subject at any time and at the principals' discretion. Has this short cut to teaching any effect in the overall

curriculum implantation process? Teacher area of specialization has a large body of scholarship spread across the years. Some works like those of Emeh and Enukoha (2015), which provided theoretical support for the importance of area of specialization and teachers effectiveness.

Also, Durojaiye (2016) and Ifiok (2005), all argued from a theoretical perspective the importance of area of specialization in teaching. The empirical research findings of Patton (2010) and Okpala (2009) also have a bearing on the teaching area of specialization and teaching effectiveness. Durojaiye (2016) stated that the major task of a teacher is to guide the students to acquire the knowledge he has acquired, to train his students in social, technical and academic skills and to guide the learning process which he has passed through himself. Ifiok (2005) observed that lack of subject based-qualified teachers hampers curriculum implementation in most Senior High schools in Nigeria. Green (2016) opined that the first step in educational reform is to improve the method of training teachers based on their various fields of specialization in order to produce well qualified teachers for efficient curriculum implementation.

Green (2016) carried out a research work on the appraisal of the implementation of the National Policy on Education (NPF) in Cross River State: implication for physics teaching in the new millennium. The researcher developed a 15 point questionnaire which was a structured obtain information on qualification (s). Nine schools were used for the study. The findings revealed that most of the physics teachers in the (3) three Local Government Areas sampled were not trained in the subjects they were teaching. Their shallow knowledge in these areas made them to exhibit in effective teaching characteristics as follows: mystification of the subjects, disregard for the curriculum, and test and evaluation

are done on familiar questions and marks are generously awarded to give the impression of good teaching.

Green (2016) stated that a strong background in the subject for teachers is a necessary and important indicator of their ability to teach the subject. Lawrenz (2015) observed that teachers' knowledge on the subject matter is positively related to student's achievements. Subject matter specialization is 'sine qua non' for every teacher. Generally, it is assumed and expected that the teacher must acquire a reasonable measure of knowledge of the subject in order to reasonably cope with the demands of teaching. Area of specialization culminates to subject matter knowledge; knowledge is dynamic, and the acquisition of current information in sometimes costly and not easy to come by.

2.4 The Role of Teachers in Curriculum Implementation

Analyzing the role of teachers in curriculum development, Albert (2010) re-echoed the dogma that no educational system can rise above the quality of its teachers. A good teacher is an embodiment of all kinds of skills without which the learners' achievement will be low. The role of the teacher therefore is very important in curriculum evaluation, interpretation and implementation, especially when it comes to measuring the gains in education. One of the primary roles of a teacher in any curriculum interpretation and implementation is that of passing message to the learner. The teacher plays other encompassing roles such as:

a) Participating in curriculum planning, guiding and learning;

b) Organizing students to meet their set objectives, and

c) Understanding and assisting in bridging the gap between theory and practice in education (Barrow, 2016).

The effective discharge of these functions helps learners to grow in depth and dimension. The role of teachers in the implementation of the curriculum is multifaceted as they assume the position of guidance and counsellors and parents substitutes especially at the lower levels of education. They are also involved in directing the students‟ thought, shaping their ideas and motivating them to aspire to greater heights in life. Therefore, the most important single determinant of what happens in the classroom is the teacher. However good the lesson notes are, the management of curriculum depends on the sophistication and appropriateness of teaching aids, and the teacher's transactional skills; which are a reflection of his/her training and experience (Onwuka, 2014).

The ability to communicate effectively will also depend on the teacher's interpersonal relationship with the students. Such relationship can be cultivated through participation and co-operation. Effective implementation of the curriculum depends tactfully on effective and efficient planning by the teacher, who decides what the learners will do and how to do it. The malfunction of curriculum implementation easily manifests in indiscipline and disruptive behaviours of learners not concentrating on their studies. To be able to implement the curriculum, the teacher as the most important part of the curriculum must be trained in experimental and manipulative behaviour (Ndubuisi, 2011). This study found out the teacher's role in the implementation of the Integrated Science curriculum. The attempt made has spelt out the role and qualities of the teachers without which curriculum implementation will be seemingly impossible. That not withstanding, it has not discussed other salient areas such as the use of appropriate teaching aids and participation in curriculum planning.

2.4.1 Role of Students in Curriculum Implementation

On the role of students in curriculum implementation, emphasis is placed on individual student's development, therefore, their needs and interests are considered in the implementation of the curriculum. In this guise, the organization of the curriculum for a group of learners depends on the perceived needs, problems and interests of the learners; the sequence of which depends upon where the learners are and how far they can overcome the problems and situation that may arise from the implementation. "A notable feature of curriculum activities is the interest in students growth through visible active experience. These are structured with the learners' interest at heart" (Tyler, 2009, p. 43)

The curriculum calls for very extensive planning by the teacher if it must be successfully implemented (Onwuka, 2014). It is hoped that this research would alert classroom teachers on the need to make preparation towards the successful implementation of the curriculum. The curriculum also calls for flexibility in advance, bearing in mind that the learners interest, needs and modes of learning determine how learning takes place and that teaching should transcend from simple to complex or from known to unknown" (Urevbu, 2015, p. 23).

2.5 Participants in Curriculum Implementation

The implementation of the curriculum requires many hands to be on deck if success is to be guaranteed. The participants are both within and outside the system. Participants within the system consist of the head teacher, teacher, learners and the supporting staff. The learners are the focus of any curriculum implementation. Whatever the head teacher, teacher, parents and the government do, the learners provide feedback on the success or

otherwise of the curriculum. It is from the learners response that the teachers get to know the effectiveness of his statement of objectives, methods, instructional materials and evaluation procedures.

Although decisions on what to teach, how to teach and the time required teaching may have been taken by policy makers, the implementation of these aspects of the curriculum lies in the hands of the classroom teacher. The teacher is the one to interpret the syllabus, the scheme of work and the lesson plan and presentation. It is for these reasons that the teacher must be given adequate training and support. The teacher is charged with the responsibilities of monitoring and supervising the implementation of the curriculum at the school and classroom levels. He is to maintain an enabling environment to enable the teachers and learners interact meaningfully. He does this by maintaining good human relations with staff and students, assigns duties and gives assistance to teachers and learners, as well as ensures availability and adequacy of instructional materials and other infrastructural facilities by keeping and maintaining regular line of communication between the school and the supervisory bodies like the ministry, education board, resource centers, research councils and so on.

The Parent Teacher Association (PTA) is another internal component of the curriculum implementation process. The role of the PTA in curriculum implementation is often understood by most head teachers. In most cases, the role of the PTA is perceived to specifically be on providing money to the head teacher to produce materials for school. While this perception is not disputed, it should be understood that the PTA has a variety of functions to perform in the school for the achievement of educational objectives (Synder, Bolin, & Zumuralf, 2009).

As a body, the PTA influences curriculum implementation in many ways. For instance, it serves as an advisory body to the school, recruitment of additional teachers in very needy subject areas, purchase of books and other instructional materials, providing funds for the execution of projects, soliciting assistance from government and other non-governmental organizations (NGO's) for the school, awarding scholarships to learners who excel but without financial base and many others. However, it should be understood that these components or agents of curriculum implementation must work in harmony if they are to achieve educational objectives through effective curriculum implementation (Synder, et al., 2009).

2.6 The challenges teachers face in the implementation of the integrated science curriculum.

Problems and prospects of curriculum implementation in the process of implementing the school curriculum are problems that are inherent. Some of these include the following:

a) Language of instruction

b) Funding

c) Manpower

d) Leadership

2.6.1 Funding

The problem of funding curriculum implementation is a serious matter. The success of the entire components of the curriculum in schools depends on adequate funding. For instance, the training of manpower and their remuneration, materials, monitoring and

supervision all require adequate and regular funding. In Nigeria, the policy of funding education is faulty, for instance, the federal government could provide instructional materials and funds for staff development but could not fund recruitment of teachers and other supporting staff; this is a contradiction and misplacement of priority in curriculum implementation. It should be made clear that the success of curriculum implementation depends on proper and adequate funding (Ukeje, 2010).

