



STRATEGIES AND ATTITUDE OF A TEACHER AS A LEADER IN SCIENCE EDUCATION IN NIGERIAN SECONDARY SCHOOLS

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ABSTRACT

The aim of this study is to examine the strategies and attitude of the teacher as a leader in science education. The teacher as a planner and leader should meet the demand for sustainable development in Nigerian science students' life. The paper looked at the science teachers skills, attitudes, strategies, ability to criticize, motivate, teach, train, understand, encourage, plan, communicate, guide and be a role model for those that will be teachers, as well as nation and values builders. This study looked at teacher competency, adequate delivery of science subjects, and the acquisition of scientific attitudes. Scientific habit can help the teacher deal sensibly with problems that often involve evidence, quantitative considerations, logical argument, using scientific methods. The paper therefore suggested that science educators must work on their attitudes using the compliance strategies towards moving our academic schools in Nigeria forward. We can start by good example strategies. Let our students identify us as role model and try to imitate us. Teachers should attend seminars, workshops, conference to discover the current trends in science education and re-orientation to their attitudes to work. They should be computer literate. Quality supervision should be used to correct the defaulters and thereby making them competent leaders in our states, country and nations at large.

Keywords: Attitude, Strategies, Teacher, Leader, Science, Education.

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INTRODUCTION

Effectiveness and efficient management of human resources in the achievement of the goal of science education is primarily the responsibility of the science teacher as the captain of the boat and the leader. The science teacher is shouldered with responsibility of coordinating the activities of the science students using his time and space judiciously and the resources available in the school and improvised the one that is not available. A good substitute science teacher should be

an advanced organizer by using ideas, materials in such a way that they will be effective and sequential.

According to Paully (2011) in Paully and Ikoumoton (2015), teacher is a professional who helps a learner through a purposeful activity or activities to transmit or facilitate the transmission of skills, attitude, ideas, knowledge to the learner that will create or influence desirable changes in their behavior. A teacher is one through professional training has acquired aptitude and attitude, and imparts some, if not all to the learners.

Learning a relatively permanent positive impact on the behavior of the learners, the underlying factors here is the professional training to become a teacher. According to Abraham (2019), a professor of engineering or medicine who has not undergone a professional training in education is not a teacher but a quack. According to (FRN, 2013), teacher education shall continue to be emphasized in educational planning and development. Korpela (2012) noted that teaching profession is held in high regard. UNESCO (2016) confirms that education is the foundation for sustainable development. Abraham (2017) noted that sustainable development and attitude could be said to be furtherance of the millennium development goals (MDGs).

According to Ford (2018), global citizenship opportunities in schools shall provide and develop skills such as critical thinking attitude and skill management for our young people in education system across the world. It is sad to note that after nineteen (19) years into 21st century most Nigeria teachers are still digital fugitives (those who do everything to run away / avoid ICT gadgets) and some other digital immigrants (those born before the ICT era but are making efforts to come into the ICT world to use and benefit for ICT facilities. We must recognize the fact the children in our class are digital natives, those born into ICT era, as such have little or no difficulty in ICT and they are benefiting from the facilities). Any teacher who is a leader without the knowledge of ICT might bring about negative attribute on the part of the learner. Nwogu (2014) rightly submit that an ideal classroom is where the teacher and students meet and interact, and relate in a cordial, mutual and friendly atmosphere, in which the student could be seen to have learnt from the leader (teacher). It is not a terror ground that could inhibit the learning interest and even scare the students out of school.

Sustainable development is defined by Obanye (2014) as the development that meets the needs of the present society, which comprises the ability of generation to meet their own needs.

Components of Attitude

According to Green (2017), attitude has four major components:

- Cognitive – deals on our thoughts, beliefs, ideas, theories, expectancies, cause and effect, perceptions related to the object in focus. Affective refers to our feelings or emotions with respect to the focal object that evokes anger, fear, sympathy, like or dislike. One may dislike dishonest person.
- Behavioral intention is the tendency or disposition to act in certain ways towards something. That is our goal, aspiration and our expected responses to the attitude of the object. Klein (1985) referred attitude to as the psychomotor component .Emphasis is on the tendency to act, not the actual acting, as what we intend and what we do may be quite different.
- Evaluation is always considered the central component of attitude, as it consists of the imputation of some degree of goodness or badness to attitude or events. It places value

judgment on the event, such as dishonest people are bad. This component is the function of cognitive, and affective. With these components, it becomes clear that attitude reflect or depicts a person’s state of feelings, accepting or rejecting, towards individual, towards people, objects or events or towards work. Attitudes are learned and are said to emerge first at the level of willingness to respond and become increasingly internalized in the learner through the stage of satisfaction in response to the teaching and learning. At this stage, the learner is able to see how the value relates to those that he already holds or the new ones that he is about to hold.

