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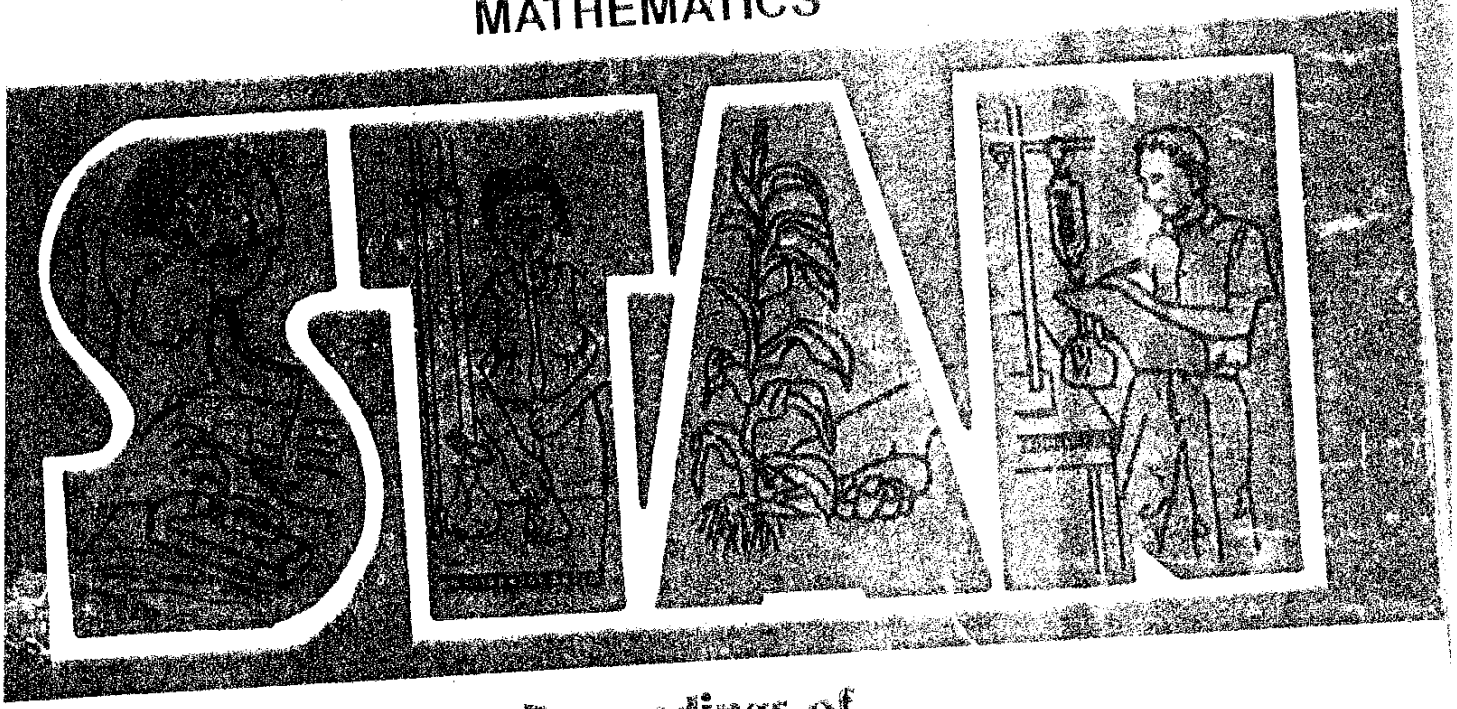

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READ ALOUD - AN INNOVATIVE APPROACH TO SCIENCE TEACHING IN DIFFICULT CIRCUMSTANCES

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Introduction

The gap between the intended and the achieved curriculum in science in Nigeria has been reported to be widening (Balogun, 1982). In the intended curriculum, the prescription is for science teachers to engage their students in investigations, use the guided discovery method and be inquiry oriented. Examples can be found in the core curriculum for primary science, core curriculum for integrated science and the teaching syllabuses for biology, chemistry and physics, put together by the Federal Ministry of Education. These documents and the associated science books including those authored by STAN, emphasise practical activities as basis for meaningful learning of science concepts.

To complement these intentions, researchers such as Okebukola and Jegede (1992) have suggested to teachers, the use of some metacognitive instructional strategies like concept mapping and vee diagramming as well as the use of analogies. It is unfortunate however, to note that many of our science teachers look the other way from these suggested approaches. Most see the prescribed strategies in the curricula and by the researchers as too theoretical and not sensitive to the realities of our science classrooms. What are these realities? Overcrowded classes, overloaded curricula, poorly equipped laboratories, poorly paid teachers who are overloaded with teaching periods and other sundry duties, are some of the barriers to the use of these ôelegantö methods of teaching science. This situation has accounted for the poor performance of students in school and public examinations in the sciences. For instance, STAN (1992) has succinctly summarised students/E performance in science subjects between 1981 and 1991 in public examinations conducted by WAEC for the Senior Secondary School Students. The following is a further compression of Tables 1 -15 in STAN (1992).

