

From Teacher-Centred to Learner Centered Approach in Teaching Agriculture

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Abstract: The teaching and learning agriculture approaches in our Institutions are mostly teacher-centred with less activity and scanty learner involvement due to lack of resources and trained personnel to impart knowledge and skill to the learners. This approach produces job seekers after graduation rather than job creators. This paper suggested pedagogical changes to make a paradigm shift from teacher-centred to learner-centred and activity-based approaches. The paper believes that each topic to be taught, and there should be clearly stated and measurable objectives. Relevant instructional materials and a conducive environment for effective teaching and learning be made available in our educational institutions to produce entrepreneurs that can create job opportunities for our teeming population. Qualified teachers to teach vocational and technical agriculture should be given training from time to time to acquaint themselves with a new method of teaching and farming practices.

Key words: Teacher, learner, teaching methods, vocational, agriculture

Introduction

The national philosophy on Agriculture is Agriculture for self-reliance based on the provision of teachers endowed with a balanced approach between principles and practice of Agriculture, academic and vocational ends (Federal Republic of Nigeria 2012).

No particular teaching-learning method can say to be best for all situations in teaching-learning processes. A good teacher knows when and how to use a particular method or combinations of methods in a particular situation. Age of the learners, subject and environment plays a fundamental role in the choice of method or methods of instruction.

Availability of teaching aids also is another factor that dictates the type of method(s) to be used in teaching and learning processes. Practical and demonstration methods with real objects as instructional materials, where possible, are the best methods of instruction in teaching agriculture. Therefore, schools and other educational institutions need to have gardens, farms, and livestock units for practical and demonstration purposes.

Over the years, our approach to teaching has been a traditional one where teachers dominate the class and learners are assumed to be empty. This teacher-centred approach is scarcely activity-based.

Objectives

The general objective of this paper is to suggest a paradigm shift from teacher centre to learner centre and activity-based teaching and learning process. The specific objectives include:

- To produce competent school leavers with required skills in agriculture and
- Production Job creators, not job seekers

Approaches to Teaching and Learning Methods

a. Traditional Approach

One of the characteristics of this approach is that it is teacher-centred, where learners are assumed to be empty, and teachers dominate the process. This method also confined teaching and learning to be in schools and classrooms. Motivation may be an advantage in a traditional method, and also lack of accessibility to modern technology by learners in developing countries may necessitate using a traditional method in teaching and learning processes.

b. Reality Pedagogy

As pointed by Christopher (2014), Reality Pedagogy is an approach to teaching and learning that focuses on teachers gaining an understanding of student realities and then using this information as the starting point for instruction. It begins with the fundamental premise that students are the teaching experts and the content experts. Reality pedagogues/teachers believe that there has to be an exchange of expertise between students and teachers for teaching and learning to happen. For this exchange to happen, teachers need a set of tools called the "5 C's" to gain insight into student realities and allow students to express their true selves in the classroom. These tools are:

1. **Co-generative Dialogues:** Where teachers and students discuss the classroom and both suggest ways to improve it.
2. **Co-teaching:** Where students get opportunities to learn content and then teach the class.
3. **Cosmopolitanism:** Where students have a role in how the class operates and in what is taught.

4. **Context:** Where the neighbourhood and community of the school are seen as part of the classroom.
5. **Content:** The teacher has to acknowledge the limitations of his/her content knowledge and work to build his/her content expertise with students.

Implications to this are;

1. This approach also focuses on students more, and the teacher has a minimal role in classroom control.
2. Students almost dictate the content and context of teaching.

c. Flipped Classroom

One of the most popular new approaches to teaching is the flipped classroom, and this approach involves a process where the typical lecture that happens in the classroom occurs at home. Students watch lectures on video and then return to school to engage in the exercises they would traditionally have for homework and to ask questions based on the lecture they watched on their own at home. When students watch videos at home, they can stop and go and at their own pace and take notes at their leisure. When they return to school, they can work in groups to discuss what they watched and have their questions answered by the teacher. In this process, students create, collaborate and learn at their own pace and apply what they have learnt at home in the classroom (Christopher, 2014).

Implications to this include lecturing, where lectures are watched in videos; hence there is no chance for discussions to guide students. Students may not have access to video machines. Blind students are not considered in this approach.

2. Contrast between Traditional Approach and Contemporary International Trend

A few assumptions about learning that tend to be recognized throughout education literature as fundamental to the planning of an education program came from the general field of educational philosophy. These assumptions form the basis for contrasting the traditional approach with contemporary international trends in teaching and learning.