2.6.2 Manpower

The proper implementation of the school curriculum requires specific reference to manpower provision. Education planners lack up to date statistics to guide their projection of manpower needs. In most of the states in Nigeria, classrooms have shortage of qualified and skilled manpower. In states where the quantity and quality exist, the manpower is not motivated in terms of conditions of service and on the job training. This tends to negatively affect curriculum implementation (Ukeje, 2010).

2.6.3 Leadership

This component of curriculum implementation is a major concern because it distorts the entire system of the school. Leadership problem is manifested in the degree of corruption that pervades the society in general and the education sector in particular. In the process of implementing the school curriculum, funds released for such purpose in most cases, do not get to their destinations. In cases where they do, a large percentage of the fund would have been diverted for purposes they were not meant for. The leadership would have to present itself as a model that would provide exemplary leadership and ensure smooth

and effective implementation of the curriculum. Such a leadership would ensure the timing of the implementation of the curriculum and monitor the evaluation procedures of effective feedback. It is important at this point to note that these problems should be regarded as challenges to education problems rather than attacks on their personalities. There is no programme implementation exercise that does not have inherent problems, what is required is the will that confront these problems objectively (Ukeje, 2010).

2.7 The determinants of integrated science curriculum implementation.

The following are factors that determine to a great extent, how successful or otherwise any given curriculum can be adequately implemented.(Ukeje, 2010):

1. The society
2. The learner/student
3. The teacher
4. Knowledge of the disciplines
5. Availability of resources
6. Textbooks authors/subject specialist
7. Classroom organization
8. Time allocation
9. Method of teaching
10. Economy or finance

2.7.1 The Society

A society is usually perceived as a collection of individuals who have organized themselves into a distinct group in relation to their natural and social environment. Such a group is usually a distinct one with several things which are held in common in order to make everyone belong. Those things which are common to the group and which also ensure togetherness of such a group are the things which make up the culture of the group. Culture therefore, becomes the total shared ways of life of a given people (Ukeje, 2010).

This comprises their characteristics, habits, ideals, modes of thinking, acting, feelings, child rearing practices, religion, land, language, any customs as well as material products like type of house, cloth and tool, etc. Different societies have different cultures and a knowledge of that is important for educational programmes to be culturally biased. Since culture preserves a given society by educating the young on its norms and values, it is imperative that educational programmes or curriculum should be culture dependent. Therefore, curriculum designed for any given society should essentially reflect societal needs, goals, value systems, aspirations, expectations, general pattern of life and culture of people (Wallace, 2013).

2.7.2 The Learner/Student

The learner is at centre of any educational programme. This being the case, any curriculum planning must give adequate consideration to the learner. The whole idea of curriculum planning and development will be meaningless if the learners who are directly involved in the curriculum implementation processes are not taken into account. A curriculum that is adequately planned, useful and relevant, must clearly reflect the

fundamental issue of learners needs, interests, peculiarities, other physical and psychological characteristics etc. (Wallace, 2013).

2.7.3 The Teacher

A teacher can be considered as the heart beat of the curriculum. For a teacher to be effective and efficient in the performance of his duties, he/she must have good knowledge of the subject matter. Added to a teacher's qualification is his experience and perception of his role in the teaching/learning process (Wallace, 2013). A teacher who cares less about the success of his students is not likely to perform well. Therefore, success or failure of any given curriculum will be determined to a reasonable degree on the commitment and dedication of a teacher to his professional role (Gagel, 2007).

2.7.4 Knowledge of the Discipline

The tremendous increase in existing knowledge has great influence on curriculum planning and development. Aspects of knowledge that are most worthy will have to be selected for learners in the school system. For instance, it is an established fact that knowledge in the disciplines, especially in the sciences has given rise to the problem of what to select from the various items of knowledge. At every point in time, selection of the kind of learning that is of most worth should always be considered (Wallace, 2013).

2.7.5 Availability of Resources

Availability of human and non-human resources is another major determiner of the curriculum implementation. Human resources include the teacher and any other person or

group of persons that have some contributions to the successful implementation of a given curriculum. Non-human resources include; facilities, equipment and materials. In some schools today, there appear to be inadequate resources for use by teachers (Wallace, 2013). In situations where materials are not available in large quantities to meet the demand, implementation of a curriculum that requires the use of the materials will be hampered (Green, 2016).

2.7.6 Textbooks by Subject Specialists

Textbook authors usually determine the scope of content and the logic of subject matter. They, in addition, determine the authenticity or truthfulness of the information the school system will be exposed to. If, for instance, the information in a textbook is shallow, misleading and not authentic, learners will be exposed to wrong information. It is necessary that authors and specialist make effort to ensure that the most relevant, the most useful and the most functional information is included in the textbooks. Textbooks should also be reviewed from time to time to reflect any change in knowledge (Wallace, 2013).

2.7.7 Classroom Organization

The organization of classes in schools has great effect on the implementation of the curriculum. The school head should ensure that teachers attend their classes punctually. There should also be effective in monitoring what goes on in the classroom for teaching and learning to be meaningful and rewarding (Wallace, 2013).

2.7.8 Time Allocation

Time available on the time table for teaching any particular subject is a measure of attention the educational managers attach to that subject. The time allocated to each subject should be adequate for the teacher to carry the learners along. If the time is too short, the teacher may tend to rush through the scheme of work not caring whether he is carrying the students along or not (House, 2005).

2.7.9 Method of Teaching

There are so many methods used in transmitting and sharing knowledge with learners. These include lecture, discussion, discovery, inquiring, field trip/excursion, role playing, demonstration, play way etc. No one method has all the essentials and no one method is superior to another. What dictates the choice of a particular method depends on the nature of the content that is to be taught (House, 2005)

2.7.10 Economy or Finance

The economy or state of finance of any country is one or the most significant influencing factors of curriculum implementation. The economic situation or financial standing of any country determines to a very large extent the quality, content and even the method of education of that country. It determines the orientation of the educational philosophy, scope of the educational objectives, the range of school subjects and learning experiences, the mode of evaluation adopted, the quality of infrastructure for implementing the curriculum and the quality of teachers.

In Nigeria, the state of the economy during the era of oil boom greatly affected the

curriculum in a positive direction. But presently, lack of funds as a result of the country's dwindling economy is one of the reasons why the federal government cannot expedite action on teachers demands for salary increase thereby leading to incessant strike actions by the teachers (House, 2005).

2.7.11 Teachers' Expectations and Behaviour

Tobin and Gallagher (2007) found that science teachers rarely, if ever, exhibit behaviour that encourages students to think about the nature of scientific inquiry and the meaning and purpose for their particular investigation during laboratory activities. On the basis of a comprehensive study on implementation of the laboratory in schools in British Columbia, Gardiner and Farrangher (2007) found that although many Biology teachers" articulated philosophies appeared to support an investigation, as well as hands-on-minds-on approach with authentic learning experiences, the classroom practice of those teachers did not generally appear to be consistent with their stated philosophies. As noted in the preceeding section, Hodson's observations of the mismatch between teacher's rhetoric and practice also complicates obtaining valid and reliable information based only upon teachers' self-reports.

Several studies (DeCarlo & Rubba, 2014; & Marx et al., 2008) have reported that very often, teachers involved students principally in relatively low-level routine activities in laboratories and that teacher-student integration focused principally on low-level procedural; questions and answers. Marx et al, (2008) reported that science teachers often have difficulty helping students ask thoughtful questions, design investigations, and draw conclusions from data. DeCarlo and Rubba (2014) reported similar findings in chemistry

laboratory settings. Earlier, Shymansky and Penick (2008) had written to say that: *"Teachers are often confused about their role in instruction when students are engaged in hands-in activity. Many teachers are concerned about an adjustment they may have to make in their teaching style to facilitate hands-on programmes as well as how students will react to increased responsibility and freedom".*

Often teachers do not perceive that laboratory activities can serve as a principal means of enabling students to construct meaningful knowledge of science, and they do not engage students in laboratory activities in ways that are likely to promote the development of science concepts.

