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USE OF JURISPRUDENTIAL INNOVATIVE APPROACH IN TEACHING BASIC SCIENCE: AN ALTERNATIVE TO LECTURE METHOD

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ABSTRACT

In order to meet the needs of diverse learners in a science classroom, it is important to vary the approach to the teaching of the content. A science teacher should have to use appropriate teaching method which is suitable for the concept he wants to presents to his students to enable them achieve the objectives of the lesson. Other times the teacher may combine two or more methods in teaching a concept. This paper appraises the use of Jurisprudential Approach in teaching Basic science. It is expected that when this new method is used in a science class the objectives of the lesson taught should be actualized by the learners.

Key Words: Jurisprudential, aphorism, Basic Science, Innovation, learners.

1. INTRODUCTION

It has been observed through literature that most pleasant learning experiences that occur while listening to lectures are most times easily forgotten. The absence of such memories is especially significant since so much of the curricular contents taught in the school is mostly through lecture method of teaching. The teachers most often prefer to use lecture method in teaching Basic science due to the fact that it is teacher centered, allowing the teacher to precisely, determine the aims, contents, organization, pace and direction of his presentation. It also permits the teacher to present greatest amount of materials to be presented to the class in the least amount of time. However Nwafor (2008) Opined that Basic Science is best understood when the teaching is learner centered whereby the students are actively involved in the teaching and learning in a science class. A good Basic Science teacher should be vaguely dissatisfied with the lecture method of teaching as it places students in a passive rather than an active role. Passivity can hinder learning and student's attention may be lost. There is an aphorism heard from some science teachers it is: "The only way you learn science teachers is by doing it". Any science teacher who takes this statement seriously should consider following it with something other than lecturing.

The lecture method might not always be most effective method to help student learn. Nwafor and Mbajigou (2006). It has also been stated that students achieve poorly in Basic science subject (Examination Development Center, Abakaliki 2012). The poor student academic achievement in Basic Science Education in Ebonyi State in particular and Nigeria as a whole is unsatisfactory. Thus state of affairs in science education is undoubtedly not encouraging. From literature, result of some studies show that students exposed to innovative teaching performed better than their counterparts exposed to lecture method. There are alternatives to the lecture method. The purpose of this paper is to present some thoughts about the nature of learning Basic Science and also to describe an alternative to the lecture method. Jurisprudential method is quite effective in providing an *enjoyable learning* experience for students. There is good reason to expect that students can participate in a classroom experience that is enjoyable and results in learning through the use of Jurisprudential approach.

2. WHAT IS JURISPRUDENTIAL TEACHING APPROACH

The jurisprudential Teaching Approach (JPM) was developed by Oliver and Shaver (1966). It is a problem-solving technique that enhances connection between science, technology and society. It develops in students' values and attitude by viewing issues from all perspective and raising questions about opposing viewpoints. This model is put together taking into consideration all the expectation and criteria of these issues. The model has six phases;

Phase I: Orientation to the Issue: The main focus of this stage is on knowledge acquisition, in it; the students develop the three fundamental concepts of science, technology and society and begin to see the connection between the three concepts.

Phase II: Identifying the issues: The students identify value and value conflicts as well as begin to raise questions about opposing view(s).

Phase III: Synthesizing the research information into Arguments: The emphasizes of this phase is to develop in the students an ability to solve problems and process information by applying knowledge gained from the study of societal problems and issues.

Phase IV: Public Meeting: This phase involves the students in mock public meeting. The meeting involves all the students in presenting the different sides of the issue being studied and sees that all the guideline set for the meeting is adhered to.

Phase V: Clarification and Consensus: This phase provides the opportunity for the students to clarify and reach a consensus on the issue(s) that they are studying.

Phase VI: Application: The final phase of this is the most important. It is in this phase that the students take what they have learned and apply it to their surroundings. Students must be able to see the value in the science they have learned.

The teacher's role during this exercise is important. As the students research, discuss, debate, the teacher encourages the students to commit themselves to one side of the issue, but be supportive if they change their minds when confronted with new evidence, and also encourages them to consider other points of view. At all times, the teacher should remain objective on the issue, encourage differentiation of positions, and promote synthesis of the different position presented in the class.

