PROBLEMS FACING THE TEACHING AND LEARNING OF INTEGRATED SCIENCE IN JUNIOR SECONDARY SCHOOLS. IN ILORIN WEST LOCAL GOVERNMENT AREA KWARA STATE

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CERTIFICATION

This is to certify that this study was carried out at the department of Chemistry and Integrated Science, Kwara State College of Education, Ilorin, Kwara State, Nigeria.

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DEDICATION

This project is dedicated to Almighty Allah the most beneficent and the most merciful who has made it possible for me to carryout this research successfully in peace, It also the one that provide assistance in all my course to see me throughout my course my sincere gratitude goes to the nobel prophet and messenger Muhammed (SAW) who brought Islam and Sunnah from Allah to us.

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ABSTRACT

This research work focused on the some perceived problem militating against effective teaching and learning of Integrated Science in Some Selected Secondary schools in Ilorin West Local Government of Kwara State. Despite the importance accredited to Integrated Science with a view of achieving a better understanding about nature causing the need for its teaching and learning to be effective, the outcome from the data analysis of the research questions for this study reveals that numerous problems exists in the teaching and learning of Integrated Science caused by a number of problem. The problem ranging from student's attitudes towards the learning of Integrated Science to societal and government problem, it is now glaring from research question 2 with 80.7% of the students showing positive response to the fact that they study Integrated Science to pass examination, which implies they do not understand it, this explains poor students' attitude towards learning Integrated Science. According to research question 3, societal factor in the case of parents' social economic status contributes to the ineffective teaching and learning of Integrated Science with evidence from the analysis that 53.3% of the students does not have Integrated Science textbooks for further practice of Integrated Science exercise to enhance effective learning of it. This study has shown that learners and teachers do well when they are motivated and when enough teaching and learning facilities are provided for them. The failure of the government to adequately provide instructional materials and facilities which are important hinders the effective teaching and learning of Integrated Science in Ilorin West Local Government Area of Kwara State.

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CHAPTER ONE
INTRODUCTION

Background of the Study

The term science evokes a wide range of meanings among various specialists or professions. In its broadest form, it constitutes the totality of what those who are organized and recognized as scientists and who also engage in the practice of science as a profession say it is. This definition underlines the fact that science is human activity and those who practice it are ordinary human beings. It may also be seen as a system of thought that requires the application of a thinking process. The ultimate end product is new knowledge which is applied by the scientists and other alike in furthering human understanding of the world. This enhanced understanding of the world is achieved through inquiry and discovery process. The former may involve the application of a systematized procedure known as the scientific method while the latter incorporates some sense perception or observations and the utilization of the individual's mental powers or processes to meditate on the data in order to generate meanings or new information. Thus the gravitationally pull of the earth did not require any rigorous experimentation for it to become part of what we know as scientific knowledge. It is in the light of the above background that the Columbia encyclopedia defined science as accumulated and systematized learning in general usage restricted to natural phenomenon.

The progress of science is not marked only by an accumulation of facts but by the emergence of scientific method and of the scientific attitudes.

A definition may also be made of science as a means of solving human problems. This definition emphasizes the instrumental aspect of science and has its basis on the external sociology of science rather than seeing science from the academic or archival persecution, it views science as a human calling that has relevance to technology. Thus science is worth the study and efforts for the simple fact that it would ultimately serve economic, political, sociological and modernizing purposes. Today, aid zones of the earth may be converted into rich agricultural lands, food production could be increase through the application of fertilizers, distance between cities can be bridged using telephone and supersonic jets, diseased parts of human beings may be removed and replaced with healthy and functional

organs as a result of science the list of possible application of a science for the enhancement of human life is endless.

There are a number of other ways one may look at science. Students should explore these and related definitions for themselves. However a careful examination of the above description of science suggests some implications on the nature of science. This implication is that science has a dual nature. Firstly, science is a dynamic enterprise that concerns itself with seeking new knowledge for enhancing human understanding of, the natural world as well as organizing, systemize and storing this knowledge as a vital part of human nature. Secondly science is continually seeking to explore, test and refuse new as well as old knowledge principles, theories and models. This dimension of duality of science corresponds to Kuhn's conceptualization of scientific revolution as involving occasional or regular discarding of old theories, paradigms or "modus operandi" of science for new ones. Finally, science has a cumulative nature. Over the decades and centuries, new scientific knowledge have been added to the existing stock of scientific knowledge and each new addition has served to further enhance our understanding and appreciation of nature.

According to Bridgeman, a discipline merits the characterization of science if within the discipline precise statements that are susceptible to verification are possible. Given this background, we may classify science into pure and applied sciences. The pure science included those areas or disciplines of science that purposefully seek knowledge or scientific truth for it's own sake and with little or no practical implications. They include such disciplines as physics, chemistry, botany, zoology, microbiology, biophysics, cytology, geology, etc. In more recent decades there has been a tendency in some quarters to view science primarily from a practical stand point. It was probably in response to this that the Federal Government of Nigeria established a number of Universities of Agriculture, Science and Technology.

The various science disciplines can also be categorized into the exact and the descriptive sciences. The former is made up primarily of those disciplines that employ a great deal of quantification in their search for truth. They are characterized by possible precision or exactness in measurements in order to ensure easy communication. Typical

examples of the exact science include Physics, Chemistry and Biology to a lesser extent. On the other hand, the descriptive science has as their major focus the development of a system of description or classification that would ensure precise references and communication. Typical example includes anatomy, botany, geology, zoology, etc. The history of science education shows that between antiquity and the 19th century nature philosophy metamorphosed into modern science which was compartmentalized or fragmented into several disciplines. Thus the various branches of science had their origin between 1820 and 1920. As the theories of science became clearly defined due to knowledge explosion between the 16th and 20th century from the various contributions of Copernicus Kepler, Galileo, Harvey, Newton, Einstein and others, the subject boundaries became dissolved. The result of this was the emergence of hybrid disciplines via biogeography, biophysics, biochemistry, geophysics, astrophysics etc. Today it is difficult to assume that a topic in science exist in isolation and without collateral knowledge from other areas of science.

From this background information, it is clear that integrated science education has been in existence for at least 30 years but the name "integrated science" perhaps surfaced as a universal term about seventeen years ago (Haggis 1973). Up to 1589, there was no science in elementary and secondary school curriculum in Nigeria. It was the church missionary secondary school in Lagos which took a step in 1859 to introduce some science. This science was introduced in the form of nature study. Nature study just meant taking the children outside the classroom to observe their natural environment.

In 1878, science was introduced at the post primary level; it was taught as general science and later broken into three basic sciences namely Biology, Chemistry and Physics. The basic science were taught to those who may not be able to further in science. Questions arose about the existence of the three separate subjects. Advanced countries were developing and we are doing integrated science without proper study. After this work of separating science subjects, a joint working section of representative from the core science committee made efforts to integrate the discipline. By 1920's the nature study was not effective and new development in curriculum of the

basic science and some cultural values as well as intellectual stimulations were brought into the curriculum.

Okoli (2017) stated that integrated science program evolved as a rescue operation to replace absolute and uninteresting general science courses. Chukwuemeka (1981) states that Nigeria integrated science is inter-disciplinary integration as well because Nigeria integrated science is an integration of nature of science. Integrated science materials development in Nigeria was a deliberate attempt to achieving a specific national design. Thus integrated science according to d'Arbon (2022) is an approach to the teaching of science aimed at enabling students gain the concept of the fundamental unity of science, the commonality of approach to the problems of scientific nature and also gain an understanding of the role and function of science in everyday life and the world in which they live. Since integrated science was introduced into the syllabus in 1970 without proper study, so many problems like in competency of the teachers, lack of teacher, lack of teaching materials, improper teaching approach and rest of them have evolved leading to non-learning interest by students.

Since the integration of these three major science courses and some others to bring about integrated science, a lot of problem arises during the process. The idea of Physics, Biology and Chemistry has been adopted by teachers respectively but to no avail. We therefore have to go into this research to find a possible lasting solution to its many problems. As the integration of these science courses to bring about integrated science was noted as one of the problems, it is necessary to note that integrated science should be taught as a unified science not just as Chemistry or Physics or Biology because teachers that are not integrated science inclined teach integrated science either as Physics, Chemistry or Biology.

Therefore saying that the teaching and learning of integrated science in junior secondary schools is very essential is no doubt as it is regarded as yard stick in the development of any nation.

Statement of Problem

The ultimate aim of education is to provide knowledge of the world. In an effort to do this, knowledge has been divided into a system of studies called subjects with science as one of the elements of the system.

Integrated science therefore attempts a unified view of the world thus some of these problems arose as a result of giving birth to integrated science in junior secondary school curriculum of our school system. Some of these problems are:

The qualification of the teachers teaching integrated science in our schools.

The interest of student in learning integrated science

The availability of materials for teaching of integrated science Presence of integrated science laboratories in our junior secondary schools.