They may not perceive that they can manage laboratory activities in ways that are consistent with contemporary professional standards. In addition, many teachers do not perceive that helping students understand how scientific knowledge is developed and used in a scientific community is an especially important goal of laboratory activities for their students. As noted in other sections of this review, several researchers have continued to observe that many science teachers do not utilize or manage the unique environment of the school laboratory effectively and conditions that are especially demanding in science laboratories because the teacher is to act as a facilitator who guides inquiry that enables students to construct more scientific concepts. Contemporary teaching standards place a heavy burden on the science teacher. Inquiry-focused teaching now rests on the constructivist notion that learning is a process in which the student actively constructs her or his own ideas that are linked with other ideas in increasingly complex networks. The constructivist model, when practiced, is relatively a radical departure from traditional teaching and learning practice.

Teachers are often not well informed about these new models of learning (Cohen, 1990; Polman, 2009) and their implications for classroom teaching and curriculum. While excellent examples of teaching can be observed, the classroom behaviours of many teachers continue to suggest the conventional belief that knowledge is directly transmitted to good students and that it is to be remembered as conveyed.

In addition, many teachers lack experience in assessment methods aimed at determining their students "understanding and performance in the science laboratory (Yung, 2011). They specifically suggested that teachers would need to emphasize goals for learning and use teaching techniques that are aligned with students' ability to earn high grades. The need for meaningful, long-term professional development for science teachers on these issues and for better communications between the science education research community and the community of science teachers is abundantly clear. These important issues are discussed further in the Teacher Education and Professional Development section later in this review.

2.8 The instructional methods used to improve students integrated science academic performance

Instructional methods are usually named after the dominant activity employed in the course of the lesson. Some of these methods include lecture, discussion, demonstration, laboratory/experimental, field trip, assignment, play way, peer teaching, role playing, project, discovery, discussion etc.

2.8.1 Lecture Method

Lecture method can be referred to as techniques that involve the teacher in complete verbal instruction or exposition. The teacher in this method tells his class what he feels they should know. The students listen and take down notes. The students are always passive while the teacher is active. There is only one-way channel of communication from teacher to students. Seating arrangement is usually centralized and the teacher is the focus of attraction. It is a teacher centered method. It is appropriate for higher level students e.g. tertiary level students (Hargreaves, 2014).

Advantages

1. It is economical in terms of time effort,
2. It allows the teacher to deal with very large students.

2.8.2 Laboratory/Experimental Method

The laboratory method can be referred to as activity carried out by particular students or a group of students which is more of personal observations of processes, products or events. This method is mostly used in the teaching-learning of science subjects. Laboratory Method is characterized by two procedures. Laboratory exercise which usually consists of activities that are carried out so as to provide practice in designing, operating and interpreting experiments. The other procedure known as experiment consists of operations or procedures used for testing a supposition, confirming the known, and by this a child learns. Furthermore, since freedom and free activity promote learning, a sort of play in teaching will incorporate them. Play has been referred to as any pleasurable activity (Hargreaves, 2014).

Advantages of Laboratory/Experimental Method

1) The method helps the students to develop manipulative skills, 2) It leads to better retention of information and development of favorable attitudes to school subjects, 3) Students are active participants and acquire more knowledge by performing experiments, 4) The method makes the students to become familiar with such mental processes as observing, informing, classifying, measuring and data interpretation ((Hargreaves, 2014).

Disadvantages of Laboratory/Experimental Method

1) It is an expensive method because equipment and materials are quite expensive, 2) Danger or accident is inherent, 3) It takes much of the students and the teacher's time

2.8.3 Field Trip

Field trip is an excursion taken outside the classroom for the purpose of making relevant observation and for obtaining some specific information. A well planned field trip affords the students the opportunity to become actively engaged in observing, collecting, classifying studying relationships and manipulating objectives. Field trip is a very valuable method of teaching as it provides the most realistic means for the study of real things and real processes. It also affords the opportunity for meeting real people or experts in their actual environments, thus enabling the students gain first hand information. It also provides opportunities for them to see and if possible touch and feel what they have heard about (Hurd, 2015).

Field trips afford the students the opportunity of employing various senses in the process of learning. This makes topics or concepts and principles taught to become vivid

thereby making retention easy. Field trip can be undertaken to places like an industry, a tourist centre, botanical garden, and centers of social services like post office, water board etc (Hurd, 2015). To utilize field trip as a method of teaching, the teacher should give consideration to whether the trip will:

1) Be of genuine interest to students; 2) Be suitable for their ages and class levels; 3) Be clearly relevant to curriculum goals and objectives; and 4) Fit naturally into the sequence of the students' work.

Advantages of Field Trip

1) It enables the students to have first hand experience of real things. Thus it is considered as providing learning experiences which cannot be brought into the classroom practically. 2) It tends to relate things studied in the classroom with actual activities outside the classroom (that is, the society or community). This makes class work or subject matter instruction more meaningful and enhances students‟ understanding of subject matter. 3) It affords valuable opportunities to development of interest in some careers. 4) It helps to arouse students‟ interest and increase their motivation to learn a subject and some other related subjects. 5) It exposes students to what aspect of subjects matter studied in class applies to everyday life. 6) It makes students much more imaginative and inquisitive observers. 7) It enables opportunities for students to interact with experts and this enhances learning. 8) Most field trip experiences make demand of all senses. This makes students to gain complete picture of the concept than from any other mode of teaching science. 9) Teacher-students relationship becomes more cordial and develops more intimately during field trip. This is because close relationship is required during field trip than is usually

required by formal classroom and laboratory interactions (Hurd, 2015).

Disadvantages of Field Trip

1) It is time consuming, 2) It is difficult to plan and execute, 3) There is danger of accident while going or returning from a field trip and even at field trip location. 4) It is not effective and feasible if a school has large number of students, 5) It is expensive to execute as it creates extra financial burden both for the school and the students. This is because it involves cost in transportation and feeding.

2.8.4 Play way Method

This method was evolved on the basis that a child is naturally creative and not just receptive; and that self activity, play, freedom and experiences are important ways learners can learn at the same time.

Advantages of Play way Method

1) It leads to easy coverage of the syllabus or course outline, 2) The method encourages the habit of listening and it also makes students develop the habit of writing fast.

Disadvantages of Play way Method

1) It is teacher-centered instead of learner-centred. The students are usually passive and eager to be spoon fed by the teacher. 2) It does recognize individual differences but does not cater for them. 3) It is a fast method of teaching and this places the slow learners at a disadvantage. 4) It is quite time consuming. 5) The method appears to recognize the teacher as an encyclopedia of knowledge (Durojaiye, 2016).

2.8.5 Demonstration Method

Demonstration is a skill that can be learnt and taught. It involves showing by offering examples of how something works or the steps involved in a process. This method is often used in the sciences, technical and vocational subjects. For instance, one can show students how to set up and use an overhead projector with transparences or slides (Durojaiye, 2016).

Advantages

1) It is an attention inducer and a powerful motivator especially when used to introduce a lesson (e.g. a lesson on use of projector). 2) With limited time and for a particular topic, demonstration saves time. 3) It enables students retain concepts easily because what is demonstrated is not easily forgotten. 4) Demonstration actually allows the teacher to use activities that may be dangerous for students to carry out by themselves. 5) In the sciences, demonstrations by teachers are useful in showing how to use fragile or dangerous equipment so as to prevent breakage and accidents.

Disadvantages

1) It is not student-centered in that students are not given the opportunity to perform activities themselves. 2) Limited time is offered the students to become well acquainted with equipment and materials and also for observing and recording. 3) In large classes, students often have difficulties in observing details of the subject demonstrated (Durojaiye, 2016).