3. ASSUMPTIONS FOR THE USE OF JURISPRUDENTIAL TO ENHANCE LEARNING

The following are some assumptions about learning that are relevant to classroom teaching. These are only hypotheses about learning but are in accord with jurisprudential teaching method.

First, *learning is fun*. The Oxford advance learners' dictionary defines learning as the process of awaiting knowledge or ability to do something, attaining a course of other educational activities, knowing or becoming informed. Learning can be also defined as that, which consists of evaluating new information and storing it in a form that is available for use in new situation. A lot of the so-called learning (actually rote memorization) that our students do i.e. Rote learning is not fun. Learning should be something the student do naturally and joyfully just like a child learns to walk, talk or use numbers, playfully just like a child learns cited by Julian Weissglass (2007) summed it up three by stating that the main ingredient of genius is playfulness. Learning should not be tedious since jurisprudential allows students to explore, interact with one another and experience new ideas, teachers should use it playfully and should not force students to learn.

The Second Assumption is that Student learn best from one another and from someone they know teacher who discusses issues and or concept with the students, interacts with them, reasons with them and understand them is most preferred than the other teacher who present himself as the president or commander in chief of instruction in the class. A Basic Science student like always to feel free to ask his science teacher question, and show him things he observes from his environment, but will be frighten to communicate with the teacher when the teacher when the teacher is having long chain and standing like sheriff ready to discipline those who do not understand his lectures delivered. In such a classroom situation the students are always scared to learn from one another as they believe the teacher alone is the only embodiment of knowledge.

Third Assumption: It is easier to learn from peers than from someone in authority: In a classroom teaching and learning section, the one in authority is the teacher. Most often it is fear that interferes with the student's understanding of information when it is presented by someone in authority. Since jurisprudential allows student to air their view and discuss issues among themselves. The phobia for studying science is considerably reduced and learning is greatly enhanced.

The fourth assumption *is that learning is most effective when one person is teaching one other person (One-to-one learning)*. It is obvious that a teacher can't teach up to 20 students on a one-to-one basis, there isn't enough time for such the only thing the teacher can do is to provide the situations where one-to-one learning can take place. Jurisprudential is most suited for this because the teacher divides the class into smaller group of three or four and allow them to discuss extensively on the issue while he goes round, listen to each group, and direct the flow of their thinking. In each of the group the teacher can respond to a particular individual problems.

The fifth assumption is that *new information can only be evaluated when its relationship to information already assimilated is understood*: A teacher using lecture method of instruction can either present his lesson so fast or so slow that cannot match with the level of assimilation of the whole class. This may make the student bored and completely lost. It is actually impossible to present all the information at the right rate for every individual student. However to achieve the new information in context and at the proper rate the student are allowed to identify, discuss and make arguments on the issue they are studying as they do these they work at their own pace and time while the teacher remain objective on the issue, but encourages and promote synthesis of different positions presented in the class.

The sixth assumption is that *learning is facilitated by the learner communicating his knowledge*: Many students report that they did not really understand a subject taught by the teacher until they discuss it among themselves or even with the teacher. This agrees with Mary Bay et al (1990) who stated that by explaining a concept to someone else, an individual increases his understanding and that students taught with innovative approach showed better long-term retention of concept than those taught with lecture even some teachers had reported that they did not really understand a subject until they taught it. This goes to buttress the point that when students teach themselves, they understand faster and retain the lesson taught thereby achieving the specific or general objectives of the lesson.

The seventh assumption is that *students who are feeling bad will not be able to give their full attention to learning new information through lecture method in the class*: In this situation, it can be that the student has emotional problems or is upset because of not understanding the new information, or do not like the teacher giving the lecture. It can also be in a situation whereby the teacher is from a different ethnicity so that the ideas and examples he uses in the lecture class do not conform/agree with that of the student own environment and background. The implications of using jurisprudence of this assumption for our teaching are profound. It takes into cognizance the students feeling and ideas, the teacher must attempt to deal with the students teachings so as to free their attention for learning since their feelings affect their learning.