Purpose of the Study

Awokey (2022) asserts that science should be taught as a whole as it affects the child in the totality of his environment it is important to look into problems facing the teaching and learning of integrated science.

If science is a systematic study of natural phenomenon in the universe and if we accept that there is a unified universe, and that children must naturally interact with their environment form their moment of birth in order to learn the world out there, then by implication, the child should be allowed to use a unified approach in studying the universe in relationship to the environment.

In a similar manner, Priny (2017) opined that knowledge is essentially one and unified and he recommended that it is this sense of unity which must be reflected in the curriculum of our schools. Another reason espoused for the unity of scientific knowledge is the fact that the scientific knowledge is continuously expanding and this necessitates the selection of basic facts that are fundamental for the understanding of nature in an integrated fashion.

Therefore the main purpose of this study is to find a lasting solution to the problems of teaching and learning of integrated science in our junior secondary schools. This study will examine:

(1) The quality of teachers teaching integrated science
(2) Availability of teachers of integrated science in our schools
(3) Method of teaching integrated science in the classroom in our junior secondary schools.
(4) Facilities for teaching integrated science such as integrated science laboratories and equipments.
(5) The way students see integrated science is also important as some students see it as a difficult subject to study.

Significance of the Study

This study is very essential to the extent that it helps to identify most suggestions for improving the teaching and learning of integrated science in our junior secondary schools. Students are future scientist and are thereby needed to be brought up with the right attitude which is the sole responsibilities of the government, teachers and parents. Thus ideas of integrated science been learnt in schools may be applied in future. Therefore the teaching and learning of integrated science has to be made more interesting and meaningful to the students. The researchers expected that if the suggested and personal opinion proposed in this research work are implemented effectively and diligently, the poor image of teaching and learning of integrated science will be restored and the objectives of education will be achieved. Thus this research work will be of benefit to the following group of people.

1.Government
2.Parents
3.Society
4.School

To the government, the benefit is that there will be inculcation of the generality of Nigerians sense of pride towards science development by saying that the nation which

cannot improve the standard of living of her people scientifically has lost her respect.
To the parents, the benefit is that their children will help control and correct the negative idea they have about certain happenings among them.
To the society, the benefit is that there will be mobilization of the entire society towards total sufficiency and self reliance in improved sciences.
To the school, integrated science unites the sciences thereby producing students who are scientifically literate and to develop in the students a positive attitude and interest in integrated science and appreciation for problems involved.
Integrated science helped to gain knowledge of science in everyday life and the world in which we live from the observations, the need for the study and effective teaching and learning of integrated science in our junior secondary schools cannot be over emphasized.

Scope of the study

This study will be restricted to the problems facing the teaching and learning of integrated science in our junior secondary school, in Kwara Ilorin West Local Government Area of Kwara State. The scope of the study will centre on the following

1. The quality of teachers teaching integrated science in our junior secondary schools.
2. The interest of students in learning integrated science in the classroom
3. The availability of materials for teaching of integrated science in our junior secondary schools.
4. Availability of laboratories incase practical are involve in the course of teaching integrated science.

Research Questions

1. Are there qualified teachers teaching integrated science in our junior secondary schools?
2. Are students in our junior secondary school interested in learning integrated science in the classroom?
3. What are the available materials for teaching of integrated science in our junior secondary schools?

4. Are there integrated science laboratories in our junior secondary schools incase practical are involve in the course of teaching integrated science.

Definition of Terms

CHAPTER TWO
REVIEW OF RELATED LITERATURE

Theoretical Framework

The target of the study is premised on student, teacher and school's learning environment and some other environmental problem that militate against effective teaching and learning. Therefore, theories that has to do with the characteristics of these entities as they affect the effectiveness of teaching and learning would be applicable. Since the learning of any subject-matter depends on the way it is presented to the learner by his or her teacher, the way the learner interacts with the learning experiences presented to him and the environment within which the learning takes place, it is therefore expected that these entities will be affected by variables that have to do with them; these include laboratory adequacy school location attitudes, and background knowledge in Integrated Science that will be considered in this study.

The theories of Maslow (1999) and Gogue (2000) would therefore provide theoretical basis for the study. Maslow's motivational theory expresses that there are two groups of needs; these are deficiency needs and growth needs. When the deficiency needs are met, pupils are likely to function at the Some Selected Junior secondary levels (that is growth needs level). This means that when the deficiency needs are met, self-directed learning or the desire to know and understand would be engaged in more easily. The implication of this is that teachers can encourage pupils to meet their growth needs by enhancing the attractiveness of learning situation. In the light of these, when the environment where the child is learning (in this study, class, laboratory, and location of school) is made attractive, effective learning is likely to take place.

Gagne's theoretical formulations are attempts to identify aspects of learning and to match these with the intellectual demands of the individual. While development is subordinated to learning, Gagne's paradigm insists on identifying valid ordered sequences of instruction (pre-requisites) that can facilitate the learning of intellectual skills.

The 21st century society makes great demands on its members because of rapidly developing and ever-changing political, cultural, social, economic and technological situations. Personal computers, cell phones, and social networks, all of which were once considered frivolous, have made such a huge impact on our culture that our daily lives will not be easy without them. Consequently, the society expects its members to keep pace with these changing situations, and adapt their skills and expertise in all aspects of life. Many societies around the world strongly believe that it is the duty of Some Selected Junior secondary education institutions to provide its youths with these skills and expertise. This raises an increasing societal concern for the quality of learning and teaching at Some Selected Secondary education institutions.

As a result of such unprecedented pressure on educational institutions to keep pace with the ever-changing societal needs and expectations, the emphasis in educational approaches has shifted over time in order to reflect the transition from less formal schooling in the agrarian society to remedial repetitive learning in the industrialization age to learning with an understanding (rather than teaching) in today's knowledge society. Educational approaches have also been influenced by the recent rapid advances and proliferation of new communications Technology. The kind of skills students need to develop to be prepared for the jobs of the 21st century is different from what they needed 20 and odd years ago. Today's employers look for young people with problem-solving, interpersonal and team skills. The concept of 'lifelong learning' and its role in building a 'knowledge society' are also Some Selected Secondary on the agenda. As a result, learning design approaches, goals and processes as well as appropriate learning environments must support the development of the aforementioned skills and expertise. Thus, an urgent need to devise new ways of teaching and learning is critical if we are to prepare our students to live, work and prosper in the 21st century. As a result, different modern educational strategies such as self-directed learning, collaborative learning, experiential-based learning and active learning have emerged.

According to Garrison and Vaughan (2008) Some Selected Junior secondary education must start delivering on its promises of providing learning experiences that engage and address the needs of society in the twenty-first century.

Environment seems to have an impact on a person's intellectual development. As a result, it is likely that the rapid societal and technological changes can have a huge impact on how students think and learn. Neuroscientists are advancing their research into areas relevant to education. Dr. Gary Small, one of America's leading neuroscientists and experts on brain function and behavior in a new book called 'iBrain: Surviving the Technological Alteration of the Modern Mind' argues that daily exposure to digital technologies such as the internet and smart phones can alter how the brain works (Small, 2008). According to him, as we continue to learn, our brains continue to develop and create new pathways and new connections which are continually shaped, reshaped and controlled by advancing societal and technological advances.

Recently, social networking applications such as blogs, wikis, and twitter have seen an unprecedented uptake by many people, especially by the youth. Growing in an interactive, socially interconnected Technology environment, as compared to such passive activities as watching television or listening to a lecture can cause a huge change in the demographics, interests, needs, expectations and work habits of today's student population. When Technology and its impact is ubiquitous and pervasive in all aspects of our life, our classrooms need to reflect what goes on around outside. Schools must try to bridge the gap between classrooms and real-world scenarios.

Dey, Burn, and Gerdes (2009) lament that students arrive on school environment ready to engage information in new ways, only to find schools, which are reluctant to alter their traditional and entrenched teaching approaches. It will soon be not a surprise if students question conventional practices as an effective approach to engage them in critical and creative thinking and learning. Therefore, a revolution in Botswana Some Selected Junior secondary education landscape is inevitable. By employing technologies familiar to students for designing and developing learning environments, educators can better stimulate their active involvement in experiential and authentic learning in engaging ways. Incorporating the concept of Web 2.0 into our subjects, both at school and online

will help elicit learner participation beyond the standard textual expectations and engage them more as active learners (Kurtz and Sponder, 2010).

Attitudes have been described as comprising cognitive, affective and behavioral components. Once an attitude has been established it tends to be stable over time. Technically, there is a difference between attitude and other affective concepts such as interest and motivation, but only attitudes are considered here. Attitudes have been demonstrated to influence and be influenced by achievement and by cognition respectively.

Researchers demonstrate that there is a link between the cognitive and the affective and that Integrated Science education goals should embrace the two and not treat them as mutually exclusive domains. The implication is that attitudes can be developed and much of the study in literature indicates that the approach to presentation and organization of the curriculum goes a long way to determining the development of desired attitudes in students.