Scientific attitude is referred to as the ethics of science, as they are characteristics behavior, which governs the intellectual behaviors of all science practitioners or science students. When the mental position or feeling is objective, the attitude is said to be scientific. Scientific attitudes are many and to be scientific, means that one must possess them.

According to Green (2017) attitudes are bipolar in nature as they consist of two opposite attributes. One end of the dipole is positive and should be encouraged and promoted while the other end is negative and should be discouraged as a leader. The bipolar pairs are shown below and they exhibit the favorable or unfavorable reactions towards the science teaching and enterprise.

Table 1: Scientific Attitudes in Bipolar Pairs

S/N	Positive Pole	Negative pole
1	Curiosity	Complacency
2	Rationality	Irrationality
3	Critical Mindedness	Critical Mindlessness
4	Humility	Arrogance
5	Cooperativeness	Uncooperativeness
6	Cautiousness	Rashness
7	Patience	Impatience
8	Objectivity	Subjectivity
9	Carefulness	Carelessness
10	Diligence	Laziness
11	Open-mindedness	Close-mindedness
12	Intellectual Honesty	Intellectual-dishonesty
13	Cleanliness	Dirtiness
14	Soliciting	Rejecting
15	Suspended judgment	Hasty judgment
16	Evidence mindedness	Evidence mindlessness
17	Tolerance	Intolerance
18	Regularity	Irregularity
19	Punctuality (Timeliness)	Lateness (Timelessness)
20	Reliability	Unreliability
21	Tidiness	Untidiness

CONCEPT TEACHING PROCESSES

Teaching strategies as adapted from Smith (1975) is as follows:

Inductive Process: The concept is identified by example, present many examples pointing out the irrelevant attributes. Concept boundaries should be set to avoid under or over generalization.

Initial examples should be few attributes that are not relevant and should be true example as reference purpose. Students should produce their own example.

Deductive Process: Present the concept by verbal definition and description and make use of sub concepts, related concepts and analogies. Present examples where possible as described from inductive process. This concept will enable the learner to be more versatile in differentiating things and categorizing things around him.

Problem Solving Strategies

In teaching students problem solving, persistence behavior should be developed in the students. The students must never give up after a given solution fails. Wrong answer should be treated as error and alternative approach must be tried.

Problem solving strategies include:

- Start from the simple version of the type of problem .As the learner masters the skills associated with the simpler versions then he can progress to more complex version;
- Practice in a substitution process enable the students to substitute known facts in a given relationship;
- Practices in different forms of analysis enable the student understand the different parts that make the whole.

Teachers Role as a Leader in Science Education before and during Problem Solving

- Identify pre –requisite knowledge by going through the problem;
- Clarify ideas to give students direction;
- Use different methods to aid recall of the relevant knowledge, eg., ask probing questions which will stimulate the recall of the relevant knowledge;
- Give hints that will help the students solve the problem. Do not tell the students the expected answers to the problems.

Steps in Problem Solving

- Identify the Problem;
- Re-define the problem;
- Examine various parts of the problem to find out what contribution each part has to play;
- Hypothesize the test;
- Collect data;
- Analyze the data an identify solution to the problem.

Methods of Teaching

Lecture Method: It is the type of teaching, in which facts, concepts and principals are orally presented to the students. In the course of lecturing, ideas are clarified and explained.

Discussion Method: It is defined as a free unrestricted consideration of a problem .It allows rich contribution of ideas. Effective learning occurs when the ideas are intellectually co-ordinated and harmonized by the leaders of the discussion. This calls for a good understanding of the discussion topic by the teacher or discussion leader

Demonstration Strategies: It is teaching technique that may be used to introduce topic and serve as motivation or entry behavior:

- To pose problem of common interest to the students;
- To verify observation and encourage critical thinking to illustrate a point reviewed and clarify shady topics;
- To explain the proper use of science equipment and instruments.

The advantages are to clarify ideas and help to apply knowledge. It encourages creativity, and helps the students to acquire more techniques in experimentation.

Project Method: It required a task that is originated and created to be accomplished by the students .The project may be individualized in nature yet the teacher must ascertain the academic background of the learner in order not to push the project beyond the students ability. It encourages creativity and originality.

