

TEACHING SKILLS IN BIOLOGICAL SCIENCE

INTRODUCTION

An educational institution performs a significant function of providing learning experiences to lead their students from the darkness of ignorance to the light of knowledge. The key personnel in the institutions who play an important role to bring about this transformation are teachers. As stated by NCTE (1998) in Quality Concerns in Secondary Teacher Education, —The teacher is the most important element in any educational program. It is the teacher who is mainly responsible for implementation of the educational process at any stage. This shows that it is imperative to invest in the preparation of teachers, so that the future of a nation is secure. The importance of competent teachers to the nation's school system can in no way be overemphasized. There is widespread consensus, however, that our education systems are failing to adequately prepare all students with the essential 21st century knowledge and skills necessary to succeed in life, career and citizenship.

MEANING OF TEACHING

Teaching includes all the activities of providing education to other. The person who provides education is called teacher. The teacher uses different method for giving best knowledge to his students. He tries his best to make understand students. His duty is to encourage students to learn the subjects. Teaching means interaction of teacher and students. They participate for their mutual benefits. Both have their own objective and target is to achieve them.

Teaching skill is a group of teaching acts/ behaviors intended to facilitate student's learning directly/indirectly.

Nature and characteristics of teaching

1. The main character of teaching is to provide guidance and training.
2. Teaching is interaction between teacher and students.
3. Teaching is an art to give knowledge to students with effective way.
4. Teaching is a science to educate fact and causes of different topics of different subjects.
5. Teaching is continues process.
6. Teacher can teach effectively, if he has full confidence on the subject.
7. Teaching encourages students to learn more and more.
8. Teaching is formal as well as informal
9. Teaching is communication of information to students. In teaching, teacher imparts information in interesting way so that students can easily understand the information.
10. Teaching is tool to help student to adjust himself in society and its environment.

Characteristics of Teaching Skill

1. Teaching skill is a set of strictly overt or observable behaviours.
2. Purely cognitive skills such as problem solving is not considered as teaching skill.
3. Teaching skills have three basic components viz., perception, cognition and action.
4. Teaching skills have three dimensions viz., Non-verbal behaviour, openness, nature of moves in teaching to which skill belongs.

UNDERSTANDING MAJOR TEACHING SKILLS

Teaching skills would include providing training and practice in the different techniques, approaches and strategies that would help the teachers to plan and impart instruction, provide

appropriate reinforcement and conduct effective assessment. It includes effective classroom management skills, preparation and use of instructional materials and communication skills.

1. Skill of Introduction

This is an important skill required for a teacher. Well begun is half done is a saying which indicates the importance of introducing a lesson. It is the duty of a teacher to bring the students into the classroom mentally. The skill is intended for making effectiveness in introducing of the content. This is always done at the start of a class. Here teacher gives a brief introduction about the lesson in order to pre-dispose the pupil's mind to it.

There are many ways to present an introduction. Here are a few:

- ❖ Asking questions to get the students thinking about the topic of the lesson.
- ❖ Showing pictures that relate to the lesson topic.
- ❖ Telling a story to show the importance of the topic.
- ❖ Bringing in real objects related to the lesson.

2. Skill of Explanation

Teaching is not primarily telling. It's helping other people learn. That means the focus is on the learners, not the teacher. People learn best through experiencing something themselves, so when you are striving to teach something, you are constantly trying to Get into the shoes of the learners so that you can better understand where they are and what they need from you to learn the subject under study. Explaining can be defined as an activity to bring about an understanding of a concept, principle etc. it is an activity to fill the gap in someone's understanding.

In classroom the teacher explains ideas and concepts. It is the most commonly used skill and is the essence of instruction. Explanation is a key skill. Generally, the skill of explanation is complex. Explanation is to explain or to give understanding to another person. It leads from the known to the unknown, it bridges the gap between a person's knowledge or experience and new phenomena, and it may also aim to show the interdependence of phenomena in a general subtle manner. It assists the learner to assimilate and accommodate new data or experience.

The explanation serves two purposes:

- (1) to introduce the subject by giving some background about its usefulness and application; and
- (2) to describe the subject in a simple, complete, and tantalizing way. The explanation should create a desire to become proficient in the subject under study.