2.8.6 Peer Teaching Method

This is a method of teaching in which some students, the intelligent or good ones, teach their fellow student. In this method, students who will do the teaching are usually given specific topics to prepare and teach. They are thus placed in the position of teachers and hence they do some bit of research to get enough information based on specific objectives. When peer teaching takes place, the classroom teacher may be present to hear the teaching exercise (Durojaiye, 2016).

Advantages of Peer Teaching Method

1) Students are highly motivated teaching their mates. 2) The method has the potential of building self confidence and self assurance in the learners. 3) Students can search for information on their own and this tends to improve their oral communication.

Disadvantages of Peer Teaching Method

1) The class can turn rowdy if not well supervised role play method. 2) It may lead to a situation where the slow learners will develop an inferiority complex.

2.8.7 Role Play Method

The role play method usually involves the children or learners in dramatization of real life situation. It is a process in which problems are dealt with through action. Usually, a problem is identified, acted out, and discussed, with some learners playing roles and others observing. In classroom situation, if a problem area is buying and selling, then it can be role played by having some learners representing traders and other customers. The teacher provides money and various articles for the role playing exercise (Durojaiye, 2016).

Advantages of Role Play Method

1) Lesson is made practical and real to life. 2) It promotes active learner participation i.e. learners are actively involved. 3) The method provides concrete experience to learners.

4) It helps learners to develop problem solving skills.

Disadvantages of Role Play Method

1) It usually takes time for the learner to get involved in role playing activities. Thus, it is time consuming and requires planning well. 2) The teacher's imagination, skill and organizational competence determine the success of the method.

2.8.8 Project Method

This is a method of teaching whereby learners are involved in a comprehensive study of certain topics. Project by definition refers to a task involving scale exercise given to students which they work on over an extended period of time. There are two main functions that a project may perform. This includes:

i. Help students to learn through problem solving; and

ii. Providing the teacher a basis for assessing students learning originality and creativity (Durojaiye, 2016).

Advantages of Project Method

1) It stimulates learning by doing. 2) It encourages discovery learning in children. 3) It makes learning real by presenting a real task for the learners to tackle. 4) The method helps to develop co-operative work attitude. 5) Creativity, freedom of expression and initiative

are encouraged through project. 6) It enables students to discover information on their own.

Disadvantages of Project Method

1) The method requires a lot of preparation and it is time consuming. 2) It is not very appropriate for very young children. 3) It places much demand on the teacher in respect of initial preparation, monitoring and evaluation. 4) Some projects may involve much money.

2.8.9 Discovery Method

This is a method of teaching where the classroom teacher provides the learners with the necessary opportunities to discover new facts, new rules, or techniques of solving problems as well as new values for themselves. The discovery method is also called the „Heuristic method. This name, as it implies, is a method by which the pupils discover things for themselves. The method uses the fact that a pupil‟s own experience is the basis of real learning. It is an activity method where pupils are mentally active all the time (McCutcheon, 2015).

Advantages of Discovery Method

1) The method equips the learner with a vital means of acquiring knowledge on his own through active participation, and develops his mind by using it to solve problems. 2) The method challenges the learners to find out information for himself; this makes instruction student-centered. 3) The method facilitates assimilation and retention of knowledge discovered by student themselves. 4) It helps students to develop manipulative skills as they come into contact with materials and apparatus. 5) Mental adventure, which this method encourages, is very rewarding. 6) It encourages analytic thought.

Disadvantages of Discovery Method

1) The method is slow and time-consuming. 2) The method cannot be used for a large class, in terms of number of students. This is because effective teacher supervision will be difficult to achieve. 3) It places considerable amount of burden on the students since it is student-centered. 4) The method has a very high financial implication; much fund is needed to buy equipment and materials needed in subject areas like Science and Home Economics (McCutcheon, 2015).

2.8.10 Discussion Method

This is a type of activity which involves breaking the class into small groups for effective talk on a topic, a problem or an issue. It is a thinking together process in which pupils talk freely to the teacher. It is also a student-centered method since students participate actively. The role of the teacher is that of a moderator. There is flow of information from the teacher to the student as well as from students to students. The teacher should not allow individuals to dominate the discussion (McCutcheon, 2015).

Advantages of Discussion Method

1) It stimulates exchange of ideas and encourages unity of purpose among pupils.

2) It develops leadership and followership skill as group members learn to control the discussion and listen to the opinions of others.

3) It offers encouragement to the shy students who may not be able to contribute to class activity. 4) It stimulates critical thinking. 5) It encourages every member of the class to participate. 6) It is a useful source of feedback to the teacher especially if discussion is formed around previous lesson taught.

Disadvantages of Discussion Method

1) Discussion could be dull if discussants do not have enough experience on the topic. 2) It may be dominated by a few students if not managed. 3) It is time consuming and if frequently used in a class, the possibility of covering the scheme of work will be remote. 4) If the discussion is too long, it could lead to restlessness and frustration on the part of the students (McCutcheon, 2015).

2.9 Summary of Literature Review

As noted in other sections of this review, the curriculum calls for very extensive planning by the teacher if it must be successfully implemented. It is hoped that this research would alert classroom teachers on the need to make preparation towards the successful implementation of the curriculum. The curriculum also calls for flexibility in advance, bearing in mind that the learners interest, needs and modes of learning determine how learning takes place and that teaching should transcend from simple to complex or from known to unknown. Inquiry-focused teaching now rests on the constructivist notion that learning is a process in which the student actively constructs her or his own ideas that are linked with other ideas in increasingly complex networks.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

In carrying out any desirable activity, it requires that an individual follows certain procedures or methods in order to achieve favorable results. This chapter assessed the methods used for the study, given a vivid description of how the research will be carried out. This chapter will cover the research methods that will be adopted by the researcher in arriving at the findings. It will describe the research design, research approach, the population, sampling and sample procedures, data gathering instruments, data collection measures, data analysis and ethical consideration will also be dealt with in this chapter.

3.1 Profile of the Study Area

The population of Karaga District, according to the 2010 Population and Housing Census, is 77,706 representing 3.1 percent of the region's total population. Males constitute 48.0 percent and females are the majority, representing 52.0 percent. Eighty two percent of the population of the district reside in rural localities. The district has a sex ratio of 92.5. The population of the district is youthful (population below 15 years old constitute 46.9% of the total population) depicting a broad base population pyramid which tapers off with a small number of elderly persons (60 years and older) representing 4.1 percent. The total age dependency ratio for the District is 104. The age dependency ratio for males (115) is higher than that of females (94).

The district has a household population of 76,927 and a total of 7,664 households. The average household size stands at 10 persons, compared to 8 for the region. Children

constitute the largest proportion of the household structure accounting for 47.9 percent. Spouses form about 8.4 percent of the household population. People in extended (head, spouse (s), children and head's relatives) households constitute the highest proportion (71.2%) of the household population and those in nuclear households (head, spouse(s) and children) constitute only 12.3 percent.

Of the population 11 years and above, 70 percent can read and write in English and Ghanaian Language. Those who can read and write in English Language only constitute about 22 percent of the district's population. Females in the district are more likely to be literates (24.6%) than males (19.9). Of the population aged 3 years and above in the district, a high proportion (65.7%) has never attended school, 28.5 percent are currently attending and 5.8 percent have attended in the past.

About 79 percent of the population aged 15 years and older are economically active while 21 percent are economically not active. Of the economically active population, 98.7 percent are employed while 1.3 percent are unemployed. For those who are economically not active, a larger percentage (37.1%) of them do home duties, 26.1 percent of them are students and 4.4 percent are disabled or too sick to work. Almost four out of ten (39.4%) unemployed are seeking work for the first time.

3.2 Research Design

The purpose of research design is to provide a framework for the collection and analysis of data. A choice of research design reflects decisions about the priority given to set of dimensions of the research process. The researcher used descriptive research design for the study. This refers to a research which specifies the nature of a given phenomena. It

determines and reports the way things are done. Descriptive research thus involves collecting data in order to test hypotheses or answer research questions concerning the current status of the subject of the study (Bryman, 2004).