Questioning Method: Through provoking and stimulating questioning .It is used to develop scientific processes in students.

Experimentation: They are events that are planned and used to test hypothesis, gather data, analyze relevant data that construct tentative conclusion.

Influence of biology teachers attitude towards the attitude of biology students or learners. Teacher's attitude to work has positive or negative influence on the part of the students. The word attitude which is derived from Latin word Optus is defined in frame work of social psychology as a subjective or mental preparation for action .Attitude determines what each individual will see, hear, think and do. They are rooted in experience and do not become automatic or routine conduct. Attitude means individual prevailing tendency to respond favorably or unfavorably to an object, person or group of people including institutions, studies or events. Attitude can be positive values or negative prejudice. Do teachers take their work seriously or do they display laissez faire attitude to their teaching, concept and nature of attitude?

Allport (1956) described attitude as a mental and neutral state of readiness, organized through experience, exerting a directive influence upon the individual's response to all objects and situation with which it is related. Akuezuilo (1993) viewed it as, a mental position with regards to a feeling towards a fact or state. Eagly and Chaiken (1998) defined attitude as a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor. Other views of attitudes to be a cognitive form of thought that is formed through experience that influence our behavior. The way one expressed or applies their values, which is expressed through words and actions considering that value is the measure of worth or importance placed on something:

- Our feelings towards certain ideas or issues;
- Manifestation of our values;
- Our likes and dislikes towards things, people and object;
- A state of mind or feeling with regards to some matter;
- It can be concrete, abstract or just about anything in one's environment;
- The way a person views something or tend to behave towards it, often in an evaluating way;
- Complex mental state involving beliefs and feelings and disposition to act in certain ways. It then means that a favorable or unfavorable evaluative reaction towards something or someone, exhibited in ones beliefs, values, feelings or intended behavior is an attitude.

Etzioni was of the view that teachers attitude towards work could affect their performance either positively or negatively. When teachers show punctuality in their day to day activities and in their work place, they are not only teaching by example but helping the students to achieve their goals and set objectives. This also enhance positive attitude in teaching and learning. Punctuality is needed in phase of life; otherwise, the teacher will go about pleasing him or herself and not having much to offer to the students.

Amanchukwu (2003) stated clearly that teachers who should teach those who have special needs are those that have impeccable character and exhibits punctuality in all their dealings. Most students believe in what they can see, touch or hear .Teaching by example, is the best that will make the students develop the right attitude towards learning.

Honesty is another positive attitude which should be inculcated in the students .An honest student follows the rules to the letter and make sure he does the right thing at the right time. When a teacher displays honesty in the class, it is likely that a good number of the students will follow suit. Students look up to their teachers as role models and thereby taking in everything they observe in their teacher. That is why when the teacher is teaching wrong concept, the students will grow with the wrong concept. A saying goes that honest is the best policy that should manifest in the teacher all the time. Students are leaders of tomorrow, therefore, they deserve practical and scientific virtues in which honesty is part of it .Students should be taught to be respectful, responsible, honest and studious in all their doings, to be successful in life.

Consistency is the right attitude that the students should emulate from the class teacher that stays with them almost half of the day. Student are the watchdogs and they can easily make comments and some that are vocal can call the teachers' attention when he deviates from what he teaches that is the truth. The students believe more on their teachers than their parents when it comes to teaching and learning. That is the more reason the teachers should be conscientious in whatever they are doing so as to give the right training.

Diligence is one of the attribute of a good teacher that enhance positive attitude on the part of the learner .The teacher should be diligent, industrious, conscientious, meticulous so as to imbibe these virtues to the students. A diligent teacher does not come to school late. He or she is very conscious of his actions towards his duty or teaching. He or she is time conscious and encourage the students to do so. The teacher that love and enjoy his or her job is mostly devoted to the work they do.

A school teacher shows he is devoted to work starting from preparation of lesson to delivery. He or she makes use of the three Ts (Time, Talent, Treasure) to design what and how best to make his or her teaching appealing to the learners and get ready the teaching aids to be

used to draw the lesson home and enhance their attitude towards learning the subject. A teacher who enters the class to teach and starts by asking the students “where did we stop the last time we met”, shows that he or she did not prepare for that particular lesson, thereby showing lack of diligent in his or her duty. A teacher that shows lack of diligent in his or her science teaching affected the attitude of the biology students to the extent that they do not attend the class anymore. When the students were interviewed they complained that the teacher does not worth his salt, they said that they find it difficult to answer their questions except the ones in the text book and for that they will not attend the class again.