There are four areas where attitudes are important:

a. Attitudes towards Integrated Science;

b. Attitudes towards topics and themes in Integrated Science;

c. Attitudes towards the learning of Integrated Science;

d. Scientific attitudes.

Much research has shown clearly that a negative attitude towards Integrated Science is the dominant factor affecting student willingness to study further Integrated Science. Based on social psychological models, it has been shown that attitudes towards topics and themes in Integrated Science are developed by means of interactive teaching materials (teaching materials where the learners have cognitively to relate new input to previously held attitudes by means of specific teaching strategies of which the most common is role play). A huge range of such materials currently exists. There is little evidence relating to the latter two attitude targets. However, scientific attitudes are better regarded as scientific ways of thinking. The evidence available suggests that success in this is very heavily dependent on cognitive development. It is likely that many aspects *cannot* be achieved before the age of 16.

Science Learning and Teaching Theories

Science education has come of age and a number of learning/teaching theories have been propounded as a guide to practice. Theories that will be relevant to this report will be categorized under the cognitive acceleration theory, cognitive load theory, the information processing theory, the conceptual change theory and the alternative conceptions agenda. The presentation is in no particular order of evolvement.

The cognitive acceleration theory, championed by Shayer and Adey of King's College, London, is based on the assumption that there is a mismatch between the cognitive capacity of students and curricula demands. It therefore seeks to handle the problem by proposing an acceleration of the cognitive development of the students through intermittent activities. Research results, however, show that the impact on performance is mediated by a number of other problem and that cognitive capacity does not have a deterministic effect on performance. Most of the suggestions from the literature are to integrate the intervention packages into the curriculum.

Cognitive load theory, pioneered by Sweller of the University of New South Wales, Sydney Australia, is interested in the problems that arise from the interaction between task complexity and cognitive architecture. It engineered a number of instructional strategies that address the issues of the worked example effect, the completion effect, the redundancy effect, the expertise reversal effect, the modality effect, the split attention effect, the imagination effect, the isolated interacting element effect, the element interactivity effect, the guidance fading effect, and the goal-free effect. This is an evolving area for research and holds promises of directing teaching in Integrated Science. However, this theory is limited in its focus when a consideration is given to all the variables involved in the teaching/learning process.

The information processing theory, championed by Johnstone of the University of Glasgow, is premised on the fact that manipulating the teaching/learning situation in the light of the way students' process information will lead to a better performance. Research has shown unequivocal results that authenticate this claim. The major message is the need to organize learning to reduce the demand on the working memory, to prepare the learner by pre-lectures or pre-labs and to reduce noise or redundant material while making the signal or important material explicit. A predictive model was developed for Science learning taking into account other strategies in the learning process. However, much of the

research under this agenda has focused on the working memory section of this process, that is, on actual processing, to the neglect of other aspects of the information processing system (eg perception, and representation). However, recent work is offering some insights into the way information is stored in, and accessed from, long term memory.

The conceptual change theory is the practical implementation of the alternative conception agenda. This was proposed and pioneered by Posner and Strike. It takes its cue from the accommodation and equilibration principles of Piaget's work. Its assumption is that learning is a rational process and that information can be made to be rational and therefore acceptable or understandable to the learner given the learners' prior conceptions. It therefore prescribes the conditions for conceptual change to include dissatisfaction with existing conceptions (presence of anomalous data), intelligibility, plausibility and fruitfulness of a new conception. Research reveals that these are not always positive in bringing about conceptual change as individuals process information in idiosyncratic ways and that the socio/affective perspectives are important in bringing about conceptual change.

Concept of Students' Learning

Students

The OECD (2005) argued that governments have a responsibility to invest in quality educational spaces because of the important role of quality spaces in increasing access and equity for all in education, improving educational effectiveness and promoting acquisition of key competencies, as well as optimizing building performance and operation. Again, little empirical research will be cited in this report.

Engagement in learning

Considerable evidence correlates poor conditions with negative outcomes on students and teachers (Price Waterhouse 2003, Fisher 2002, Filardo 2008). Rudd, Reed et al. (2008) found that student engagement increased in newer, well-designed buildings. Greene, Miller et al's (2004) research noted that student perceptions of classroom structures are important for their motivation, particularly if current class work was instrumental for future success, which included how the curriculum was reshaped in the

new buildings of the few studies of outside school spaces. Black's studies (a,b,c)of the City as a classroom was a learning experience that makes education a public activity outside schools with positive sense of engagement.

Quality Learning

Collaborative learning experiences

There is a reasonable body of literature on the facilitation of collaboration through appropriately designed physical spaces. Numerous studies argue for the particular role of libraries in collaborative learning (Bridgland and Blanchard 2001; Keating and Gabb 2005; Folkestad and Banning 2009). Wolff's (2002) systematic analysis of how physical environments support and encourage collaborative, project-based learning found that it was extremely difficult to determine the essence of what was important in terms of the design, concluding that it was the interrelationship among the design elements that was significant. Dahey (1994) found that putting students into groups does not necessarily lead to co-operative learning unless there is a shared and common goal leading to positive interdependence, face to face interaction, individual responsibility, social skills and group processing that had a clear pedagogical focus. He cites Slavin's study that 63% of groups in cooperative learning increased achievement scores. This has implications for use of space in terms of class size, group size, space, personalization, comfort, safety and classroom furniture.

Concept of Integrated Science

Integrated Science is one of the most important branches of Science; it enables learners to understand what happened around them. Because Integrated Science topics are generally related to or based on the structure of matter, Integrated Science proves a difficult subject for many students. Integrated Science curricula commonly incorporate many abstract concepts, which are central to further learning in both Integrated Science and other Sciences (Taber, 2002). These abstract concepts are important because further Integrated Science/Science concepts or theories cannot be easily understood if these underpinning concepts are not sufficiently grasped by the student (Zoller, 1990; Nakhleh, 1992; Ayas&Demirbaş, 1997; Coll&Treagust, 2001a; Nicoll, 2001). The abstract nature of Integrated Science along with other content learning difficulties (e.g. the mathematical

nature of much Integrated Science) means that Integrated Science classes require a Some Selected Secondary-level skill set (Fensham, 1988; Zoller, 1990; Taber, 2002).

Integrated Science is often regarded as a difficult subject, an observation that sometimes repels learners from continuing with studies in Integrated Science. With the establishment of new syllabuses in Integrated Science for secondary schools in different countries in the last decayed. One of the essential characteristics of Integrated Science is the constant interplay between the macroscopic and microscopic levels of thought, and it is this aspect of Integrated Science (and Physics) learning that represents a significant challenge to novices (Bradley & Brand, 1985). In his early study, Johnstone (1974) reported that the problem areas in the subject, from the pupils' point of view, persisted well into university education, the most difficult topics being the mole, chemical formulae and equations, and, in organic Integrated Science, condensations and hydrolysis.

The focus questions for this overview of the literature will be:

1. What are the main areas of learning difficulty?
2. What are the main aspects of reducing obstacles to effective learning?

Research reported in the literature for each of these themes is now presented in turn.

1. Areas of Difficulty

In looking at the enormous range of papers, which have addressed various facets of the learning difficulties, related to Integrated Science, it is not easy to categorize the work into neat compartments. In the analysis presented here, the work has been divided into five main areas of concern, recognizing that there are overlaps and potential omissions. Each is discussed briefly.

(a) Curriculum Content

The advent of revised school syllabuses in the 1960s and 1970s in many countries saw a move towards the presentation of school Integrated Science in a logical order, the logic usually being that of the experienced academic chemist. Similarly, early chapters in almost all textbooks for first level Some Selected Junior secondary education courses start with topics like atomic theory, line spectra, Schrödinger equations, orbital, hybridization, bonding, formulae, equations, balancing ionic equations, calculations, and stoichiometry. This is the'grammar and syntax' (Jenkins, 1999) of Integrated Science but is daunting for the student. Johnstone (2000) has made arguments against this 'logical' presentation

cogently: The logical order may well not be psychologically accessible to the learner.Much school Integrated Science, taught before 1960, laid great emphasis on descriptive Integrated Science, memorization being an important skill to achieve examination success. The sub-microscopic interpretation and symbolic representation were left until later.

Sawrey (1999) found that, in an introductory Integrated Science course, significantly more students were able to solve the problems that used symbols and numbers than could solve those depicting particles. Bunce*et al*. (2001) interviewed students who had solved problems out loud.

This study will indicate that students rarely thought about the phenomenon itself but they searched in their minds until they came upon something that fitted the conditions of the problem.