Remarks to *Teacher Teaching Basic Science* with jurisprudential approach

- Learn to respond to a question from the students cheerfully, don't criticize or evaluate question thrown to you.
- Always divide the class into smaller group and allow the group to work on their own but moderate the activities of all the group as they work in group, in the following guideline should be adhered to
 - a. Vigorous intellectual climate where all views are respected should be maintained.
 - b. Avoid the direct evaluation of each other opinion
 - c. Make sure that the issue being discussed are thoroughly exposed.
- Appreciate any student that brings good ideas
- Encourage the student that ask questions and find a way to bring someone lost back to the class.
- Always be cheerful and put up a smiling face, this will enable the student to feel free and communicate with the teacher in the class.
- Approach each group in everyday's lesson with new ideas and be responsible for helping everyone else to learn and make learning experience an enjoyable one.
- Make good judicious use of time and get yourself fully prepared.
- Try to be a model for the entire group.

A Sample Lesson Note Using Jurisprudential Teaching Approach to teach **Disease Vector (Mosquito)** in a Basic Science Class:

Subject: Basic Science
Class: Junior Secondary School I
Time Allowed: 60 minutes
Topic: Disease vector (Mosquito)

Entry Behaviour: The students had already suffered from malaria at one time or the other.

Specific Objective: At the end of the lesson, the students should be able to:

1. Describe the life cycle of mosquito
2. Use the knowledge of the life cycle to control the spread of malaria
3. Describe the control of malaria

Instructional Materials: Whiteboard, mosquito

Step I

The teacher gives students an orientation on disease vector to enable them acquire knowledge on the topic. The teacher displays to the students a sample of mosquito and asks them the following question, what do you see?

Step II

Students drawn from knowledge of what they see and identify the specimen as a mosquito. Some students will describe mosquito as an insect that bits and suck blood while others will describe it as an insect that makes noise each time it comes in contact with their ear.

Step III

Teacher explain to the student that mosquito undergo complete metamorphosis i.e. egg, larva, pupa and adult. The teacher introduces the concept of life cycle to the students. He divides the students into four groups and assigns each stage of the life cycle to a particular group and asks them to discuss extensively what they know of the stage assigned to them.

Step IV:

The teacher brings the different groups together and forms what is known as mock public meeting. This meeting will involve the students in presenting the different sides of the stage of the life cycle assigned to them; the student discuss amongst themselves the various ways of controlling the mosquito, and how mosquito can transmit malaria, the teacher gives them an example that when mosquito bites, the plasmodia will enter the red blood cell in the blood stream and multiply there, when they mature they escape from the red blood cell into the blood plasma thus, causing malaria.

Step V:

The teacher explain to the students the possible way of controlling the spread of mosquito for example at the egg stage, all the water drainage, stagnant water in the dirty drains, swamps, ditches, breeding places for mosquito should be drained. The teacher then ask students to suggest other ways of controlling the mosquito as the students are suggesting, the teacher will be writing down the points made by students on the board.

Step VI:

The teacher then summarizes all the action, which the students should take to control the spread of mosquito to be free malaria. The students now go home to apply the investigation skills and action strategies on the controls of the housefly to the community in which they live. This clarifies to the students that the science they are learning is of value to them.

Evaluation

The teacher instruct the students to ask question based on the topic, the teacher allow the students to attempt answering the question raised by themselves, the teacher clarify the students on the answer to their question and lastly ask the students his or her own questions based on the objective of the lesson.

4. CONCLUSION

In a class using Jurisprudential Approach, the students are talking to the teacher and to each other. This provides some relief of feeling lonely, fearful and isolation which are common amongst students. It also

provide immediate feedback to the learner and hence successful learning experience is recognized. The learning experience thus helps the student feel better and gives more attention to learning. Moreover, jurisprudential classroom situation provides flexibility and freedom for the teacher to relate to individual student as a human being by encouraging personal contact between him and the student. Finally, this approach increases the teachers' awareness of the individual's learning difficulties and facilitates the process of providing the necessary support and encouragement.

5. RECOMMENDATION

Since it has been established that jurisprudential approach allows the students have more control over the rate at which new information is being introduced than the lecture method, it should therefore be included in a Basic Science class and possibly other subject areas. It offers advantages to students with different learning strengths. Varying the approach to teaching content can help teach a broader number of students and at the same time achieve the objective of the lesson taught.

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