The attitude of the teacher made the student to hate the science subject. Due to the fact that the school was a private school the teacher’s job was terminated. Had it been that it is government secondary school, the students will be dying in silence because the half-baked teacher will be there affecting the attitude of the students towards science learning. Committed attitude is a value in a workplace .The management need employees who are not only committed to the goals and initiatives that affect the bottom line, but who are also committed to the particular position which is classroom teaching. An employee display a committed attitude by showing willingness to do whatever it takes to fulfill the duties of his position in the right way and avoid assisting students in exam malpractice that lead to their non-challant attitude towards learning with the hope that their teacher will assist them during external exams, even in internal exam all the students are being promoted to the new classes even if they fails or passes .There is mass promotion. Teacher should group the students into smaller groups (cells) and appoint a leader for each cell.

Member of each group will be given a topic already treated in the class to read and ready to discuss it among themselves. The teacher gives necessary assistance and corrections to the group presenting their topic. This will help everybody to participate during revision classes. Ofoegbu (2004) affirmed that poor academic performance of students in Rivers State has been linked to poor teachers’ performance in terms of accomplishment of the teaching task, negative attitude to work and poor teaching habits which have been attributed to poor motivation. Futhermore, Ukeje (1966) enumerated other factors that can affect good attitude to work as follows:

- Use of teaching materials or aids;
- Encouraging creativity on the learner;
- Motivating students for desire to learn.

On the Part of the Teachers:

- Promotion;
- Prompt salary payment;
- Provision of staff quarters;
- In –service training for teacher.

Amanchukwu (2011) upheld the same view as that of Ukeje (1966) and Ofoegbu (2004) when they emphasized that infrastructures for effective teaching and learning, prompt payment of salaries, coupled with in-service training opportunity, workshop, seminar for teachers’ development should not be neglected. Harp (1989) maintained that many studies had looked at teacher’s attitudes and methods while teaching different groups. These studies revealed that the

high groups received the best instruction geared to critical thinking, while the lower groups received instruction that was less stimulating. In line with this, Amanchukwu (2017) reiterated that teachers should waken the giant in the learners by getting out of their comfort zone, seeking challenges and putting in more effort by employing various strategies in the business of teaching and learning. This is very essential for academic enhancement and development of vibrant scientist and future leaders of this country. Having knowledge of these strategies, it is not enough but employing them when teaching, matters so much.

Zang (1982) observed that there should be no moral justification to blame teachers, if because of frustration they develop non-challant attitude towards teaching. He wondered when a hungry man has ceased to be an angry man. Zang further added that if these teachers are allowed to live with neglect and contempt, they are not likely to do their job creditably.

Amanchukwu (2010) affirmed that a significant difference was established in teacher attitude to work .As a teacher who work under coercive principals showed more positive attitude to work, then followed by teachers who work under utilitarian principal and finally ,by teacher who work under normative principal. This shows that coerciveness works faster in dealing with a group people especially when achievement of educational goals are concern. No principal will watch the teachers ruin his administration, instead, he will employ the use of coercive power (query) for instance, to achieve the set goal .

Hall (2014) indicated some basic professional attitudes that make a teacher more effective as a provider of knowledge and also as a facilitator of learning. Hall opined that, as a professional teacher you must be polite, firm and fair in relating with the learners. This is to show that he is neither partial nor aggressive in relating with the learner. The learner feels more secured in a class the teacher takes them as human beings by his ways of communication and interaction in the class, this will make them have positive attitude towards the teacher and the subject that he is teaching.

The professional teacher needs to be confident without being arrogant. He should be a bundle of humility and with that the learner will feel at home knowing that he can discuss with the teacher in a relaxed manner. In this way he can bring out the giant or potentials in the students.

A professional teacher is always punctual and neat in his dressing, in this way the learner would emulate the teacher and it will become the norm of the class. One must bear in mind always that teachers are mirrors to the students. A conscientious teacher gets her wears ready for the previous day so as to avoid delay in choosing what to wear for class; it helps to avoid lateness to duty. A professional teacher always prepares his lessons very well before entering the class. This will also prevent teachers being embarrassed by the puzzle questions from the students that will throw them off balance. The subject matter of the lesson should be well known to the teacher at the tips of his fingers and that makes the task half done. Teachers' style of presentation should be gradual, starting from known to unknown. In that case, the students will feel at home and follow the sequence happily and eager to learn more. The personal attitude of the teachers matters a lot in the fact that learners will be watching the teacher's countenance to know whether he is approachable or whether he has aggressive tendencies. If the latter happens to be the case, it will make the learner become afraid and remain in fear till the lesson is over. The teacher should remember that there is time for everything, time to joke and laugh and time for serious work. All these add to the success and positive attitude on the part of the learner.