Osborne and Cosgrove (2003) showed how students (at several school age levels) understood little about the particulate nature of matter or about chemical phenomena in their everyday lives. Surprisingly, some of the incorrect explanations that students gave to common phenomena are concepts that they developed AFTER formal school instruction. Bodner (2001) then used the same questions developed by Osborne and Cosgrove to determine how prevalent these ideas were among the graduate students. His findings indicated that non-scientific explanations persist for some students even after they had graduated with a major in Integrated Science. He concluded that students have difficulty in applying their knowledge and they do not extend their knowledge into the real world.

(b) Overload of Students' Working Memory Space

The working memory space is of limited capacity (Baddeley, 1999). This limited shared space is a link between, what has to be held in conscious memory, and the processing activities required to handle it, transform it, manipulate it, and get it ready for storage in long-term memory. When students are faced with learning situations where there is too much to handle in the limited working space, they have difficulty selecting the important information from the other less important information.

The latter has been described as “noise”, the student having difficulty in separating the signal from the noise (Johnstone&Letton, 2001). Faced with new and often conceptually complex material, the Integrated Science student needs to develop skills to organize the ideas so that the working space is not overloaded.

Without the organizing structures available to the experienced teacher, the student frequently has to resort to rote learning, which does not guarantee understanding. To solve this type of problem, Johnstone (1999) has argued that teachers have to look more closely at what is known about human learning and also look at the nature of the discipline of Integrated Science and its intellectual structure in an effort to harmonize them.

The ability to develop strategies to cope with information overload depends heavily on the conceptual framework already established in the long-term memory. Working space cannot be expanded but it can be used more efficiently. However, this depends upon some recognizable conceptual framework that enables student to draw on old, or systematize new, material. Miller (1956) suggested the idea of "chunking" (the ability to use some strategy to bring together several items into one meaningful unit, thus reducing working space demands).

(c) Language and Communication

Language has been shown to be another contributor to information overload (Johnstone, 2000). Language problems include unfamiliar or misleading vocabulary, familiar vocabulary which changes its meaning as it moves into Integrated Science, use of Some Selected Secondary-sounding language, and the use of double or triple negatives (Cassels&Johnstone, 2001). An interesting example of the effect of language on working memory space overload is the work carried out to measure working memory space, using the second language of the pupils. They found that, where the learner was operating in a second language, the usable working memory space dropped by about one unit. It was suggested that this unit was being “used” to handle the language transfer (Johnstone&Selepeng, 2001).

White (1999) argued that learning involves the interaction of the information that the learner receives through his sensory system and the information that he or she already has available in his or her long-term memory. This enables the learner to recognize and organize the incoming information and make sense of it. Unfamiliar or confusing words

and constructions come into conflict with the organizational process. White also emphasized that the cognitive processes may be considered to involve the interaction of the components of memory: Working memory and long-term memory.

Language influences the thinking processes necessary to tackle any task. This is supported by the following observations made by Cassels and Johnstone (2000). They noted that memory span is not determined by the number of words but by the grammatical structures (e.g., embedded clauses) that may themselves load the memory. They stress that the important factor in the sentence is its meaning while sentences with a negative require more of working memory capacity than do otherwise identical sentences lacking the negative. The whole area of language, including the use of representational symbolisms, needs careful thought. Previous work has established the reality and nature of the problem.Language helps or hinders interactions with long-term memory but it also can be a source of significance information overload. Perhaps this suggests that there has to be more opportunity for the learner to verbalize and discuss ideas as they are being presented. This would give opportunities for misunderstandings and confusions to become more apparent, allowing the learner to adjust thinking and clarify ideas.

(d) Concept Formation

Integrated Science learning requires much intellectual thought and discernment because the content is replete with many abstract concepts. Concepts such as dissolution, particulate nature of matter, and chemical bonding are fundamental to learning Integrated Science (Abraham *et al*., 1992, 1994; Nakhleh, 1992).

Therefore, inquiring into students' conceptions of the fundamental concepts in Integrated Science has been a research focus of several researchers in many countries for the last two decades (Stavy, 1999; Peterson &Treagust, 1999; Ebenezer & Gaskell, 2000; Quiles-Pardo&Solaz-Portoles, 2000; Ayas&Demirbaş, 2002; Ayas&Coştu, 2002; Çalık*et al*., 2005).

Real understanding requires not only the grasp of key concepts but also the establishment of meaningful links to bring the concepts into a coherent whole. Ausubel's important work (1998) has laid the basis for understanding how meaningful learning can occur in terms of the importance of being able to link new knowledge on to the network of concepts, which already exist in the learner's mind. Concepts develop as new ideas are

linked together and the learner does not always correctly make such links. This may well lead to misconceptions.

The whole area of misconceptions (including alternative frameworks and the ideas in constructivism) probably needs some re-thinking. It appears to be a natural part of the developmental process and it appears to be individually idiosyncratic. However, strategies can be adopted to take advantage of this natural process in the development of more secure concept understandings. A useful future line of research might be to explore the effects of strategies, which teachers might use to take advantage of this natural process in order to give the learners an enriched understanding of important concepts. Group work, dialogue and the exchange of ideas may all be very important in allowing misconceptions to be corrected effectively.

(e) Motivation

There is no doubt that motivation to learn is an important factor controlling the success of learning and teachers face problems when their students do not all have the motivation to seek to understand. However, the difficulty of a topic, as perceived by students, will be a major factor in their ability and willingness to learn it (Johnstone&Kellett, 1998). Students' motivation to learn is important but does not necessarily determine whether they employ a deep or a surface approach: Aspects of students' motivation to learn can be classified as either intrinsic (e.g. wanting to know for its own sake) or extrinsic (e.g. wanting to learn what is on an exam syllabus) (Entwistle*et al*., 1999). There is also a third class, called 'a motivational' learning, which covers the situation where students do things (like attending lectures) without any conscious belief that this will help them learn anything (Vallerand&Bissonnette, 2002).

Resnick (1998) found that students will engage more easily with problems that are embedded in challenging real-world contexts that have apparent relevance to their lives. If the problems are interesting, meaningful, challenging, and engaging they tend to be intrinsically motivating for students. However, Song and Black (2001) indicated that students may need help in recognizing that school-based scientific knowledge is useful in real-world contexts.

2. Reducing Obstacles to Learning

It is, of course, the aim of Integrated Science teachers at all levels to make the subject accessible in such a way that maximum meaningful learning can take place. Salvaratnam (2003) has listed a number of important aspects to aid such learning. These are consistent with two broad principles:

(1) The need to avoid working memory space overload;

(2) The importance of taking into account concepts already held.

These two fundamental ideas are explored now in some detail:

(a) Working Memory Space Overload

The problems associated with limitations in working memory space have already been outlined. The importance of these limitations cannot be underestimated. The working memory space not only has to hold incoming information, it also has to draw information from long-term memory AND process information to make sense of it. The potential for overload is, therefore, considerable.

One of the greatest difficulties in avoiding working space overload lies in the fact that the learner does not yet have the experience (such as the development of "schema, tricks, techniques and previous knowledge" which may be called "strategies") to be able to reduce the working space overload (Johnstone& El-Banna, 2000). Unfortunately, the acquisition of such strategies (e.g. chunking, Miller, 1996) is a Some Selected Secondaryly personal process. Therefore, it is not easy to teach the learner how to chunk although it is possible to present information in such a way that the learner can more easily develop personal chunking skills.

According to White (1998), we chunk the world that is we combine our sensations into a small number of patterns. Therefore, chunking is a function of knowledge. The size and number of chunks perceived in a situation is one of the big differences between the knowledgeable person (e.g. expert, teacher, adult) and the novice (e.g. beginner, student, and child). The knowledgeable person can collect the phenomena or events into a smaller number of meaningful units. The teacher already has such strategies but no students can necessarily apply these. It is important, therefore, to minimize working space demands and to provide several routes to meaningful learning, allowing the learner to seek to develop their own strategies, which might enable them to reduce the overload.

Kellett (1998) proposed a relationship between Information Content, Conceptual Understanding, and Difficulty. It stated that where the learners had a lack of conceptual understanding then those learners may perform reasonably in low information load situations, but their performance would decrease in Some Selected Secondary information load situations, causing complaints of difficulty. Those with Some Selected Secondary conceptual understanding could use this to chunk information, and thus reduce the information load to one, which their working spaces could handle. Some Selected Secondary conceptual understanding would also allow the learners to separate relevant from irrelevant and focus in on the relevant only, which would also reduce the information load burden.

(b) Paying Attention to Incoming Information

Learners have to focus on a specific task within a 'noisy' environment (irrelevant material), but also, within the task, they have to select specific information that is relevant (meaningful) for them. Teachers can only really find out whether learners are attending by ascertaining what they are learning (Ausubel, 1998). Learners need to know when and where to pay attention, and to what to pay attention.

Fox (2003) claimed that attention is affected by the complexity of the task and the motivation of the individual. The focus of the learners' attention determines what information is processed. Learners can attend to only a very limited number of the demands that compete for their attention.