Some of these assumptions, as pointed by Anonymous (2016), include:

- i. Persons of all ages have the potential to learn, with some of them learning faster than others. Age may or may not affect a person's speed of learning, and individuals vary in the way they like to learn.
- ii. The individual experiencing a change process, such as a new learning situation, is likely to feel stress and confusion. Some anxiety often increases motivation to learn, but too much anxiety may cause fatigue, inability to concentrate, resentments, and other barriers to learning. Learning is more comfortable and effective when the environmental conditions support open exchange, sharing of opinions, and problem-solving strategies. The atmosphere should foster trust and acceptance of different ideas and values.

- iii. In the classroom, the instructor facilitates learning by incorporating students' experiences, observations of others, and personal ideas and feelings. Exposure to varied behaviour models and attitudes helps learners to clarify actions and beliefs that will aid in meeting their own learning goals.
- iv. The depth of long-term learning may depend on the extent to which learners try to analyze, clarify, or articulate their experiences to others in their family, work or social groups. The depth of learning increases when new concepts and skills are useful in meeting current needs or problems. This allows for immediate application of the theory to a practical situation.
- v. An educational program may only provide one step in an individual's progress toward acquiring new behaviours. The adoption of a new behaviour depends on many factors. Some conditions predispose an individual to take a particular action, such as former knowledge and attitudes. Availability and access to resources, such as exercise or practice facilities, may enable a person to carry out new plans of action. Other environmental conditions and family characteristics help to reinforce or hinder behaviour changes.
- vi. Learning improves when the learner is an active participant in the educational process. When selecting among several teaching methods, it is best to choose the method that allows the learning to become most involved. Using varied teaching methods helps the learner maintain interest and may help reinforce concepts without being repetitious.

In recent years teachers have found that many principles of adult learning also apply to children and adolescents. For example, adults and children prefer participatory learning experiences; they learn faster when new concepts are useful in their present and future lives. The role of an educator is to assess the audience's interest, current skills, and aims. This information then guides the structuring of a learning atmosphere and selection of methods most satisfying and effective for the learner.

Ormrod (2004) also observed that;

- i. Humans are social beings who learn by observing the behaviour of others and the outcomes (reinforcements and punishments) associated with that behaviour.
- ii. Observed behaviours which are rewarded will be repeated (imitation)
- iii. The person whose behaviour is being imitated is called the role model, and an imitation is called modelling.
- iv. Learning can sometimes occur without a change in behaviour. This behaviour may occur at a later time or may never occur.
- v. Cognitive processes play an important role in learning. Some of these cognitive processes include attention, memory, rehearsal, motivation and expectations of reinforcement or punishment.

Effective Teaching and Learning in Agriculture

For effective teaching and learning of agriculture, the curriculum is broken down into a syllabus which is further broken down into a scheme of work. Lesson plans are drawn from the scheme of work for a class lesson.

In preparing a teaching syllabus, the Nigerian Educational Research and Development Council (NERDC 2012) pointed that answer to the following five questions is helpful.

1. What will they know and be able to do as a result of teaching the subject?
2. What is the skill the learners are expected to acquire?
3. What instructional materials and teaching methods should be used?
4. What classroom interaction should exist among learners and between teacher and learners?
5. What are the means of evaluation?

The above five questions indicate that learners should be considered in the design of curriculum, syllabus, scheme of work and lesson plan.

A learner-centred approach is an activity-based approach where learners are kept engaged with a task, preferably in a group. At the end of the task and subsequent group discussions, the result is presented by the group to the class for class discussions.

The learner-centred approach could assist retention (Zepki, Linda, and Prebble 2006), and in this approach, the teacher plays the role of a mentor guiding the learners to achieve the plan objectives.

Learners should be grouped, and groups are given a task to perform and present to the class for discussions. According to McLaughlin and Luca (2004), there is greater recognition of the potential of communication technologies to dialogue, networking and team Skills among learners in this approach.

Sample of Scheme of Work for Age 213; Introductory Genetics

Weeks	Topics per periods	Objectives	activity
1	1 st Meaning and scope of genetics 2 nd application of genetics	<ol style="list-style-type: none"> To define genetics State branches/disciplines emanating from the science of genetics To mention areas of application of genetics To explain the relevance of genetics in such areas 	<p>Group discussion/presentations on what is genetic and discipline is arising from genetics, e.g. Cytogenetic molecular genetics etc.</p> <p>Group discussions and presentations per subject area</p>
2	1 st Pre-Mendelian Genetics 2 nd Pre-Mendelian genetics continues	<ol style="list-style-type: none"> To state earlier conceptions To state conceptions of earlier scientists before Mendel, e.g. Plato and Aristotle 	Students to be grouped per earlier scientist to discuss and present their views on his theories
3	1 st Mendelian genetics on Monohybrid inheritance 2 nd Monohybrid inheritance continues	<ol style="list-style-type: none"> To say what is monohybrid inheritance To state how he got his Pure lines State Mendel conclusions and law of segregation To be able to describe Mendel's experiment briefly Be able to separate gametes from parents Make crosses and come out with the correct ratio 	<p>Students are group per Mendel's conclusion to discuss and say their opinion on the conclusion and law of segregation in earlier and modern forms.</p> <p>Students to come out with different contrasting traits and match each with an allele. Students are grouped per trait to make crosses and come out with the ratios, and present class</p>
4	1 st Chromosomes	<ol style="list-style-type: none"> To define chromosome. Say their locations and roles. State types of chromosome Draw and label chromosome 	Group students per objectives for discussion and presentations