3.3 Research Approach

There are basically two research philosophies within which social research are located: interpretivist and positivist paradigms. While the interpretivist paradigm is grounded in the qualitative approach to research, the positivist paradigm is placed within the quantitative approach to research. In this study the researcher will use the qualitative approach. This type of research approach will be used because it will enable the researcher to make fair judgment about the effectiveness, relevance or desirability of the study.

Ritchie and Lewis (2003), asserted that the qualitative research, is a term used as an overarching category, covering a wide range of approaches and methods found within different research disciplines. Strauss and Corbin, (1998) believe the concept is any type of research that produces findings not arrived at by statistical procedures or other means of quantification. The central theme of qualitative research is the way in which the phenomenon under study clearly understands and interprets social reality (Bryman, 2004). One of the central motif of qualitative research is the manner in which the participants being studied understand and interpret their social reality (Bryman, 2004).

Research designs can be classified into three main types. These are qualitative research method, quantitative research method and the mixed method which is the combination of qualitative and quantitative research methods. The combination of quantitative and qualitative research methods was used for the study.

3.4 Population

According to Ary, Jacobs and Rezavieh (2012), population is used to refer to the entire group of individuals to whom findings of a study apply. The population was made up of all Integrated Science teachers and head masters of Karaga Senior High School. The total population for the study was 36, comprising 34 science teachers and two headmasters of Karaga Senior High School.

3.5 Sample Size and Sampling Technique

Census method was used to select all the thirty six participants for the study. According to Ary, Jacobs and Rezavieh (2012), Census method refers to the complete enumeration of a universe. A universe may be a place, a group of people or a specific locality through which we collect the data. Census method is necessary in some cases like population census, for gaining vast knowledge. But in contrary this method is not applicable as well as needed to some social problems because it is costly and time consuming. It is difficult to study the whole universe because financially aid requires for it to complete the study (Bryman, 2014). So a required number was selected.

3.6 Research Instrument

3.6.1 Questionnaire

Questionnaires were designed and distributed to the respondents at the Karaga Senior High School. The questionnaire covered items which helped the researcher to assess the participation of teachers in the implementation of integrated science curriculum to enhance students' academic performance in the Karaga Senior High School. The

questionnaire consisted of five sections. Section 1 contains the demographic information of the respondents, including the the respondents gender, age ranges, highest educational qualification, and working experience. Section 2 investigated the role of teachers and students in the implementation of integrated science curriculum in the Karaga Senior High School. Section 3 identified the determinants of integrated science curriculum implementation. Section 4 evaluated the instructional methods used to improve students integrated science academic performance while section five assessed the challenges teachers face in the implementation of the integrated science curriculum. The analysis of the study will be based on the above mentioned issues. (Please refer appendix A for sample of the questionnaire).

3.7 Pilot Testing

The questionnaires were given to social science teachers and some selected students. They identified and notified me about some typographical errors which could not be identified earlier. I corrected the errors and also detected some repeated questions identified in the pilot testing. The pilot test revealed that the questionnaires were correct and approval for mass distribution.

3.8 Data Collection Procedure

Before the data collection, I asked for permission from the Headmaster and the head of Integrated Science Departments of Karaga Senior High School to conduct the study in that setting. After permission was granted to conduct the study, I sent a letter to each of the participants for their consent to take part in the study and to inform them of the impending

questionnaire and interview guide. A written questionnaire was hand delivered to all the selected participants in the SHS. An interview guide was also used to solicit data from some selected participants in the department. Primary data was collected through a field survey from participants in the Karaga SHS. Data was collected through the use of a questionnaire hand-delivered to participants in their offices and classrooms. Questionnaires were filled out by participants and the researcher had to go for the questionnaires on the same day of distribution.

3.9 Data Analysis

The data collected was analysed statistically using Statistical Package for Social Sciences (SPSS) version 18. The main statistical technique that was used were frequencies, percentages, tables and charts was used to explain certain findings.

3.10 Ethical Considerations

Ethical considerations in the study such as confidentiality, anonymity, access, informed content was critically addressed. The researcher and the respondents agreed that all recordings should be deleted after two days to avoid leakages. During the study, high ethical standards was maintained to ensure that no harm is caused to any of the participants. Steps were taken to keep information provided confidentially and anonymous, seeking the participants consent was addressed. No video, audio and picture was taken without the consent of the respondents.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

The main purpose of the study was to assess the participation of teachers in the implementation of integrated science curriculum to enhance students' academic performance in the Karaga Senior High School. The specific objectives of the study include investigating the role of teachers and students in the implementation of integrated science curriculum in the Karaga Senior High School. Secondly, to identify the determinants of integrated science curriculum implementation. Thirdly, to evaluate the instructional methods used to improve students integrated science academic performance and lastly, assessing the challenges teachers face in the implementation of the integrated science curriculum. The analysis of the study was based on these research objectives.

Table 4.1, gives results on the demographic characteristics of the respondents used for the study.

Table 4.1: Demographic Characteristics of Study Participants

		Number of Respondents	
Characteristic	Sub-character	Teachers	Headmasters
Gender	Male	20 (58.8)	2 (100)
	Female	14 (41.2)	-
Age (Years)	< 25		
	26 – 35	5 (14.7)	-
	36 – 45	8 (23.5)	
	46 – 55	11 (32.4)	1 (50)
	56+	10 (29.4)	1 (50)
Highest educational qualification	Diploma	8 (23.5)	-
	Degree	24 (70.6)	-
	Masters	2 (5.9)	2 (100)

***n*=36 Source: Fieldwork 2018**

Table 4.1 shows that 20 teachers representing 58.8% were males while 14 teachers representing 41.2% were females compared to 2 head masters representing 100% were males. Moreover, 11 respondents representing 32.4% were between the age ranges 46-55 years, 10 respondents representing 29.4% were above 56 years, 8 respondents representing 23.5% were between the age ranges 36-45 years while 5 respondents representing 14.7% were between the age ranges 26-35 years. Also, 1 respondent representing 50% was between the age ranges 46-55 years and above 56 years respectively.

Furthermore, 24 respondents representing 70.6% were holding bachelor's degrees as their highest academic qualification, 8 respondents representing 23.5% were holding diploma as their highest academic qualification, while 2 respondents representing 5.9%

were possessing masters degrees. However, 2 headmasters representing 100% were holding masters degrees.

Research question one: What is the role of teachers and students in integrated science curriculum implementation?

Table 4.2: The Role of headmasters and Teachers in the Implementation of Integrated Science Curriculum in the Karaga Senior High School

The Role of Teachers in Curriculum Implementation	SD	D	N	A f(%)	SA f(%)	Total f(%)
Participating in curriculum planning, guiding and learning	-	-	-	22 (61.1)	14 (38.9)	36 (100)
Organizing students to meet their set objectives	-	-	--	18 (50)	18 (50)	36 (100)
Understanding and assisting in bridging the gap between theory and practice in education	-	-	-	17 (47.2)	19 (52.8)	36 (100)
They assume the position of guidance and counselors	-	-	-	20 (55.6)	16 (44.4)	36 (100)
They are also involved in directing the student's thought, shaping their ideas and motivating them to aspire to greater heights in life.	-	-	-	19 (52.8)	17 (47.2)	36 (100)
The ability to communicate effectively will also depend on the teacher's interpersonal relationship with the students.	-	-	-	17 (47.2)	19 (52.8)	36 (100)
Effective implementation of the curriculum depends tactfully on effective and efficient planning by the teacher, who decides what the learners will do and how to do it.	-	-	-	23 (63.9)	13 (36.1)	36 (100)

Key= SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

***n*=36 Source: Fieldwork 2018**

Table 4.2 indicates that 22 respondents representing 61.1% agreed that the role of Headmasters and Teachers in the Implementation of Integrated Science Curriculum is to participate in curriculum planning, guiding and learning while 14 respondents representing 38.9% strongly agreed. Moreover, 18 respondents representing 50% agreed and strongly agreed that the role of Headmasters and teachers in the implementation of integrated science curriculum is to organise students to meet their set objectives. Furthermore, 19 respondents representing 52.8% strongly agreed that the role of Headmasters and Teachers in the Implementation of Integrated Science Curriculum is to understand and assist in bridging the gap between theory and practice in education while 17 respondents representing 47.2% agreed.