Johnstone and Percival (1996) found that attention breaks do appear to exist and occur generally throughout lectures. The observer can detect such breaks relatively easily and those attention breaks appear as genuine loss of learning in subsequent diagnostic tests. A learners' ability to select the important information to attend to is a key strategy for effective learning. Selective or discriminatoryattention has been shown to underlie learners' rates of learning.

Preparing the mind of the learner is one way to help students to focus their attention on the new information by linking it to their previous knowledge (the knowledge theyalready know and understand). This is discussed in more detail in Sirhan*et al*. (1999)where the use of pre-lectures is shown to be powerfully effective as a way to prepare the minds of learners, with special emphasis on those whose background

knowledge and experience is less than adequate. Students who know more about a topic find it easier to identify and focus on important information. For this reason, carefully choosing the delivered material may greatly facilitate learning. This has been explored in detail inSirhan (2000) and is outlined in Sirhan and Reid (2001, 2002).

(c) Recalling Previous Knowledge Easily

To make the material easier for recall, learners actively need to construct, organize, and structure internal connections that hold the information together. The systematic organization of knowledge, which may be considered to be the ordering of the component knowledge items in a logical, coherent, concise, and principle-based manner, is of fundamental importance for the effective learning, recall, manipulation, and use of knowledge.

All these different terms describe very similar themes and processes, including pupils having an understanding of their learning; being motivated to take responsibility for their learning; and working with teachers to structure their learning environment.

• There is a consensus in the literature that independent learning does not involve pupils merely working alone. Instead, the important role teachers can play in enabling and supporting independent learning is stressed.

• There are a number of different ways of defining and describing independent learning, without there being a shared understanding of how these different definitions and descriptions relate to one another.

The literature works with different definitions and this may make it difficult for policy-makers and practitioners to find clear guidance The concept of ‘independent learning’ is associated with, or part of, a number of other educational concepts and wider policy agenda of contemporary relevance such as ‘personalization’, ‘student-centered learning’ and ‘ownership’ of learning. It is a feature of important issues such as pupil–teacher roles and relationships, and the role of information and communications Technology (ICT) in learning. Theoretical study and practical application of the principles of independent learning are perhaps most advanced in the US, but the concept is of increasing significance in the UK. It is one of the essential elements of ‘personalization’, which government sees as vital to the continuing development of a system of school

education that promotes Some Selected Secondary quality and lifelong learning and social equity and cohesion (DfES, 2006).

An understanding of how learners learn, both in terms of theories of cognition and their practical application, is crucial to developing strategies aimed at improving the capacity for independent learning. This contention is supported by a large body of literature - for instance, the US-based Bransford*et al.* (2000) and Schunk (2005) and the UK-based Reynolds *et al.* (2002), Huddleston and Unwin (2002) and Higgins *etal.* (2007).

These and other writers have shown how new information from many branches of Science has added to our understanding of what it means to know; from the neural processes that occur during learning to the influence of culture on what people see and absorb. The issue of learning styles, originating from the work of the US-based Gardner (1998), is relevant here, though enthusiasm must be tempered by the severe qualifications made by the UK-based White (1998) and Coffield*et al.* (2004).

CHAPTER THREE
METHODOLOGY

This chapter presents the methodology of the study under the following headings of the study; population, sampling and sampling technique, design instrumentation, validity and reliability of the instrument and data collection procedure.

3.1 Research Design

The study was aimed at investigating some problem militating against effective teaching and learning of Integrated Science in Some Selected Junior Secondary schools in ILORIN WEST Local Government Area of Kwara State. The study involves a descriptive survey research.

3.2 Population

The target population of the study was all the teachers and students of Integrated Science in Some Selected Junior Secondary schools in ILORIN WEST Local Government Area of Kwara State. The population was limited to ten (10) Some Selected Secondary schools in ILORIN WEST Local Government Area of Kwara State.

3.3 Sample and sampling techniques

A simple random sampling technique was used to choose the sample from the target population (10 Some Selected Junior Secondary schools in ILORIN WEST Local Government Area of Kwara State), 300 students and 30 teachers was selected at random. The overall total number of respondents was three hundred and thirty (330).

3.4 Research instrument

There were two sets of Questionnaire (instrument) used in this study;

(1) The teacher questionnaire which was meant for teachers in the Schools that was selected.

(2) The student questionnaire which was meant for students in the Schools that was selected.

The two instruments had two sections (A and B). A contains the biographical personality of the respondents such as age, status. B section includes the items coined to

know some of the problem militating against effective teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area of Kwara State, how they cope with them and how they affect student's performances in Integrated Science.

3.5 Validity of the instrument

Three experts in the field of Education were given the instrument to validate, to ensure the validity of the instrument.

3.6 Reliability of the instrument

The parallel (equivalent) method of reliability was carried out on the instrument.

3.7 Data collection procedure

The data was collected through the two set of questionnaire that was administered at (10) ten Some Selected Secondary schools that was selected in Ilorin West Local Government with the assistance of the class teachers and principals who helped in making sure that the respondents who were responding to the questionnaire are valid and original.

3.8 Method of data analysis

The method that was used for analyzing the data that was collected was simple percentage, frequency count, mean and standard deviation.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS

4.1 Introduction

The purpose of this chapter is to analyze the data collected in a systematic way so as to facilitate verification and authenticity of the prepositions that were stated earlier which will provide the much needed answers to the research questions and also form a basis of good and reliable recommendations. Simple percentage, frequency count, mean and standard deviation was used for data analysis. A total of three hundred and thirty (330) research instrument (questionnaire) was distributed, one hundred (300) for students and one hundred (30) for teachers. All questionnaires was completed and returned, which now would serve as basis for data analysis.

4.2 Analysis of Respondent Demographic Characteristics (Bio-Data) for Teacher's questionnaire

Age Distribution

	Frequency	**Percent**
20-29YRS	11	36.7
30-39YRS	11	36.7
40-49YRS	8	26.6
50-59YRS	0	0
Total	**30**	**100**

From the table above, 36.7% of the respondent surveyed represents age 20-29yrs, 36.7% are between the ages of 30-39yrs, while 26.6% represent those who are 40-49yrs and 0.0% of the respondents are between 50-59yrs. The survey here shows that majority of the respondents are vibrant and young adult.

Gender Distribution

		Frequency	Percent
Valid	MALE	17	56.7

	FEMALE	13	43.3
	Total	30	100

From the table above, 56.7% of the respondents surveyed represent male while 43.3% are female. This shows that there are more female Teachers in the survey.

Marital Status

		Frequency	Percent
Valid	SINGLE	13	43.3
	MARRIED	17	56.7
	Total	30	100

From the table above table, 43.3% of the total respondents surveyed are still single while 56.7% of them are married.

Respondents Teaching Experience

		Frequency	Percent
Valid	1-10YRS	21	70.0
	1-15YRS	7	23.3
	16-25YRS	2	6.7
	26-30YRS	0	0.0
	Total	30	100

From the table above, 70.0% of the respondent surveyed represents those who are between 1-10yrs with teaching experiences, 23.3% are 11-15yrs, while 6.7% represent those who had 16-25yrs teaching experiences and 0.0% are with 26-30yrs teaching experience.

Formal Education Qualification

	Frequency	Percent

Valid			
	O-LEVEL	0	0
	NCE	10	33.3
	OND	0	0
	HND	7	23.3
	BSc	11	36.7
	MSc	1	3.3
	PhD	1	3.3
	Total	30	100

From the table above, 33.3% of respondents surveyed possesses NCE Certificates while 23.3% represents those with HND Certificate while 36.7% represents those with BSc and 3.3% of them has attain the level of MSC and 3.3% has also attain the PhD level, while O-level and OND Certificate holders are of no respondent with 0% each. The survey indicates that NCE, HND and BSc holders are more populated in the schools considered in this survey.

4.3 Analysis of Research Questions from Teacher's questionnaire

Table 1: Research question 1

Are Integrated Science teachers in Some Selected Secondary schools in ILORIN WEST local Government qualified and adequate?

S/N	STATEMENT	SA	A	D	SD	Mean	Standard deviation
1	There are enough qualified Integrated Science teachers in my school	1 **3.3%**	12 **40.0%**	15 **50.0%**	2 **6.7%**	2.4000	.67466

2	I have enough exposure to various aspects of Integrated Science during my Some Selected Junior secondary educational programme	13 **43.3%**	17 **56.7%**	0 **0.0%**	0 **0.0%**	3.4333	.50401
3	I attend workshops, seminars regularly to keep me updated on new development in teaching methodology	13 **43.3%**	8 **26.7%**	2 **6.7%**	7 **23.3%**	2.9000	1.21343
4	I give my students Integrated Science assignment often	11 **36.7%**	19 **63.3%**	0 **0.0%**	0 **0.0%**	3.3667	.49013
5	Recommended textbooks on Integrated Science in my school are very clear in content and methodology	9 **30.0%**	13 **43.3%**	1 **3.3%**	7 **23.3%**	2.8000	1.12648
6	I maintain discipline in my classroom	8 **26.7%**	12 **40.0%**	9 **30.0%**	1 **3.3%**	2.9000	.84486

Discussion

The table 1 above reveals the adequacy and how qualified the teachers in Some Selected Secondary schools in Ilorin West Local area are, where statement one recorded that 3.3% of the respondents show strong agreement to the statement that there are enough qualified Integrated Science teachers in the respondents school with 40.0% of the respondents also showing an agreement to the statement while 50.0% of the respondents are of contrary opinion to the statement showing disagreement and 6.7% also showing strong disagreement to the statement. From statement two, 43.3% of the respondent strongly agreed that they have enough exposure to various aspects of Integrated Science during their Some Selected Junior secondary educational programme with 56.7% also agreeing to this statement while 0.0% of the respondents disagreed to the statement with 0.0% also showing strong disagreement to the statement.