Good classroom management is expected for effective teaching and learning in biology to take place. The teacher can apply laugh therapy when there is tension in the class (Akubue,

1991). In that case, the learners would stop whatever negative behavior or attitude in which they engage themselves, to know why the teacher is laughing out loud. In other words the teacher should have in mind what to use to call the learner to order when the class is becoming noisy.

Teachers motivation is very necessary. Teachers should motivate the learners in various ways to boost their morale in learning. Teachers should learn to say, well done, excellent, good work, perfect experiment. Teachers' motivation can be in form of gift to the best student to encourage others to try more or study harder. Student–teacher interaction is expected in teaching and learning biology. This is a way of giving each learner an opportunity to ask for clarifications of what is confusing to him. The learner might have some contributions to make in the learning process. Effective communication is the key to success. It is very essential in biology teaching and learning process. Classroom is not a place where the teacher practice all the big English expression he has learnt. The teacher will use the English that is within the students understanding and avoid ambiguous English that will make them loss interest in the subject and starts showing negative attitude towards the learning of the subject in question.

Evaluation and feedback are necessary so as to know what the learners have heard and understood in the lesson. It is at this juncture that the teacher will find out whether the objectives of the lesson have been achieved or not. Nothing stops a teacher from giving extra time to his students after the scheduled period. This shows the concern the teacher has for his students. The essence of this extra time is to ensure that the slow learners make progress. The teacher makes use of his time, talent and treasure to achieve the desired success, while the fast learners are given more challenging tasks to perform during the extra lesson as well. The learners should be allowed to participate actively to enable them retain what they have learnt. They should touch, feel the object as the case may be, this activity will make the lesson more interesting.

Ajao (2001) maintained that the quality of education and performance of students depends on the teachers as reflected in the discharge of their duties. Students' academic performance both in internal and external examinations had been used to determine the effectiveness of the teacher. Other factors that can contribute to students' success were adequate infrastructures, effective classroom communication, adequate instructional materials, good sitting arrangement.

Ogunsaju (2004) was of the opinion that academic standard of student in all Nigerian educational institutions has fallen considerably below societal expectation. Teachers influence students' academic achievement greatly and they also play an important role in educational attainment because the teacher is ultimately responsible for translating educational principles into practical term during class interaction thereby promoting positive attitude towards science teaching and learning. Both teaching and learning depends on teachers and so an effective teacher has been conceptualized as one who produce desired results in the course of his duty as a teacher (Uchefuna, 2001). Ofoegbu (2004) affirmed that poor performance of students in Nigeria and their negative attitude towards learning has been linked to poor teacher's performance in terms of accomplishing their teaching task, negative attitude to work and poor teaching habits have been attributed to poor motivation and negative attitude towards learning biology.

Oredein (2000) has also observed conditions necessary for effective teaching and enhancing positive attitude towards learning such as resources available for teachers, infrastructure as well as instructional materials. When these are not available in public secondary schools in River state even in tertiary institutions, teaching and learning becomes ineffective leading to negative attitude towards science learning. Starr (2002) maintained that teachers' strong effect would significantly influence students' academic achievement. Other factors such

as socio-economic background, family support, intellectual aptitude of the students, personality of the students, self-confidence of the students, previous instructional qualities of the students, have been found to influence students' attitudes towards learning and also their examination scores.

Blankstein (1996) had stated that students' grade, attitude to learning, and test scores are not good indicators of the quality of teachers' instruction. In support of this view, a study carried out in Nigeria by Joshua and Kritsonis (2006) shows that Nigerian condemn the use of students' achievement scores as indicators of teachers' competence in performance, attitude and effectiveness in his duties.

Obanya and Onocha (1984) pointed out that some qualities of an effective teacher which include socio-economic status, personal traits, professional attitudes, experience, teaching methods, and students' attitudes and achievements among others.

Ukeje (1991) revealed that effective teachers can be gotten through effective teaching preparation. According to him, teacher preparation includes exploration of aptitudes, inculcation of attitudes, exploration of potentials, motivation of interest, practical experiences, curricular planning and others.