The ranges of percentage performance are:

Agriculture Science	15.28 - 49.27
Biology	6.01 - 25.55
Chemistry	4.13 - 39.15
Mathematics	6.26 - 21.69
Physics	9.50 - 25.85

Several reports have shown that many science teachers use methods different from the prescribed, thus bringing about a gap between the intended and the achieved curricula. Science is taught in an expository manner in the lecture mode with a lot of teacher talk, and with students reading from their textbooks. Many science teachers give notes to students to copy without any formal explanation of the contents of the notes thereby making the subject look very difficult to understand. In most cases also students are made to read the contents of the lesson from the textbooks and form their own notes. Studies have shown the pervasiveness of this situation in our primary science (Bajah, 1982) integrated science (Olarewaju, 1987), Biology (Soyibo, 1983), Chemistry (Ekpe, 1993) and Physics (Otuka,

1993) classes. Since we cannot readily change the way our teachers teach science, the logical solution is to ômake the best of the bad situationö. The problem before us, therefore, is how we can make science teaching effective through exposition and by reading from science texts in the class. In this paper, ôread-aloudö is suggested as a method of teaching to take care of these deficiencies. It could be used advantageously to teach science concepts meaningfully where materials are lacking.

The Read Aloud Method

Read-aloud is a method used in teaching comprehension in the language class. It is a non-fiction methodology which accommodates a wide variety of skills and interest levels in the classroom. It is very simple but powerful in aiding comprehension with a huge potential of making students eager to read about science and aid their comprehension of scientific concepts. It involves the following activities.

Listening - The teacher instructs students to listen very carefully for certain information on the passage to be read e.g. in teaching a topic like Habitats (see Nigerian Integrated Science Project by STAN, Bk.II, pg. 49). The teacher instructs students to listen for all clues that make up the explanation of Habitats. The students at this stage do not take any notes; they just listen. The teacher then asks them what they have heard. He then records what they heard on the chalkboard. While the teacher re-reads the selection, students check the notes for accuracy and add new points.

Passage from Habitats

Ducks and chickens are both kinds of birds. Ducks and chickens however are found living in different kinds of places. The kinds of place where plants and animals live are called habitats. Biologist who study habitats are called ecologists. There are many kinds of habitats: The school compound is a habitat, a pond is a habitat and the tropical rain forest of Africa is a habitat.

Most habitat can be grouped under two main headings: Aquatic and terrestrial.

The aquatic habitat can be sub-divided into fresh water and salt water habitats. Salt water habitats are found in the oceans and seas examples of such are microscopic organism and large mammals like the whales also live there.

Fresh water habitats include lakes, ponds, rivers and streams, such organisms as Tilapia fish, water lily live there.

Terrestrial habitat has three layers - near the top of trees, above the ground and below the ground. Human beings live in this habitat. Birds like the weaver bird, Agama lizard and the earthworm live in terrestrial habitat. Plants and animals live in places that suit them. Their bodies are structured in such a way that they can survive in their habitat for example the duck has webbed feet that help it to swim in water. Also its feathers do not get soaked with water like those of a chicken when it gets wet. So plants and animals are adapted to their habitat.

Discussing: After the read-aloud segment, students discuss and brain storm on the definition and other examples of habitats. They discuss why it is difficult for some animals or plants to live in other places other than their own habitat for example why it is difficult for the water lily to live in brackish water or why a chicken cannot live in a place where hawks live. In other words plants and animals live in places that suit them. Student should mention other plants and animals, their habitats and why these places suits them, what plants grow in the north, south and why.

Debating: This segment of the read-aloud technique provides the opportunity for a debate among groups of students about plants and animals, their habitats and adaptation (for example Activity 9.1 on page 51 of STAN, Integrated Science Bk. II can be used)

Activity 9.1 Habitats and Adaptation. Below is a list of organisms. Each of them has been mentioned in the passage; complete the first column by filling in the main habitat that each animal live in

Give a further description of the habitat in the second column. In the last column, give an example of an adaptation that the organism has to help it to live in it's environment.

The students are then divided into 3 groups:

Organism	Main habitat	Further description of its habitat	Adaptation
Blue Whale			
Tilapia Fish			
Water Lily			
Weaver Bird			
Agama Lizard			
Earthworm			

Other possible questions from this read-aloud can follow. For example:

1 What is a habitat?
2 What are the main kinds of habitat?
3. Define and explain the term adaptation.
4. Give an example of an abiotic factor in a habitat.
5 Give two examples of biotic factors.
6 Give an examples of how a living thing can affect other living things in a habitat?
7 Give an example of how a living thing can affect a non-living thing.

Writing - Students should now write the blackboard summary of the discussions and debate down as their notes

Investigating - Inquiring projects are a logical extension with students selecting different species to research. Teacher provides a variety of plants and animals not discussed in class and assign students to study their habitats and adaptations either individually or in groups. Their findings should be brought to class and summarised on the chalkboard.

Conclusion

Science should be taught in a manner that reflects its inquiry nature. Investigatory, rather than confirmatory or expository method of instruction is the more predisposing mode. Unfortunately, the context of science instruction in Nigeria today is hardly supportive of the investigatory mode. It is within this context that the Read Aloud technique is suggested as an innovative approach to improve the delivery of science education through exposition and text reading in science classes. This paper presents the major steps in the use of the Read Aloud technique.

It is believed that the technique will encourage students to read about science just for the fun of it nd this can lead not only to a deeper appreciation of scientific literature, it will also enrich their knowledge nd information in a more practical sense. It also could lead students to question further, read more nd eventually develop interest in science.

A caveat is in order in concluding this paper. The Read Aloud method is not being suggested as the primary way of teaching science. Its lack of alignment with the spirit of teaching ôgood scienceö contra-indicates its use. However, it can be put to good use as a supplement when all else fail. Since all would appear to be failing with our science education efforts, one sees the Read Aloud method as one that has a place in Nigerian science classrooms for a long time.

References

Akuezuilo, E. O. (1986) Science Curriculum and Instruction in Nigerian Secondary Schools: A Need for Reappraisal. *JSTAN*, Vol. 24, Nos. 1 and 2, (April 1986)