Considering statement three, 43.3% of the respondents surveyed strongly agreed that they attend workshops, seminars regularly to keep them updated on new development in teaching methodology with 26.7% also agreeing to the statement while 6.7% and 23.3% shows contrary opinion about the statement with disagreement and strong disagreement respectively. Research statement four recorded that 36.7% of the respondents strongly agreed that they give their students Integrated Science assignment often with 63.3% also agreeing to this statement while 0.0% shows a disagreement to the statement and 0.0% also showing strong disagreement to the statement.

From research statement five, 30.0% of the respondents strongly agreed that recommended textbooks on Integrated Science in their school are very clear in content and methodology and 43.3% of the respondents also agreeing to this statement while 3.3% of the respondents showing a disagreement to this statement and 23.3% strong disagreement were also recorded. Statement six recorded that 26.7% of the respondents strongly agreed that they maintain discipline in their respective classrooms during the course of instructional delivery with 40.0% of the respondents also in support of the statement with agreement response while 30.0% of the respondents showed disagreement to the statement and 3.3% also showing strong disagreement to the statement.

Research question 2

Table 2: Students' attitude towards learning Integrated Science in Some Selected Secondary schools in Ilorin West Local Government

S/N	STATEMENT	SA	A	D	SD	Mean	Standard deviation
1	80% of my students do and submit their assignment when due	9 **30.0%**	8 **26.7%**	7 **23.3%**	6 **20.0%**	2.6667	1.12444
2	My students turn Integrated Science lesson to jest-making class	10 **33.3%**	3 **10.0%**	12 **40.0%**	5 **16.7%**	2.6000	1.13259
3	My students have personal Integrated Science textbooks	9 **30.0%**	5 **16.7%**	7 **23.3%**	9 **30.0%**	2.4667	1.22428
4	My students like	10	17	1	2	3.1667	.79148

	Mathematics	**33.3%**	**56.7%**	**3.3%**	**6.7%**		
5	My students always practice exercise from Integrated Science lesson	14 **46.7%**	7 **23.3%**	9 **30.0%**	0 **0.0%**	3.1667	.87428
6	My students participate actively during Integrated Science lessons	8 **26.7%**	19 **63.3%**	3 **10.0%**	0 **0.0%**	3.1667	.59209

Discussion

The table 2 above reveals the students' attitude towards learning Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area, where statement one recorded that 30.0% of the respondents show strong agreement to the statement that 80% of their students do and submit their assignment as at when due to be submitted with 26.7% of the respondents also showing an agreement to the statement while 23.3% of the respondents are of contrary opinion to the statement showing disagreement and 20.0% also showing strong disagreement to the statement. From statement two, 33.3% of the respondent strongly agreed that their students turn Integrated Science lesson to jest-making class with 10.0% also agreeing to this statement while 40.0% of the respondents disagreed to the statement with 16.7% also showing strong disagreement to the statement.

Considering statement three, 30.0% of the respondents surveyed strongly agreed that their students have personal Integrated Science textbooks with 16.7% also agreeing to the statement while 23.3% and 30.0% shows contrary opinion about the statement with disagreement and strong disagreement respectively. Research statement four recorded that 33.3% of the respondents strongly agreed that their students like Mathematics with 56.7% also agreeing to this statement while 3.3% shows a disagreement to the statement and 6.7% also showing strong disagreement to the statement.

From research statement five, 46.7% of the respondents strongly agreed that their students always practice exercise from Integrated Science lesson and 23.3% of the respondents also agreeing to this statement while 30.0% of the respondents showing a disagreement to this statement and 0.0% strong disagreement were also recorded.

Statement six recorded that 26.7% of the respondents strongly agreed that their students participate actively during Integrated Science lessons with 63.3% of the respondents also in support of the statement with agreement response while 10.0% of the respondents showed disagreement to the statement and 0.0 % also showing strong disagreement to the statement.

The table 2 above also illustrated that statements one, two, three, four, five and six are having means 2.6667, 2.6000, 2.4667, 3.1667, 3.1667, 3.1667 and standard deviations 1.12444, 1.13259, 1.22428, .79148, .87428, .59209 respectively.

Research question 3

Table 3: the extent to which societal problem contributes to the ineffective teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area

S/N	STATEMENT	SA	A	D	SD	Mean	Standard deviation
1	There is sufficient period on my school's time-table for the teaching of Integrated Science	8 **26.7%**	22 **73.3%**	0 **0.0%**	0 **0.0%**	3.2667	.44978
2	Effective teaching and learning of Integrated Science will be hindered if teachers are not motivated to teach the subject	14 **46.7%**	6 **20.0%**	7 **23.3%**	3 **10.0%**	3.0333	1.06620
3	The population of students in my class enhances teacher-student interaction	12 **40.0%**	13 **43.3%**	5 **16.7%**	0 **0.0%**	3.2333	.72793
4	My school's environment is well managed and conducive	8 **26.7%**	16 **53.3%**	4 **13.3%**	2 **6.7%**	3.0000	.83045
5	The Integrated Science syllabus has explicit details related to objectives, content and methodology in Integrated Science	12 **40.0%**	8 **26.7%**	7 **23.3%**	3 **10.0%**	2.9667	1.03335

Discussion

The table 3 above reveals the extent to which societal problem contributes to the ineffective teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area, where statement one recorded that

26.7% of the respondents show strong agreement to the statement that there is sufficient period on their school's time-table for the teaching of Integrated Science with 73.3% of the respondents also showing an agreement to the statement while 0.0% of the respondents are of contrary opinion to the statement showing disagreement and 0.0% also showing strong disagreement to the statement. From statement two, 46.7% of the respondent strongly agreed that effective teaching and learning of Integrated Science will be hindered if teachers are not motivated to teach the subject with 20.0% also agreeing to this statement while 23.3% of the respondents disagreed to the statement with 10.0% also showing strong disagreement to the statement.

Considering statement three, 40.0% of the respondents surveyed strongly agreed that the population of students in my class enhances teacher-student interaction with 43.3% also agreeing to the statement while 16.7% and 0.0% shows contrary opinion about the statement with disagreement and strong disagreement respectively. Research statement four recorded that 26.7% of the respondents strongly agreed that their school's environment is well managed and conducive with 53.3% also agreeing to this statement while 13.3% shows a disagreement to the statement and 6.7% also showing strong disagreement to the statement.

From research statement five, 40.0% of the respondents strongly agreed that the Integrated Science syllabus used in their school has explicit details related to objectives, content and methodology in Integrated Science and 26.7% of the respondents also agreeing to this statement while 23.3% of the respondents showing a disagreement to this statement and 10.0% strong disagreement were also recorded.

The table 3 above also illustrated that statements one, two, three, four and five are having means 3.2667, 3.0333, 3.2333, 3.0000, 2.9667 and standard deviations .44978, 1.06620, .72793, .83045, 1.03335 respectively.

Research question 4

Table 4: Does Government provide adequate facilities for the teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area?

S/N	STATEMENT	SA	A	D	SD	Mean	Standard deviation
1	My school has a well-equipped practical laboratory	16 **53.3%**	4 **13.3%**	7 **23.3%**	3 **10.0%**	3.1000	1.09387
2	Learning facilities like chalk, chalkboard, chairs, tables e.t.c are adequate and maintained in my school	12 **40.0%**	14 **46.7%**	2 **6.7%**	2 **6.7%**	3.2000	.84690
3	My allowance is delayed when due to be paid	0 **0.0%**	0 **0.0%**	18 **60.0%**	12 **40.0%**	1.6000	.49827

Discussion

The table 4 above reveals government's provision of adequate facilities for the teaching and learning of Integrated Science in Some Selected Secondary schools in Ilorin West Local Government Area, where statement one recorded that 53.3% of the respondents show strong agreement to the statement that their schools has a well-equipped practical with 13.3% of the respondents also showing an agreement to the statement while 23.3% of the respondents are of contrary opinion to the statement showing disagreement and 10.0% also showing strong disagreement to the statement. From statement two, 40.0% of the respondent strongly agreed that learning facilities like chalk, chalkboard, chairs, tables e.t.c are adequate and maintained in my school with 46.7% also agreeing to this statement while 6.7% of the respondents disagreed to the statement with 6.7% also showing strong disagreement to the statement.