Also, 20 respondents representing 55.6% agreed that the role of Headmasters and Teachers in the Implementation of Integrated Science Curriculum is to assume the position of guidance and counselors while 16 respondents representing 44.4% strongly agreed. The study results revealed that 19 respondents representing 52.8% agreed that headmasters and teachers are also involved in directing the student's thought, shaping their ideas and motivating them to aspire to greater heights in life while 17 respondents representing 47.2% strongly agreed. Furthermore, 19 respondents representing 52.8% strongly agreed that the ability to communicate effectively will also depend on the teacher's interpersonal relationship with the students, while 17 respondents representing 47.2% agreed.

The study result shows that 23 respondents representing 63.9% agreed that effective implementation of the curriculum depends tactfully on effective and efficient planning by the teacher, who decides what the learners will do and how to do it while 13 respondents

representing 36.1% strongly agreed.

4.1.1 Discussion of the role of Head masters and teachers in integrated science curriculum implementation

Analyzing the role of teachers in curriculum development, Albert (2010) re-echoed the dogma that no educational system can rise above the quality of its teachers. A good teacher is an embodiment of all kinds of skills without which the learners' achievement will be low. The role of the teacher therefore is very important in curriculum evaluation, interpretation and implementation, especially when it comes to measuring the gains in education. One of the primary roles of a teacher in any curriculum interpretation and implementation is that of passing message to the learner. The teacher plays other encompassing roles such as:

a) Participating in curriculum planning, guiding and learning;

b) Organizing students to meet their set objectives, and

c) Understanding and assisting in bridging the gap between theory and practice in education (Barrow, 2016).

The effective discharge of these functions helps learners to grow in depth and dimension. The role of teachers in the implementation of the curriculum is multifaceted as they assume the position of guidance and counsellors and parents substitutes especially at the lower levels of education. They are also involved in directing the students' thought, shaping their ideas and motivating them to aspire to greater heights in life. Therefore, the most important single determinant of what happens in the classroom is the teacher. However good the lesson notes are, the management of curriculum depends on the sophistication and appropriateness of teaching aids, and the teacher's transactional skills;

which are a reflection of his/her training and experience (Onwuka, 2014).

The ability to communicate effectively will also depend on the teacher's interpersonal relationship with the students. Such relationship can be cultivated through participation and co-operation. Effective implementation of the curriculum depends tactfully on effective and efficient planning by the teacher, who decides what the learners will do and how to do it. The malfunction of curriculum implementation easily manifests in indiscipline and disruptive behaviours of learners not concentrating on their studies. To be able to implement the curriculum, the teacher as the most important part of the curriculum must be trained in experimental and manipulative behaviour (Ndubuisi, 2011). This study found out the teacher's role in the implementation of the Integrated Science curriculum. The attempt made has spelt out the role and qualities of the teachers without which curriculum implementation will be seemingly impossible. That not withstanding, it has not discussed other salient areas such as the use of appropriate teaching aids and participation in curriculum planning.

Research Question Two: What are the determinants of integrated science curriculum implementation?

Table 4.3: The Determinants of Integrated Science Curriculum Implementation.

Determinants	Frequency	Percent	Ranking
The society	3	8.3	5th
The learner/student	4	11.1	4th
The teachers' Knowledge of the other disciplines	6	16.7	2nd
Availability of resources	6	16.7	2nd
Textbooks authors/subject specialist	2	5.6	6th
Classroom organization	3	8.3	5th
Time allocation	5	13.9	3rd
Method of teaching	7	19.4	1st
Total	36	100.0	

***n*=36 Source: Fieldwork 2018**

Table 4.3 shows that 7 respondents representing 19.4% affirmed that the teachers method of teaching determines integrated science curriculum implementation (ranked 1st), 6 respondents representing 16.7% indicated that the teachers' Knowledge of the other disciplines and availability of resources are determinants of integrated science curriculum implementation respectively (ranked 2nd), 5 respondents representing 13.9% said that time allocation determines integrated science curriculum implementation (ranked 3rd), 4 respondents representing 11.1% revealed that the ability of the learner/students to study integrated science determines the curriculum implementation

(ranked 4th), 3 respondents representing 8.3% said that the society and classroom organisation determines the integrated science curriculum implementation (ranked 5th) respectively, while 2 respondents representing 5.6% indicated that textbooks authors and subject specialist determines the implementation of the curriculum.

4.2.1 Discussion of the determinants of integrated science curriculum implementation

These findings are in agreement with Wallace, (2013), he asserted that the following are factors that determine to a great extent, how successful or otherwise any given curriculum can be adequately implemented: the society, the learner/student, the teacher knowledge of the disciplines, availability of resources, textbooks authors/subject specialist, classroom organization, time allocation, method of teaching, economy or finance. There are so many methods used in transmitting and sharing knowledge with learners.

Textbook authors usually determine the scope of content and the logic of subject matter. They, in addition, determine the authenticity or truthfulness of the information the school system will be exposed to. If, for instance, the information in a textbook is shallow, misleading and not authentic, learners will be exposed to wrong information. It is necessary that authors and specialist make effort to ensure that the most relevant, the most useful and the most functional information is included in the textbooks. Textbooks should also be reviewed from time to time to reflect any change in knowledge (Wallace, 2013)

Availability of human and non-human resources is another major determiner of the curriculum implementation. Human resources include the teacher and any other person or group of persons that have some contributions to the successful implementation of a given

curriculum. Non-human resources include; facilities, equipment and materials. In some schools today, there appear to be inadequate resources for use by teachers. In situations where materials are not available in large quantities to meet the demand, implementation of a curriculum that requires the use of the materials will be hampered (Wallace, 2013).

Research Question Three: What instructional methods could be used to improve students integrated science academic performance?

Table 4.4: The Instructional Methods used to Improve Students Integrated Science Academic Performance

Instructional Methods	Frequency	Percent	Ranking
Lecture Method	2	5.6	5th
Laboratory/Experimental Method	8	22.2	1st
Field Trip	4	11.1	3rd
Play way Method	1	2.8	6th
Demonstration Method	5	13.9	2nd
Peer Teaching Method	5	13.9	2nd
Role Play Method	4	11.1	3rd
Project Method	2	5.6	5th
Discovery Method	3	8.3	4th
Discussion Method	2	5.6	5th
Total	36	100.0	

***n*=36 Source: Fieldwork 2018**

Table 4.4 revealed that 8 respondents representing 22.2% indicated that laboratory/experimental method and project method to improve students performance (ranked 1st), 5 respondents representing 13.9% revealed that they used demonstration and peer teaching methods (ranked 2nd) respectively, 4 respondents representing 11.1% affirmed that they used field trip and role play methods to improve students learning (ranked 3rd) respectively, 3 respondents representing 8.3% said that they used discovery method to enhance students' academic performance (ranked 4th), 2 respondents representing 5.6% indicated that they used lecture method, discussion method was used to improve students integrated science academic performance (ranked 5th), while 1 respondent representing 2.8% used play way method to enhance students integrated science performance (ranked 6th).

4.3.1 Discussion of the instructional methods used to improve students integrated science academic performance

These results are in agreement with Brickhouse and Bodner (2012), they indicated that instructional methods are usually named after the dominant activity employed in the course of the lesson. Some of these methods include lecture, discussion, demonstration, laboratory/experimental, field trip, assignment, play way, peer teaching, role playing, project, discovery, discussion etc.

These include lecture, discussion, discovery, inquiring, field trip/excursion, role playing, demonstration, play way etc. No one method has all the essentials and no one method is superior to another. What dictates the choice of a particular method depends on the nature of the content that is to be taught. The instructional methods used was successful

since most students could now solve 10 out 15 questions in Integrated Science. The researcher used a combination of different methods and encouraged teachers to use the same in their lesson delivery.

