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TEACHER'S CLASSROOM LANGUAGE IN BIOLOGY

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Abstract
This chapter attempts to examine Teacher's classroom language in biology. It highlights the importance of classroom language in pedagogy. The paper discusses classroom language, communication and learning. The writer presents the biology teacher's profile and influence on the curriculum. The text presents two types of classroom language employed by the biology teacher. Finally, the writer concludes by expressing strong opinion on a biology teacher's proficiency in the use of classroom language to achieve meaningful communication and skills in the intellectual, social and academic development of the student in biology.

Keywords: Classroom language; Communication; Teacher; Pedagogy; School; Biology

Introduction
Intellectual development of the human power namely the body, mind and spirit through training, experience and integration has its basis in language. Classroom language is the type of language required to communicate and survive in the classroom without necessarily using the students' mother tongue (Gonelaves, 1993). The teacher is crucial to the communication of knowledge to the student in the school system. The primary role of the teacher is within the classroom. Hence, the teacher initiates the teaching and learning process. Indeed, the teacher's classroom language is the most powerful communication instrument with respect to the curriculum. Outside the classroom, the teacher may be assigned to accompany students on fieldtrips, supervise extracurricular activities, students discipline and organized other school functions.

However, two important factors; classroom language and pedagogy influence much of what happens in the classroom and students learning of a subject. Language is perceived as a formalized system of communication, especially the use of sounds or symbols which majority of a particular community readily understands (Robin, 2003). Pedagogy involves the determination of the educational levels of students particular skills. That is, the teacher's assessment of the pedagogic diversity of students and differentiate for individual students accordingly.

Consequently, a teacher is a person who provides schooling for others and his function is often formal and on-going, carries out as an occupation or profession at the school or places of education. The purpose of a school is to ensure holistic development of all its students through enlightenment in a conducive environment which promotes development of character and sense of self. Similarly, personal and social education are essential for the development of successful and productive citizens. A school by its very nature is a place where communication takes place and the only context where classroom language operates.

In Nigeria, English, a foreign language is the country's main medium of instruction and communication at all levels of the educational system. In this chapter, the writer examines teacher's classroom language in Biology.

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Firstly, the text in it introduction highlights the importance of classroom language in communication and pedagogy. Secondly, presents the relationship between communication and learning. Thirdly, the profile of a biology teacher and influence on the biology curriculum. Fourthly, it discusses the use of two types of teacher's classroom language in biology and lastly concludes by expressing strong opinion on the need for a biology teacher's proficiency in the use of the two types of classroom language to achieve effective communication and acquisition of biology knowledge, skills and attitudes by students for their intellectual, social and economic development.

Classroom Language, Communication and Learning
There are two aspects of classroom language. Firstly, as a pattern of expectations which constitute an essential component of what students learn. Secondly, as means of learning which they can use to make sense of what they already know, that is, distinguishing speech as a communication from speech as a reflection. Are the two related to one another? If a curriculum is considered to be the system of meanings which are available to and used by the teacher and students alike, how does speech affect students? How does speech affect the collaborative construction of these meanings by speech and writing? Language essentially is brought into the curriculum.
1. As the communication system of the classroom and school.
2. As a means of learning.

If a language is considered solely as a communication system, it would then indicate that the student could be relegated to a passive status as the beneficiary of socialization: but, if language is pictured as a means of learning, students could then be regarded as active participants in the construction of meaning. These social functions of language occur simultaneously with making of meanings. Therefore, it is pertinent to consider how the two functions interact.

In a classroom situation and more generally in a school system, the type of organizational set-up and expectations may restrain to a large extent students participation in the shaping of learning. The following diagram is a representation of the relationship between language, communication and learning.

![Diagram](image)

A model of communication and learning (Barnes, 1975).

*EDUCATION: A Communication Channel for National Development*
In the diagram the box on the left side represents student’s knowledge of the subject, which provides him with a variety of ways of interpreting the world and of strategies for solving problems. However, the opportunity to put these into effect depends on patterns of communication of the particular classroom context. This is represented by the centre of the diagram. The learning strategies which the students use and filtered through the communication system are symbolized by the heavy broken arrow. As the form of communication changes so will the form of the content of what a student learns.