Considering statement three, 0.0% of the respondents surveyed strongly agreed that their allowance is delayed when due to be paid with 0.0% also agreeing to the statement while 60.0% and 40.0% shows contrary opinion about the statement with disagreement and strong disagreement respectively.

The table 4 above also illustrated that statements one, two and three are having means 3.1000, 3.2000, 1.6000 and standard deviations 1.09387, .84690, .49827 respectively.

4.4 Analysis of Respondent Demographic Characteristics (Bio-Data) for Student's questionnaire

Age Distribution

		Frequency	Percent
Valid	13YRS	7	2.3
	14YRS	40	13.3
	15YRS	65	21.7
	16YRS	102	34.0
	17YRS	58	19.3
	18YRS	19	6.3
	19YRS	4	1.3
	20YRS	5	1.7
	Total	300	100

From the table above, 2.3% of the respondent surveyed represents age 13yrs, 13.3% are of the age of 14yrs, 21.7% are of the age 15yrs, 34.0% are of the age 16yrs, 19.3% are of the age 17yrs, 6.3% are of the age 18yrs, while 1.3% represents those who are 19yrs and 1.7% of the respondents are 20yrs.

Gender Distribution

		Frequency	Percent
Valid	MALE	149	49.7
	FEMALE	151	50.3
	Total	300	100

From the table above, 49.7% of the respondents surveyed represent male while 50.3% are female.

Class Distribution

		Frequency	Percent
Valid	GRADE10	126	42.0
	GRADE11	174	58.0
	Total	300	100

From the table above, 42.0% of the respondents surveyed represent grade 10 students while 58.0% are grade 11 students.

4.5 Analysis of Research Questions from Student's questionnaire

Table 1: Research question 1

Are Integrated Science teachers in Some Selected Secondary schools in ILORIN WEST local Government qualified and adequate?

S/N	STATEMENT	SA	A	D	SD	Mean	Standard deviation
1	I like my Integrated Science teacher because he is friendly	81 **27.0%**	172 **57.3%**	26 **8.7%**	21 **7.0%**	3.0433	.79807
2	My Integrated Science teacher does not know how to teach	13 **4.3%**	50 **16.7%**	157 **52.3%**	80 **26.7%**	1.9867	.78008
3	I admire the way my Integrated Science teacher dresses to class which I am willing to emulate	149 **49.7%**	127 **42.3%**	15 **5.0%**	9 **3.0%**	3.3867	.72034
4	My friends do complain about my Integrated Science teacher's language after class	39 **13.0%**	84 **28.0%**	89 **29.7%**	88 **29.3%**	2.2433	1.02026

	lesson						
5	My Integrated Science teacher motivates his/her students to learn	170 **56.7%**	60 **20.0%**	40 **13.3%**	30 **10.0%**	3.2333	1.02423

Discussion

The table 1 above reveals the adequacy and how qualified the teachers in Some Selected Secondary schools in ILORIN WEST Local area are, where statement one recorded that 27.0% shows strong agreement to the statement that the respondents like their Integrated Science teacher because he is friendly with 57.3% of the respondents also showing an agreement to the statement while 8.7% of the respondents are of contrary opinion to the statement showing disagreement and 7.0% also showing strong disagreement to the statement. From statement two, 4.3% of the respondent strongly agreed that their Integrated Science teacher does not know how to teach with 16.7% also agreeing to this statement while 52.3% of the respondents disagreed to the statement with 26.7% also showing strong disagreement to the statement.

Considering statement three, 49.7% of the respondents surveyed strongly agreed that they admire the way my Integrated Science teacher dresses to class which I am willing to emulate with 42.3% also agreeing to the statement while 5.0% and 3.0% shows contrary opinion about the statement with disagreement and strong disagreement respectively. Research statement four recorded that 13.0% of the respondents strongly agreed that their friends do complain about my Integrated Science teacher's language after class lesson with 28.0% also agreeing to this statement while 29.7% shows a disagreement to the statement and 29.3% also showing strong disagreement to the statement.

From research statement five, 56.7% of the respondents strongly agreed that their Integrated Science teacher motivates his/her students to learn and 20.0% of the respondents also agreeing to this statement while 13.3% of the respondents showing a disagreement to this statement and 10.0% strong disagreement were also recorded.

The table 1 above also illustrated that statements one, two, three, four and five are having the means 3.0433, 1.9867, 3.3867, 2.2433, 3.2333 and standard deviations .79807, .78008, .72034, 1.02026, 1.02423 respectively.

Research question 2

Table 2: Students' attitude towards learning Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government

S/N	STATEMENT	SA	A	D	SD	Mean	Standard deviation
1	The teaching of Integrated Science is not necessary	37 **12.3%**	49 **16.3%**	137 **45.7%**	77 **25.7%**	2.1533	.94488
2	I study Integrated Science to pass examination	71 **23.7%**	171 **57.0%**	53 **17.7%**	5 **1.7%**	3.0367	.70021
3	I do not understand Integrated Science when it is taught	47 **15.7%**	40 **13.3%**	157 **52.3%**	56 **18.7%**	2.2600	.93915
4	Science students turn Integrated Science lesson into jest-making class in my school	10 **3.3%**	90 **30.0%**	150 **50.0%**	50 **16.7%**	2.2000	.74958
5	I participate actively during Integrated Science classes	100 **33.3%**	170 **56.7%**	10 **3.3%**	20 **6.7%**	3.1667	.77947
6	I like my school	90 **30.0%**	180 **60.0%**	30 **10.0%**	0 **0.0%**	3.1000	.83205

Discussion

The table 2 above reveals the students' attitude towards learning Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area, where statement one recorded that 12.3% of the respondents show strong agreement to the statement that the teaching of Integrated Science is not necessary with 16.3% of the respondents also showing an agreement to the statement while 45.7% of the respondents are of contrary opinion to the statement showing disagreement and 25.7% also showing strong disagreement to the statement. From statement two, 23.7% of the respondent strongly agreed that they study Integrated Science to pass examination with 57.0% also agreeing to this statement while 17.7% of the respondents disagreed to the statement with 1.7% also showing strong disagreement to the statement.

Considering statement three, 15.7% of the respondents surveyed strongly agreed that they do not understand Integrated Science when it is taught with 13.3% also agreeing to the statement while 52.3% and 18.7% shows contrary opinion about the statement with disagreement and strong disagreement respectively. Research statement four recorded that 3.3% of the respondents strongly agreed that Science students turn Integrated Science lesson into jest-making class in my school with 30.0% also agreeing to this statement while 50.0% shows a disagreement to the statement and 16.7% also showing strong disagreement to the statement.

From research statement five, 33.3% of the respondents strongly agreed that they participate actively during Integrated Science classes and 56.7% of the respondents also agreeing to this statement while 3.3% of the respondents showing a disagreement to this statement and 6.7% strong disagreement were also recorded. Statement six recorded that 30.0% of the respondents strongly agreed that they like my school with 60.0% of the respondents also in support of the statement with agreement response while 10.0% of the respondents showed disagreement to the statement and 0.0 % also showing strong disagreement to the statement.

The table 2 above also illustrated that statements one, two, three, four, five and six are having means 2.1533, 3.0367, 2.2600, 2.2000, 3.1667, 3.1000 and standard deviations .94488, .70021, .93915, .74958, .77947, .83205 respectively.

Research question 3

Table 3: the extent to which societal problem contributes to the ineffective teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area

S/N	Statement	SA	A	D	SD	Mean	Standard deviation
1	More lesson periods should be allocated to Integrated Science	100 **33.3%**	30 **10.0%**	120 **40.0%**	50 **16.7%**	2.6000	1.11541
2	I have personal Integrated Science textbooks	90 **30.0%**	50 **16.7%**	70 **23.3%**	90 **30.0%**	2.4667	1.20571
3	My parent motivates	170	60	39	31	3.2300	1.02987

	me to learn	**56.7%**	**20.0%**	**13.0%**	**10.3%**		
4	My parent are well-educated	90 **30.0%**	80 **26.7%**	70 **23.3%**	60 **20.0%**	2.6667	1.10739
5	My parent provides for my basic needs	50 **16.7%**	220 **73.3%**	30 **10.0%**	0 **0.0%**	3.0667	.51293

Discussion

The table 3 above revealsthe extent to which societal problem contributes to the ineffective teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area, where statement one recorded that 33.3% of the respondents show strong agreement to the statement that more lesson periods should be allocated to Integrated Science with 10.0% of the respondents also showing an agreement to the statement while 40.0% of the respondents are of contrary opinion to the statement showing disagreement and 16.7% also showing strong disagreement to the statement. From statement two, 30.0% of the respondent strongly agreed that they have personal Integrated Science textbooks with 16.7% also agreeing to this statement while 23.3% of the respondents disagreed to the statement with 30.0% also showing strong disagreement to the statement.