The laboratory method can be referred to as activity carried out by particular students or a group of students which is more of personal observations of processes, products or events. This method is mostly used in the teaching-learning of science subjects. Laboratory Method is characterized by two procedures. Laboratory exercise which usually consists of activities that are carried out so as to provide practice in designing, operating and interpreting experiments. The other procedure known as experiment consists of operations or procedures used for testing a supposition, confirming the known, and by this a child learns. Furthermore, since freedom and free activity promote learning, a sort of play in teaching will incorporate them. Play has been referred to as any pleasurable activity.

Research Question Four: What are the challenges teachers faces in the

implementation of the integrated science curriculum?

Table 4.5: The Challenges Teachers face in the Implementation of the Integrated Science Curriculum.

Challenges	SD f(%)	D f(%)	N f(%)	A f(%)	SA f(%)	Total f(%)
Language of instruction	22	4	2	8	-	36
	(61.1)	(11.1)	(5.6)	(22.2)		(100)
Inadequate Funding	-	-	5	21	10	36
			(13.9)	(58.3)	(27.8)	(100)
Inadequate social studies teachers to implement the integrated science curriculum/Manpower	-	-	5	20	11	36
			(13.9)	(55.6)	(30.6)	(100)
Poor instructional leadership	4	4	3	19	6	36
	(11.1)	(11.1)	(8.3)	952.8)	(16.7)	(100)
Inadequate teaching and learning materials (TLMs)	-	-	-	24	12	36
				(66.7)	(33.3)	(100)
Insufficient time allocation	3	3	3	18	9	36
	(8.3)	(8.3)	(8.3)	(50)	(25)	(100)
The use of Poor Method of teaching	4	3	5	18	6	36
	(11.1)	(8.3)	(13.9)	(50)	(16.7)	(100)

SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

***n*=36 Source: Fieldwork 2018**

Table 4.5 revealed that 22 respondents representing 61.1% strongly disagreed that language of instruction is a challenge teachers face in the implementation of the integrated

science curriculum, 8 respondents representing 22.2% agreed, 4 respondents representing 11.1% disagreed, while 2 respondents representing 5.6% were neutral. The study shows that 21 respondents representing 58.3% agreed that inadequate funding is a challenge teachers face in the implementation of the integrated science curriculum, 10 respondents representing 27.8% strongly agreed, while 5 respondents representing 13.9% were neutral.

Moreover, 20 respondents representing 55.6% agreed that inadequate social studies teachers to implement the integrated science curriculum/Manpower is a challenge teachers face in the implementation of the integrated science curriculum, 11 respondents representing 30.6% strongly agreed, while 5 respondents representing 13.9% were neutral. Furthermore, 19 respondents representing 52.8% agreed that poor instructional leadership is a challenge teachers face in the implementation of the integrated science curriculum, 6 respondents representing 16.7% strongly agreed, 4 respondents representing 11.1% strongly disagreed and disagreed respectively, while 3 respondents representing 8.3% were neutral.

To add more, 24 respondents representing 66.7% agreed that Inadequate teaching and learning materials (TLMs) is a challenge teachers face in the implementation of the integrated science curriculum, while 12 respondents representing 33.3% strongly agreed. The study shows that 18 respondents representing 50% agreed that insufficient time allocation is a challenge teachers face in the implementation of the integrated science curriculum, 9 respondents representing 25% strongly agreed, while 3 respondents representing 8.3% strongly disagreed, disagreed and were neutral respectively. Furthermore, 18 respondents representing 50% agreed that the use of poor method of teaching is a challenge teachers face in the implementation of the integrated science

curriculum, 6 respondents representing 16.7% strongly agreed, 5 respondents representing 13.9% were neutral, 4 respondents representing 11.1% strongly disagreed, while 3 respondents representing 8.3% disagreed.

4.4.1 Discussion of the challenges teachers faces in the implementation of the integrated science curriculum

These findings are in agreement with Ukeje, 2010), who indicated that the problem of funding curriculum implementation is a serious matter. The success of the entire components of the curriculum in schools depends on adequate funding. For instance, the training of manpower and their remuneration, materials, monitoring and supervision all require adequate and regular funding. In Nigeria, the policy of funding education is faulty, for instance, the federal government could provide instructional materials and funds for staff development but could not fund recruitment of teachers and other supporting staff; this is a contradiction and misplacement of priority in curriculum implementation. It should be made clear that the success of curriculum implementation depends on proper and adequate funding.

The proper implementation of the school curriculum requires specific reference to manpower provision. Education planners lack up to date statistics to guide their projection of manpower needs. In most of the states in Nigeria, classrooms have shortage of qualified and skilled manpower. In states where the quantity and quality exist, the manpower is not motivated in terms of conditions of service and on the job training. This tends to negatively affect curriculum implementation (Ukeje, 2010).

This component of curriculum implementation is a major concern because it distorts

the entire system of the school. Leadership problem is manifested in the degree of corruption that pervades the society in general and the education sector in particular. In the process of implementing the school curriculum, funds released for such purpose in most cases, do not get to their destinations. In cases where they do, a large percentage of the fund would have been diverted for purposes they were not meant for.

The leadership would have to present itself as a model that would provide exemplary leadership and ensure smooth and effective implementation of the curriculum. Such a leadership would ensure the timing of the implementation of the curriculum and monitor the evaluation procedures of effective feedback. It is important at this point to note that these problems should be regarded as challenges to education problems rather than attacks on their personalities. There is no programme implementation exercise that does not have inherent problems, what is required is the will that confront these problems objectively (Ukeje, 2010).

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The main purpose of the study was to assess the participation of teachers in the implementation of Integrated Science Curriculum to enhance students' Academic Performance in the Karaga Senior High School. The researcher used descriptive research design for the study. Quantitative research approach was used. The population comprised of science teachers (34 science teachers) and headmasters (2 headmasters) of Karaga Senior High School. Census sampling method was used to select all the 36 respondents for the study. Questionnaire was the main instrument used to gather primary data. The data collected was analysed statistically using Statistical Package for Social Sciences (SPSS) version 18.

5.2 Key findings of the Study

The first objective of the study was to investigate the role of teachers and students in the implementation of integrated science curriculum in the Karaga Senior High School. The study indicates that 22 respondents representing 61.1% agreed that the role of Headmasters and Teachers in the Implementation of Integrated Science Curriculum is to participate in curriculum planning, guiding and learning. Moreover, 18 respondents representing 50% agreed and strongly agreed that the role of Headmasters and Teachers in the implementation of Integrated Science Curriculum is to organize students to meet their set objectives. Furthermore, 19 respondents representing 52.8% strongly agreed that the

role of Headmasters and Teachers in the Implementation of Integrated Science Curriculum is to understand and assist in bridging the gap between theory and practice in education.

Also, 20 respondents representing 55.6% agreed that the role of Headmasters and Teachers in the Implementation of Integrated Science Curriculum is to assume the position of guidance and counselors. The study results revealed that 19 respondents representing 52.8% agreed that Headmasters and Teachers are also involved in directing the student's thought, shaping their ideas and motivating them to aspire to greater heights in life. Furthermore, 19 respondents representing 52.8% strongly agreed that the ability to communicate effectively will also depend on the teacher's interpersonal relationship with the students. The study result shows that 23 respondents representing 63.9% agreed that effective implementation of the curriculum depends tactfully on effective and efficient planning by the teacher, who decides what the learners will do and how to do it.

The second objective of the study was to identify the determinants of Integrated Science Curriculum Implementation. The study shows that 7 respondents representing 19.4% affirmed that the teachers method of teaching determines Integrated Science Curriculum Implementation (ranked 1st), 6 respondents representing 16.7% indicated that the teachers' Knowledge of the other disciplines and availability of resources are determinants of Integrated Science Curriculum Implementation respectively (ranked 2nd), 5 respondents representing 13.9% said that time allocation determines Integrated Science Curriculum Implementation (ranked 3rd), 4 respondents representing 11.1% revealed that the ability of the learner/students to study Integrated Science determines the Curriculum Implementation (ranked 4th), 3 respondents representing 8.3% said that the society and classroom organisation determines the Integrated Science Curriculum Implementation

(ranked 5th) respectively, while 2 respondents representing 5.6% indicated that textbooks authors and subject specialist determines the implementation of the curriculum.