**Profile of a Biology Teacher**

A modern school is understood to be a place where an academic mastery of subject matter achievement is an important goal (Good, 1999). Biology, a science subject in the Nigerian senior secondary school curriculum is an example. In the Nigeria policy on Education, it is accorded the status of a core subject and occupies prominent position (FRN, 1998, 2004). Biology is the study of life and biological knowledge has direct application to society. Biology, the science of life and living organisms including human beings, a practical subjects is often a requirement for many professional careers including medicine, biochemistry microbiology, biology education, health education physiotherapy, agricultural science, dentistry, dental technology, biotechnology food nutrition and others. Biology is the popular choice of student in preference to other science subjects in fulfilling the senior secondary school examination registration requirement, which specifies that one science subject must be inclusive.

**Who is a biology teacher?** A biology teacher is a trained person who has acquired the skills to teach biology in the senior secondary school system. He is a person expected to have obtained specialized education, knowledge in biology, code of ethics of the teaching profession and internal monitoring. A biology teacher is required to obtain a Bachelor of science degree in biology and a postgraduate Diploma in Education or a degree in Biology Education, an academic qualification in the subject including the study of pedagogy from a recognized tertiary institution usually, a university. A biology teacher is expected to be a member of the Teachers Registration Council of Nigeria (TRCN).

The biology teacher and the biology content he teaches have profound influence on the curriculum. The latter is often considered to mean what the teacher plans in advance for students to learn. However, a curriculum made only of the teacher’s intentions would definitely be inadequate and student will learn very little. Therefore, for a curriculum to be meaningful, it has to be enacted by student as well as the teacher in a collaborative effort. A biology teacher acquires experience and proficiency in the profession as his years on the job advance. The biology teacher and his students must come together in meaningful communication through classroom language.

**Use of Classroom Language In Biology**

In the senior secondary school classroom, the biology teacher and the students are the participants of classroom language. Barnes (1975), argues that the kind of personal and conversational interaction that exists between the teacher and the students are crucial aspects of the learning process. There are no two identical classrooms. Hence, biology teacher’s language in one classroom differs from that of another classroom. Every classroom has its own peculiarities.

Talking is an essential component of classroom language without which classroom communication cannot take place. With respect to the two parties involved in classroom
communication in biology, there are two types of classroom language used by a biology teacher:
1. The English language
2. The technical language of biology as a science subject.

A. The English Language
The English language is the language of pedagogy or instruction. It is actually used in classroom teaching, talking, giving information, instruction, asking and answering questions, conducting experiments and other exponents of language. Both the teacher and students must have acquired sufficient vocabulary for this type of classroom language for effective communication to occur. A biology teacher should elicit useful classroom English language for students to acquire by showing them through example.
This use of this type of language requires that a biology teacher is able to speak the language reasonably well, audibly and correctly. Most of the classroom and laboratory activities will require the use of this language. In teaching the processes of science, such as classifying, experimenting, identifying, measuring, reporting, making inferences and use of the apparatus such as the microscope, the English language is very important. It is the language of speech and talking and cannot be avoided in the classroom.
Four ways of presenting this type of classroom language exponents are as follows from:
   a. Student
   b. Teacher
   c. Reading and writing task
   d. Real classroom laboratory situations

a. Student
The teacher should place students in groups and ask them to write down all the expressions they think of which they might require to use in the classroom. The exponents should be grouped into two categories
   i. What to say to the teacher
   ii. What they say to other students
The teacher should give examples on the chalkboard, whiteboard or transparencies. Students should be asked to compile their own list of classroom language.
E.g:

Student – Teacher
i) Can we copy the note now?
ii) I cannot find my biology text book.
iii) Let us revise the text

Student – Student
i. What do you want to do now?
ii. Where is your text book?
iii. Come and sit next to me.

b. Teacher
The teacher should drill the students and also give them practice in saying each of the language exponents. The teacher should also ask other groups to assist to correct, translate and write them on the chalkboard for all to see and copy into their notebooks. The teacher may initiate the writing of a list of classroom language on the chalkboard, whiteboard or transparencies instead of asking them to draw up their own list of classroom language. Before this, a clear explanation of what classroom language is should be given to the students, each exponent should be indicated gradually to the students and discussed. Students should then be asked to copy into their notebooks to start a classroom language section.

c. Reading and Writing Task

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In the senior secondary school, most Nigerian students already have some knowledge of the English language. The teacher should photocopy a task sheet for each student. The task sheet should have two columns. Arrange the student in pairs or groups, let them decide between each pair who uses which exponent. Either as the teacher or as the student. The teacher may ask students to act out each situation as in the previous exercises.