Considering statement three, 56.7% of the respondents surveyed strongly agreed that their parents motivates them to learn with 20.0% also agreeing to the statement while 13.0% and 10.3% shows contrary opinion about the statement with disagreement and strong disagreement respectively. Research statement four recorded that 30.0% of the respondents strongly agreed that their parents are well-educated with 26.7% also agreeing to this statement while 23.3% shows a disagreement to the statement and 20.0% also showing strong disagreement to the statement.

From research statement five, 16.7% of the respondents strongly agreed their parents provides for their basic needs and 73.3% of the respondents also agreeing to this statement while 10.0% of the respondents showing a disagreement to this statement and 0.0% strong disagreement is also recorded.

Research question 4

Table 4: Does Government provide adequate facilities for the teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area?

S/N	STATEMENT	SA	A	D	SD	Mean	Standard deviation
1	My class is over-populated	92 **30.7%**	130 **43.3%**	66 **22.0%**	12 **4.0%**	3.0067	.83001
2	There is need for a practical Integrated Science laboratory in my school	108 **36.0%**	141 **47.0%**	38 **12.7%**	13 **4.3%**	3.1467	.80039
3	My school has a well-equipped and usable library	0 **0.0%**	30 **10.0%**	150 **50.0%**	120 **40.0%**	1.7000	.64138
4	There are adequate learning facilities like chairs, chalkboard, tables e.t.c in my school	120 **40.0%**	140 **46.7%**	20 **6.7%**	20 **6.7%**	3.2000	.83406

Discussion

The table 4 above reveals government's provision of adequate facilities for the teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government Area, where statement one recorded that 30.7% of the respondents show strong agreement to the statement that their class is over-populated with 43.3% of the respondents also showing an agreement to the statement while 22.0% of the respondents are of contrary opinion to the statement showing disagreement and 4.0% also showing strong disagreement to the statement. From statement two, 36.0% of the respondent strongly agreed that there is need for a practical Integrated Science laboratory in their school with 47.0% also agreeing to this statement while 12.7% of the respondents disagreed to the statement with 4.3% also showing strong disagreement to the statement.

Considering statement three, 0.0% of the respondents surveyed strongly agreed that their school has a well-equipped and usable library with 10.0% also agreeing to the statement while 50.0% and 40.0% shows contrary opinion about the statement with disagreement and strong disagreement respectively. Research statement four recorded that

40.0% of the respondents strongly agreed that there are adequate learning facilities like chairs, chalkboard, tablese.t.c in their respective school with 46.7% also agreeing to this statement while 6.7% shows a disagreement to the statement and 6.7% also showing strong disagreement to the statement.

The table 4 above also illustrated that statements one, two, three and four are having means 3.0067, 3.1467, 1.7000, 3.2000 and standard deviations .83001, .80039, .64138, .83406 respectively.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Summary

This research work focused on the some perceived problem militating against effective teaching and learning of Integrated Science in Some Selected Secondary schools in ILORIN WEST Local Government of Kwara State. Despite the importance accredited to Integrated Science with a view of achieving a better understanding about nature causing the need for its teaching and learning to be effective, the outcome from the data analysis of the research questions for this study reveals that numerous problems exists in the teaching and learning of Integrated Science caused by a number of problem.

The problem ranging from student's attitudes towards the learning of Integrated Science to societal and government problem, it is now glaring from research question 2 with 80.7% of the students showing positive response to the fact that they study Integrated Science to pass examination, which implies they do not understand it, this explains poor students' attitude towards learning Integrated Science. According to research question 3, societal factor in the case of parents' social economic status contributes to the ineffective teaching and learning of Integrated Science with evidence from the analysis that 53.3% of the students does not have Integrated Science textbooks for further practice of Integrated Science exercise to enhance effective learning of it.

It was found out from research question 4 that the government through its new science policy aims at enhancing student's empirical and scientific competence of their secondary education but does not play most notable role in making sure that Integrated Science is well taught because it has failed to provide; a well equipped and usable library according to 90.0% of the students responding, practical Integrated Science laboratory according to 83.3% of the students responding who showed that there is need for it and also infrastructural facilities like building of more classroom in order to reduce over population in classes according to 74.0% of the students responding that their class is over-populated.

From research question 1, it was deduced from the teachers that teachers in schools in ILORIN WEST Local Government are not adequate with 56.7% of them confirming that there are not enough qualified Integrated Science teachers in their schools.

5.2 CONCLUSIONS

There is no denying the fact that Integrated Science teaching can only be effective and result-oriented when students are willing and the teachers are favorably disposed, using the appropriate methods and resources in teaching the students. With the current increase in scientific knowledge all over the world, much demand is placed, and emphasis is laid on the teacher, the learner, the curriculum and the learning environment in the whole process of teaching and learning of Science. Integrated Science has come to stay as an effective medium of internal and global scientific and technological development of Nigeria which was one of the reasons why it was made a compulsory subject which calls for the need for its teaching learning to be effective.

This study has shown that learners and teachers do well when they are motivated and when enough teaching and learning facilities are provided for them. The failure of the government to adequately provide instructional materials and facilities which are important hinders the effective teaching and learning of Integrated Science in ILORIN WEST Local Government Area of Kwara State.

Teacher have generally shown positive attitude towards the teaching of Integrated Science but not well motivated to teach the subject. The teachers who it is clear from observation are not adequate and even the ones present are grounded in Integrated Science and are handicapped by a number of problems such as complex working time for a Integrated Science teacher to teach the whole of GRADES 10, 11, 12 students with the combination of another science subject like biology without been assisted, non-availabilitiy of instructional materials, over populated classroom in the teaching of Integrated Science.

Results of the study should interest educational policy makers in federal, state and local governments, inspectors of Education and practicing classroom teachers. Based on findings from the study, it is apparent that the government must generate policies and guidelines that will introduce effective Integrated Science teaching and learning into our schools. For our Integrated Science teachers and inspectors of education, diagnostic tools based on findings relating to interest, attitude, cognitive and manipulated skills of the learners could be designed and developed. Such tools will enable them assess the degree of readiness of each student and prescribe appropriate intervention learning programmed when and where necessary.

5.3 RECOMMENDATIONS

The foregoing discussion call for the following recommendations;

(a) More qualified teachers should be employed in order to decongest the classrooms. If a class is over-populated, the teachers will find it difficult to mark tests and assignments given to the students.

(b) Well equipped, functional and usable laboratories should be installed in our Some Selected Secondary schools. Relevant audio-visual aids should be provided.

(c) Students should be encouraged to Learn Integrated Science in order to understand so that they could have better understanding of their world and not just to read to pass examinations.

(d) While it is universally accepted that a well-motivated teaching force is essential for improvement in any educational system. Different teachers use varying motivation problem, a more thorough supervision of teachers should be emphasized as a means of improving the quality of education.

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APPENDIX

KWARA STATE COLLEGE OF EDUCATION ILORIN

STUDENT QUESTIONNAIRE

PLEASE ANSWER THE FOLLOWING QUESTIONS BY TICKING THE RELEVANT BLOCK OR WRITING DOWN YOUR ANSWER IN THE SPACE PROVIDED.

SECTION A

This section of the questionnaire refers to background or biographical information. Although we are aware of the sensitivity of the questions in this section, Once again, we assure you that your response will remain anonymous. Your cooperation will be appreciated.

(1) GENDER

MALE	
FEMALE	

(2) AGE (IN COMPLETE YEARS) | | |

(3) CLASS _____

SECTION B

KEY:

SA = STRONGLY AGREE

A = AGREE

D = DISAGREE

SD = STRONGLY DISAGREE

S/N	QUESTION ITEMS	SA	A	D	SD
1	The teaching of Integrated Science is not necessary				
2	I like my Integrated Science teacher because he is friendly				
3	I study Integrated Science to pass examination				
4	I do not understand Integrated Science when it is taught				
5	My Integrated Science teacher does not know how to teach				

6	I admire the way my Integrated Science teacher dresses to class which I am willing to emulate				
7	My class is over – populated				
8	There is need for a practical Integrated Science laboratory in my school				
9	My friends do complain about my Integrated Science teacher's language after class lesson				
10	More lesson periods should be allocated to Integrated Science				
11	Science students turn Integrated Science lesson into jest-making class in my school				
12	I participate actively during Integrated Science classes				
13	I have personal Integrated Science textbooks				
14	My school has a well equipped and useable library				
15	There are adequate learning facilities like chairs, chalkboard, tables e.t.c in my school				
16	I like my school				
17	My Integrated Science teacher motivates his/her students to learn				
18	My parent also motivates me to learn				
19	My parent are well-educated				
20	My parent provides for my basic needs				