The components of skill of explaining involved

- ❖ Clarity
- ❖ Continuity
- ❖ Relevance to content using beginning and concluding statements
- ❖ Covering essential points
- ❖ Simple
- ❖ Relevant and interesting examples appropriate media
- ❖ Use of inducts, deductive approach, it can be functional, causal or sequential

Characteristics of effective explanation

- ❖ Coordination in Statements. Coordination in the statements used during the explanation is very essential; otherwise there will be all hotch- potch.
- ❖ Relevant Statements. While presenting the subject matter, the concerned statements should be relevant.
- ❖ Fluency in Language. The teacher should use fluent language so that the pupils may listen and understand his thoughts.

- ❖ Connecting Links. The use of words, idioms or connecting links such as ‘therefore’ as a result of etc. is essential to link the different thought or statements.
- ❖ Clear Beginning Statement. Before starting any explanation, the teacher should make the pupils aware of what he is to teach on that day through a clear beginning statement.
- ❖ Use of proper Words. The teacher should use proper words for explaining an object or an event otherwise he would be in a state of confusion

3. Questioning

Successful teaching highly dependent on questioning technique employed in the teaching sessions.

Questioning is an important teaching skill that a teacher must learn. The teacher should learn to ask suitable, appropriate and meaningful questions. Questioning is definitely a skill. We can very easily answer a question but it is too difficult to ask a question.

A question is any sentence which has an interrogative form or function. In classroom settings, teacher questions are defined as instructional cues or stimuli that convey to students the content elements to be learned and directions for what they are to do and how they are to do it. Questioning promotes involvement, initiates thinking, creates motivation and enhances learning.

Effective questioning is a real compliment to the instructional skills. It shows the ability to understand the student’s real needs. It shows that for meaning that’s deeper than the spoken message. Effective questioning is a powerful, learned skill.

For students, questioning strategies help to categorize and anticipate exam questions, allowing for more effective preparation. The strategies are also useful for study groups, focusing efforts and allowing members to test each other. They improve the student’s ability to clarify, reorganize, and accurately explain new information. Questioning also aids in self-assessment and self-monitoring.

Basis of Questioning skill

Questioning skills refer to one’s ability to formulate and respond to questions about situations, objects, concepts, and ideas. Questions may derive from oneself or from other people.

There are two levels of questions:

1. Low-level questions refer to questions that require one to recall information that has been registered in memory. Low-level questions operate on the level of knowledge, drawing from one’s knowledge base of a subject.
2. The High-level questions encompass questions that require one to process information rather than simply recall it. High-level questions operate on one’s ability to comprehend, apply, analyze, synthesize, and evaluate information.

Questioning techniques

Good questions are essential to effective communication between: the teacher and the student: the teacher who lack the skill to effectively question their student create disinterest and boredom on the part of the student. They also ignore a fine opportunity to open communication lines for determining the effectiveness of the lesson. Good questions expand on central thoughts, develops the subject, and not on minor, nice-to-know points. Let us look at some rules for asking questions.

- ❖ Distribute questions at random. Do not always ask the same student or those sitting in a particular area. Ask questions of the entire class to promote thinking in all students and get them involved.
- ❖ Acknowledge all answers to ensure incorrect or vague answers are clarified.

- ❖ Don't use catch or trick questions. Students will not participate and you could possibly lose them if they feel humiliated.
- ❖ Allow enough time for the student to think about and give an answer. Do not waste time waiting if the student clearly does not know the answer, but do not cut the student off before ample time is given for the complete thought process or answer period.
- ❖ Begin questions with the words that require thoughtful answers, such as, "Why, When, How, What," etc. Stay away from questions that can be answered with a simple yes or no. This will help stimulate and even guide students thinking.
- ❖ Avoid frequent group or choral responses. This method provides answers that are often unintelligible and errors that are hard to pick up.
- ❖ Do not waste time "pumping" a student. If the trainee does not know the answer, either offer an explanation or ask the question of another student.

4. Skill of closure

This skill is useful for a teacher to close his teaching properly. The teacher is to summarise all the teaching during the period and provide opportunities for the students to correlate the learnt matter with the past and future knowledge. This is to be done by statements or by asking questions.