Example
Task Sheet on Classroom Language

<table>
<thead>
<tr>
<th>Exponents (filled in by the teacher)</th>
<th>Who would have said it? (Filled in by students)</th>
<th>In what situation? (filled in by students)</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. May I sit on this side of the classroom?</td>
<td>i. Can you pass me the book?</td>
<td></td>
</tr>
<tr>
<td>ii. Can you pass me the book?</td>
<td>ii. Bring out your biology textbooks</td>
<td></td>
</tr>
<tr>
<td>iii. Bring out your biology textbooks</td>
<td>iii.</td>
<td></td>
</tr>
</tbody>
</table>

**d. Real Classroom or Laboratory situation**

This should come up at a later stage in the year, possibly the third term. The teacher should use one class or laboratory situation to introduce and add to the classroom language list. This could be done before an activity such as ‘Food Test in the laboratory. The teacher already can predict the kind of language the student will require for this and therefore, introduces some relevant exponents before setting up the reagents and materials required for the experiment e.g. exponents relevant to this activity.

**Demonstration Experiment on Food Tests**

<table>
<thead>
<tr>
<th>Student - Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>i) What is in this bottle, ?</td>
</tr>
<tr>
<td>ii) What is a reagent bottle?</td>
</tr>
<tr>
<td>iii) Let me hold the dropper for you.</td>
</tr>
<tr>
<td>iv) I can perform the experiment by myself</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Teacher - Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>i. Come closer students</td>
</tr>
<tr>
<td>ii. Can you see what is happening?</td>
</tr>
<tr>
<td>iii. What colour is this?</td>
</tr>
<tr>
<td>iv. Open your textbooks at page 10</td>
</tr>
</tbody>
</table>

### CLASSROOM LANGUAGE EXPONENTS

<table>
<thead>
<tr>
<th>Student - Teacher</th>
</tr>
</thead>
<tbody>
<tr>
<td>May I sit in front, please?</td>
</tr>
<tr>
<td>Could you speak more slowly, please?</td>
</tr>
<tr>
<td>Can you repeat what you said?</td>
</tr>
<tr>
<td>Sorry, I don’t understand the concept</td>
</tr>
<tr>
<td>How do you spell photosynthesis?</td>
</tr>
<tr>
<td>What’s the difference between ‘do’ and ‘did’</td>
</tr>
<tr>
<td>Excuse me, I’m sorry I’m late</td>
</tr>
<tr>
<td>Can I leave a bit early today, please?</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Student - Student</th>
</tr>
</thead>
<tbody>
<tr>
<td>Can you help me do this exercise</td>
</tr>
<tr>
<td>Can you lend me a pen?</td>
</tr>
<tr>
<td>Have you done your homework?</td>
</tr>
<tr>
<td>What homework have we got to do?</td>
</tr>
<tr>
<td>Sorry I can’t remember your name.</td>
</tr>
<tr>
<td>Can I share you textbook with you?</td>
</tr>
<tr>
<td>Where’s Tolulope today?</td>
</tr>
<tr>
<td>She is absent</td>
</tr>
</tbody>
</table>

**Source:** Adapted from (Gonclaves, 2000).

Students may also be asked as an alternative to make one or more wallcharts with classroom language. This would enable new exponents to be added from time to time and students can all point to the charts to remind the students to use English language when they are using their own language unnecessarily. It does not matter how classroom language is presented. The most important thing is to motivate and encourage students to use it. Reinforcement may be required by the teacher to ensure that correct classroom
language is used by his students. That is, encourage his student through commendations, applause and rejection of incorrect exponents.
Interestingly, sometimes the Biology teacher also acts as an English teacher.

B. The technical language of biology as a science subject
There is an obvious difference between writing an essay and a scientific report. While the former may be written with free-flowing, colourful expressions, the latter is full of dense and nerve-grating statements. The two types of writings are governed by certain rules and use of a guide to style and language (Adams, 2004). However, the language of science to which biology belongs, is more restricted than those of non-science related subjects. A language in which observable and quantifiable phenomena are discussed.
Firstly, it is common to use technical terms, theories, laws, principles, acronyms and botanical names in biology. It has also been noted that restrictions on the choice of words also come to play a significant role in the teaching of biology. Essentially biology seeks to be as factual and as objective as possible. The words are controlled by this scientific doctrine. This in turn makes the scientific language more difficult for students to read and comprehend, if additional explanation is lacking.