	2 nd Sex inheritance	<ol style="list-style-type: none"> 1. To identify the two sexes between plants and animals 2. State the two sex chromosomes, X-chromosomes and Y-chromosomes 3. Be able to make crosses between male and female and get a 50% chance of having a male or female 4. Students to answer correctly on who is to blame, wife or husband on failure to get baby boy 	Students to separate gametes and make crosses to come out with chances of having either sex
5	1 st Sex linkage	<ol style="list-style-type: none"> 1. State what is sex linkage 2. To identify sex-linked traits such as colour blindness and eyes colour 3. Make crosses to determine the transmission of such genes between sexes <p>Continuous Assessment</p>	Group per linked trait and observe their transmission between sexes.
	2 nd Test		Writing Test
6	1 st Genetic Variability	<ol style="list-style-type: none"> 1. Students to identify variations in living organisms 2. State two types of variations, i.e. continuous and discontinuous 	Student to take measures of their height and their skin colours in groups. Students to observe their earlobe and also the ability to roll their tongues. Students grouped per factor to discuss role and mode of action. Each group presents to the class.
	2 nd Causes of Genetic Variability	<ol style="list-style-type: none"> 1. To list at least four factors causing variability 2. Be able to explain each 	

7	1 st Heritability 2 nd Test	<ol style="list-style-type: none"> 1. Students to define heritability 2. List variables used in calculating heritability 3. Be able to write heritability formula and interpret it. <p>Continues Assessment</p>	<p>Calculation of heritability in groups with different values or variables and presentations</p> <p>Writing test</p>
8	1 st Population Genetics 2 nd Basic Concept in Genetic Engineering	<ol style="list-style-type: none"> 1. Students to define population 2. To define population genetics <ol style="list-style-type: none"> 1. Students to define genetic engineering 2. Students to state differences between genetic engineering and conventional breeding 	<p>Students to be grouped according to a particular group of plants and animal population to discuss their peculiar characteristics</p> <p>Make Presentation</p>
9	1 st Advantages and Disadvantages of Genetic Engineering 2 nd Mutations	<ol style="list-style-type: none"> 1. State five advantages and five Disadvantages of genetic engineering <ol style="list-style-type: none"> 1. Students to define mutations 2. To differentiate between chromosome mutations and gene mutations 3. To draw and explain 4 types of chromosome mutation 	<p>Class grouped into two to discuss the advantages and disadvantages of plants and animal GMOs</p> <p>Grouping of students into 4 groups to discuss on;</p> <ol style="list-style-type: none"> a. Deletions b. Duplications c. Inversions and d. Translocations. <p>Each group to present in 5 minutes each</p>
10	1 st Eugenics	<ol style="list-style-type: none"> 1. Students to define eugenics 2. To say the origin of eugenics 3. State implications of eugenics 	<p>Group students into two groups for and against eugenics. Each group present their results to the class.</p>

	2 nd Test	Evaluations	Writing of Test
11	Revisions	Revisions to get feedback	Students presentations and discussion continues to cover the semester

Conclusion

In conclusion, to respond to the changing global trend in terms of technological development and information technology, in particular, there is a need for the shift from a traditional teaching approach to modern approach where learning is not just confined to classrooms but open to more horizons. In contrast to a traditional approach, the modern approach is learner-centred and emphasizes activity-based learning.

Recommendations

1. Matching topics with the relevant season, for instance, arable crop production, should be taught during the rainy season.
2. Instructional materials such as farm machinery, equipment and farm animals should be made available with relevant manpower for effective vocational training.
3. Our classrooms should be converted to smart classrooms with moveable seats, grouping and regrouping.
4. Training and retraining of teachers so as to equip them with improved practices in agriculture and new methods of instruction.
5. ICT materials should be available with internet connectivity for educational activities.
6. Agriculture is capital intensive. Therefore the government should fund education adequately to produce learners that can create employment.

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