The third objective of the study was to evaluate the instructional methods used to improve students integrated science academic performance. The study revealed that 8 respondents representing 22.2% indicated that laboratory/experimental method and project method to improve students' performance (ranked 1st), 5 respondents representing 13.9% revealed that they used demonstration and peer teaching methods (ranked 2nd) respectively, 4 respondents representing 11.1% affirmed that they used field trip and role play methods to improve students learning (ranked 3rd) respectively, 3 respondents representing 8.3% said that they used discovery method to enhance students' academic performance (ranked 4th), 2 respondents representing 5.6% indicated that they used lecture method, discussion method was used to improve students Integrated Science academic performance (ranked 5th), while one respondent representing 2.8% used play way method to enhance Students Integrated Science performance (ranked 6th).

The fourth objective was to assess the challenges teachers face in the implementation of the integrated science curriculum. The study indicates that 22 respondents representing 61.1% strongly disagreed that language of instruction is a challenge teachers face in the implementation of the Integrated Science Curriculum. The study shows that 21 respondents representing 58.3% agreed that inadequate funding is a challenge teachers face in the implementation of the integrated science curriculum. Moreover, 20 respondents representing 55.6% agreed that inadequate teachers to implement the integrated science curriculum is a challenge teachers face in the implementation of the integrated science curriculum. Furthermore, 19 respondents representing 52.8% agreed that poor

instructional leadership is a challenge teacher's face in the implementation of the integrated science curriculum. To add more, 24 respondents representing 66.7% agreed that inadequate teaching and learning materials (TLMs) is a challenge teachers face in the implementation of the integrated science curriculum. The study shows that 18 respondents representing 50% agreed that insufficient time allocation is a challenge teachers face in the implementation of the integrated science curriculum. Furthermore, 18 respondents representing 50% agreed that the use of poor method of teaching is a challenge teachers' face in the implementation of the Integrated Science Curriculum.

5.3 Conclusion

The study concluded that the role headmasters and teachers play in the implementation of the integrated science curriculum were participating in curriculum planning, guiding and learning, organising students to meet their set objectives, understanding and assisting in bridging the gap between theory and practice in education, assuming the position of guidance and counselors, involvement in directing the student's thought, shaping their ideas and motivating them to aspire to greater heights in life,

The determinants of Integrated Science Curriculum Implementation were the teachers' method of teaching, the teachers' Knowledge of the other disciplines, availability of resources time allocation, the ability of the learner/students to study integrated science, the society, classroom organisation, and textbooks authors and subject specialist determines the implementation of the curriculum.

The instructional methods used to improve students Integrated Science academic performance were discussion method, demonstration, peer teaching methods, field trip,

role play methods, discovery method, lecture method, laboratory/experimental method and project method to improve student's performance.

The challenges teachers face in the implementation of the Integrated Science curriculum were inadequate funding, inadequate social studies teachers to implement the integrated science curriculum/Manpower, poor instructional leadership, inadequate teaching and learning materials (TLMs), insufficient time allocation, and the use of poor method of teaching.

5.4 Recommendations

Based on the conclusion, the study recommended that;

5. The Ministry of Education through the Karaga district education directorate should provide adequate teaching and learning materials to facilitate the implementation of the social studies curriculum.
6. The headmaster and teachers should provide enough time to study integrated science lessons in order to study all the course contents in the integrated science curriculum.
7. The Ministry of Education through the Karaga district education directorate should organise in-service training programmes to improve integrated science teachers expertise regarding the use of modern methods of teaching to enhance curriculum implementation.

5.5 Suggestions for Further Research

According to the recommendations of the study; the researcher suggested that a similar study should be conducted to investigate the impact of providing adequate teaching and learning materials on students integrated science academic performance.

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APPENDIX A

QUESTIONNAIRE FOR THE INTEGRATED SCIENCE TEACHERS

Consent form for Participation

Dear Student,

I am a post graduate students of the University of Education, Winneba, Kumasi Campus. I am currently doing a research for my project report. The title of the project report is to assess the participation of teachers in the implementation of integrated science curriculum to enhance students' academic performance in the Karaga Senior High School. This research would assess the participation of teachers in the implementation of integrated science curriculum to enhance students' academic performance in the Karaga Senior High School. With this form, I am seeking your consent to use your response from the questionnaire for my study. The study questionnaire would take about 10 – 15 minutes to answer. Your responses are confidential, hence they would be treated as such. In addition you are entreated to be factual with your responses.

Thank you.

Section A: Demographic Information of the Respondents

8. What is your Gender?

Male [ ] Female [ ]

9. Age ranges of the teachers

Below 25 years [ ] 26-35 years [ ] 36-45 years [ ] 46-55 years [ ] Above 56 years [ ]

10. Working experience of the teachers

Below 5 years [ ] 6-10 years [ ] 11-15 years [ ] more than 16 years [ ]

Section B: The Role of Teachers and Students in the Implementation of Integrated Science Curriculum in the Karaga Senior High School.

Please use the following Likert scale to evaluate the role of teachers and students in the implementation of Integrated Science curriculum in the Karaga Senior High School.

The Role of Teachers in Curriculum Implementation	**SD 1**	**D 2**	**N 3**	**A 4**	**SA 5**
11. Participating in curriculum planning, guiding and learning					
12. Organizing students to meet their set objectives					
13. Understanding and assisting in bridging the gap between theory and practice in education					
14. They assume the position of guidance and counselors					
15. They are also involved in directing the student's thought, shaping their ideas and motivating them to aspire to greater heights in life.					
16. The ability to communicate effectively will also depend on the teacher's interpersonal relationship with the students.					
17. Effective implementation of the curriculum depends tactfully on effective and efficient planning by the teacher, who decides what the					

learners will do and how to do it.					

Key= SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

18. Section C: The Determinants of Integrated Science Curriculum Implementation.

Please use the following Likert scale to assess the determinants of integrated science curriculum implementation.

Determinants	**SD**	**D**	**N**	**A**	**SA**
The society					
The learner/student					
The teachers' knowledge of the other disciplines					
Availability of resources					
Classroom organization					
Time allocation					
Method of teaching					

SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

19. Section D: The Instructional Methods used to Improve Students Integrated Science Academic Performance.

Please use the following Likert scale to investigate the instructional methods used to improve students integrated science academic performance.

Instructional methods	**SD**	**D**	**N**	**A**	**SA**
Lecture Method					
Laboratory/Experimental Method					
Field Trips					
Demonstration Method					
Peer Teaching Method					
Role Play Method					
Project Method					
Discovery Method					
Discussion Method					

SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

Section E: The Challenges Teachers face in the Implementation of the Integrated Science Curriculum.

Please use the following Likert scale to identify the challenges teachers face in the implementation of the integrated science curriculum.

Challenges	**SD**	**D**	**N**	**A**	**SA**
20. Language of instruction					
21. Inadequate Funding					
22. Inadequate Social Studies teachers to implement the integrated science curriculum					
23. Poor instructional leadership					
24. Inadequate teaching and learning materials (TLMs)					
25. Insufficient time allocation					
26. The use of Poor Method of teaching					

SD-Strongly Disagree, D-Disagree, N-Neutral, A-Agree, SA-Strongly Agree

APPENDIX B:

INTERVIEW GUIDE FOR THE HEADTEACHERS (OPTIONAL)

1. What is the role of teachers and students in integrated science curriculum implementation?

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2. What are the determinants of integrated science curriculum implementation?

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3. What instructional methods could be used to improve students integrated science academic performance?

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4. What are the challenges teachers faces in the implementation of the integrated science curriculum?

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