1. An example of a law related to ecology in biology is:
The 1st law of thermodynamics which states that: "Energy is neither created nor destroyed" It can only be transformed from one form to another. A continual food supply is required to provide energy and the ultimate source of energy of living things is sunlight. The biology teacher should explain this law otherwise, he may not carry his students along. The teachers must have theoretical command of knowledge in Biology, such that he should relating the subject matter to learning and human behaviour.

2. Examples of principles in biology are:
   (a) Living things possess a definite cellular structure – i.e the principle of cellular organization.
   (b) There is a constant building up and tearing down within the body of every living organism. – i.e the principle of metabolism.
   (c) Living things must adapt themselves to the conditions of their environment if they are to survive i.e the principle of adaptation.

3. Examples of some Acronyms in biology are:
   a DNA – Deoxyribonucleic Acid
   b RNA – Ribonucleic Acid
   These acronyms requires explanation and assistance of the biology teacher to ensure that the meanings are understood.

4. Examples of Some botanical names of common animals and plants including human beings.

<table>
<thead>
<tr>
<th>Botanical Names</th>
<th>Common Names</th>
</tr>
</thead>
<tbody>
<tr>
<td>a Carica Papaya</td>
<td>pawpaw</td>
</tr>
<tr>
<td>b Homo Sapiens</td>
<td>Human beings</td>
</tr>
<tr>
<td>c Bufo regularis</td>
<td>Toad</td>
</tr>
<tr>
<td>d Tilapia Zilli</td>
<td>Tilapia</td>
</tr>
</tbody>
</table>

Secondly, in presenting a biology lesson, it is understandable of course that a biology teacher might be concerned to encourage his students to use terminologies of the subject.
He/she will most importantly be more interested in whether they can apply scientific terms for thinking in addition to saying the correct words. For instance, in presenting his lesson, a biology teacher may ask a student in Senior Secondary School (SSS 2) to draw a flower and label the parts for a topic on ‘Reproduction in flowering Plants.’ He would not only be concerned with the memorizing of the botanical names of the flower e.g Delonix regia, whose common name is ‘Flame of the forest’, he would also be concerned with whether the student understood the floral arrangement of the flower, furthermore, that the student is able to apply the correct terminologies to describe the floral parts and identify them on the real flower.

For instance, the calyx, corolla, androecium and gynoecium are collective names for the following parts of a flower

Calyx - the sepal
Corolla - the petals
Androecium - stamens
Gynoecium - pistil and stigma

He would also not rest on his oars, if this student cannot identify the plant with reference to the different terminologies. For example some technical processes of practical biological work, such as cutting on mounting a sections on a microscope or dissecting a toad to show its digestive system and many other physiological experiments on plant and animals. These involve many stages and use of terminologies. The onus is on the biology teacher to make the student to understand the terminologies associated with each and when to apply them.

There are several examples that could be given in this text because the list is by no means exhaustible. However, a biology teacher must understand English language reasonably well and proficient in the language of biology, which is his area of specialization and on which most of the biology content is based. The latter is that language which distinguishes the biology teacher from others.

Conclusion

The most pertinent question which requires an urgent answer about the future of the education system is how are we going to foster the creation of new paradigms of learning which is largely based on the complex circumstances and context of classroom and school culture (Burnett, 2000). It is imperative that the biology teacher and students come together in meaningful communication, to talk, write, draw, collect and observe specimens, ask and answer questions, read biology text books and conduct experiments. It is also desirable that they disagree with one another, learn what to say and do, how to interpret what others say and do within the classroom and biology laboratory. When a curriculum becomes more than teachers intentions, the talks and gestures which students and teacher exchange in meanings through classroom language become some form of communication. Thus, in the teaching and learning of biology, talking is an essential component of classroom language without which communication cannot take place. Communication itself cannot be overemphasized as an integral part of effective teaching and meaningful learning of the subject, biology. This is inevitable if the intellectual, social and economic development of the students are to be achieved.

References


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