Reddin (1970) stated that effectiveness is the extent to which the manager achieves the output required of his position, hence it is the measure of organizational productivity. Ukeje et al. (1992) emphatically stated that the ultimate goal of a formal organization is effectiveness and positive attitude to duty. The effectiveness of educational institution is the extent to which students have positive attitude towards learning and achieve their goals, teachers are satisfied, the staff morale is high, students' dropout rate is low. There should be tremendous improvement in general performance of the students.

Gbadamosi (1994) made it clear that a visit to most of our public primary and secondary schools will convince anybody that the teacher-students ratio is too high to facilitate effective teaching and learning. Effective teaching and inculcating positive attitude to learning science can still take place if the teacher can design her own style of teaching to affect students' progress. Inspiration is the driver of new findings. Teachers should open up the brain of students and bring out the giant in them, living by example, exposing the students to various ways of acquiring information. Thanks to (ICT). The teacher should be there for more meaningful interaction, there are sure way to open up the students' brain. The students should be given brain storming activities from there the teacher will know who can cope and who cannot cope. An individual that is emotionally unstable cannot easily be inspired, find out the problem and guide him along the line to overcome it.

Depression is another condition that reduces the students' interest in studying, leading to inability to finish what one has started. Depression kills all feelings of confidence, inspiration and creativity. The teacher should try to let the students not to get to the point of being depressed before they come to their rescue. Close monitoring of students and counseling will help a student that is emotionally disturbed to add humor to what you are teaching and you will discover that the tempo will change instantly. If a student cannot see himself as individual who can offer the world anything, the knowledge acquired throughout his education will not reproduce itself in any meaningful manner. Teachers should keep on encouraging students to enable them bring out the potentials in them.

Amanchukwu (2017) maintained that the class teacher should try and maintain peace and calmness in the classroom and avoid labeling a student (OTL), which means out-to- launch (Gallegos, 2000) or labeling a student 'a bad fellow' (Anuna, 1997). This demoralizes the

students and kills his zeal to learn. Calling a dull students names in class does not help matters. The student is in the school system to be transformed to someone better. There should be no labeling of students, instead an ample opportunity should be created for them to achieve success and positive attitude towards his academic work.

As a teacher, you must have observed that all students do not learn at the same rate. Effort should be made to consider the disability and ability of each student in order to make them reach their potentials and offer help as soon as possible. A teacher should not just continue to perform the task of teaching without taking a close look at the learners. This is one of the ways the teacher can use to dictate who needs extra help. For example, a student with poor vision can be dictated if the teacher is close enough and make some adjustment in sitting arrangement to accommodate the learner. This will definitely enhance positive attitude towards learning on the part of the student.

CONCLUSION

The teachers should try and encourage students to discover principles by themselves. The instructor and students should engage in active dialog (society learning) the task of the teacher is to translate information to be learned into a format appropriate to learners current state of understanding.

Typically constructive teaching strategy is based on what the students know best when they gain knowledge through exploration and active learning. Hand on material are used instead of text books. Student are encouraged by the teacher to think and explain to think and explain things instead of memorizing. The Ausubel strategies (Verbal reasoning) will create a meaningful connection between new ideas. Remembering the key words will commit the information to long term memory of the student. The fact remains that teaching and learning rely upon the teacher. There is no technological country without an effective and efficient teacher. The teacher makes sure that the students receive all the domains of education namely the Cognitive domain that deals with reasoning and problem solving from simple to complex. The skill involve is knowledge. It has to do with recall and recognition of information. Comprehension which entails understanding, interpretation and explaining of ideas. Application that means to apply ideas to other situations. Analysis implies breaking down ideas into components parts and determining the relationship between the various ideas. Synthesis means developing new ideas or formulating hypothesis. Evaluation involve making judgment. Being able to identify the fallacies in the analysis of the experiment.

Recommendations

The study advocate that in teaching science, presentation is necessary to show the aspect of scientific theories and principles that come into play (Ogwudire, 2004, 2007). Scientific knowledge open up avenues to raise more question and search for new knowledge, new ideas and new invention that will affect our society for good and so the science teacher could be more scientific to bring more knowledge and embrace the one formed by other scientist by been current to observe and utilize the changes. He should be computer literate to know what is happening around him so as to impact such to the student. Teachers should be versatile. They should use scientific strategies in teaching and not teaching in abstract with the teaching aids. Teachers should know the strength and the weakness of the students and encourage the weak

ones and not to call good for nothing .The government, communities and stake holders should help to make the environment favorable for teaching and learning, provide teaching material and laboratory, prompt payment of teachers salary, incentives should be given to the teachers to encourage them to do more.

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