5. Skill of Reinforcement

This skill is the most important one than other teaching skills. Reinforcement, the term implies the use of the technique for influencing behaviour of individuals in desired direction. The concept of reinforcement is based on the hedonistic principles, which envisages that all individuals tend to repeat the pleasant experiences and avoid unpleasant ones. The skill is being used to utilize good behaviours of the learners and to avoid the undesirable behaviours of the learners. The teacher would like the student's desirable behaviours and criterion responses to be retained and undesirable behaviours to be eliminated. For reinforcing student's desirable behaviours and criterion responses he uses positive verbal and non-verbal reinforcers. These reinforcers not only strengthen the student's desirable behaviours but also develop confidence in them. Besides, they enhance their positive selfconcept. Absence of positive reinforcers for student's desirable behaviours may erode their confidence and lead to poor self-image. Positive reinforcements encourage students to participate actively in classroom interactions. It stimulates them to achieve more, thereby, creating a sense of achievement.

Skilled use of reinforcers helps a teacher to promote student's learning. The skill of reinforcement refers to the effective use of reinforcers. It, can therefore be defined as 'the effective use of reinforcers to modify student's behaviour in the desired direction'.

6. Skill of varying the stimulus

Varying the stimulus is described as a deliberate change in the behaviours of the teacher in order to sustain the attention of the learners throughout the lesson. The variation in the stimulus helps in avoiding monotony and in generating interest among the students which in turn makes learning effective.

Learning in the classroom depends, to a large extent, on the attention of the students on the learning task. It is therefore, essential for the teacher to secure and sustain student's attention for making his teaching effective. Continuous use of the same stimulus or activity for longer period induces inattention. The inattention is caused in two ways: one is continued focus of the students on the same stimulus for a long time restricts his postural mobility which leads to fatigue. Next is the continued use of the same stimulus for longer duration introduces the element of monotony, which brings in dullness. This will be further aggravated because of the short span of student's attention.

Their attention tends to shift from one stimulus to another frequently. They find it difficult to attend to one stimulus for more than a few minutes. The problem of inattention is a challenge to the teacher, unless he is in a position to secure and sustain student's attention. It is therefore, essential for the teacher to secure and sustain student's attention towards the topic of the lesson. One of the significant ways to secure and sustain students' attention is to introduce the elements of variation in teaching. The variation can be introduced in several ways depending upon the teaching activity. Appropriate variation in different dimensions can help a teacher to secure and sustain students' attention. The set of teacher behaviours that tend to secure and sustain student's attention in teaching learning situation in the classroom constitutes the skill of varying the stimulus.

Some of the components of varying the stimulus are as follows:

- ❖ Movement
- ❖ Gestures
- ❖ Change in voice
- ❖ Focusing
- ❖ Change in interaction pattern
- ❖ Pausing
- ❖ Student's physical participation
- ❖ Aural visual switching

7. Non- verbal cues

Non-verbal communication has been defined as communication without words. They are usually made with the help of the movements of the eye, hand, head, body, and facial expressions. Facial expression will lead to encourage pupil to participate actively in learning situations. Positive nonverbal cues include smiling, nodding the head, a delighted laugh, patting on the shoulder, asking the students to clap. The students can be asked to clap their hands for correct answers given by a student.

Disapproval without using words has the effect on negative reinforcement. Negative non-verbal cues include staring, looking angry, shaking the head, beating, caning, bruising, raising the eyebrows, tapping foot impatiently and walking around etc.

8. Fluency in communication

Communication in general is a process of sending and receiving messages that enables humans to share knowledge, attitude, and skills. Communication is a series of experiences of hearing, seeing, smelling, tasting, and touching / feeling. Although we usually identify communication with speech, communication is composed of two dimension: verbal and non-verbal. Both verbal and non-verbal plays a significant role in teaching learning process. Verbal communication is divided into Intra verbal: intonation of word and sound and extra verbal: implication of words and phrases, semantics.

The teacher uses knowledge of effective verbal and nonverbal communication techniques as well as instructional media and technology to foster active inquiry, collaboration, and supportive interaction in the classroom.

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