# TO STUDY STUDENTS PERCEPTION ON THE EFFECT OF ACTIVE LEARNING IN BIOLOGY ON STUDENT OF SECONDARY LEVEL

**Anupriya Pandey**
Research Scholar
Sardar Patel University
V.V. Nagar, Gujarat

**Dr. Dipali Gandhi**
Associate Professor
Waymade College of Education
V.V. Nagar, Gujarat

**Abstract**

The objective of the study was to find out students perception in Biology class and weather students perception significantly differ with reference to gender, grade and achievement. To study the perception a questionnaire containing 30 Likert Scale items were introduced on students studying in grade IX, X, XI and XII. The questionnaire focused on (1) Teaching strategies, (2) students interest in Biology, (3) Aptitude in Biology, (4) Students Independent Learning, (5) Activities in Biology Class, and (6) laboratory experiences. Survey based Research Methodology is used To Study Students Perception on the Effect of Active Learning in Biology on Student of Secondary Level. 366 students from CBSE English medium school was randomly selected for the study. The study group consisted of 173 males and 193 female students in age ranging between 14 to 17. The statistical findings of the scores revealed that secondary students' impressions of their scientific classes differed significantly favouring female students, and that students' perceptions of their science classes improved significantly from secondary to higher secondary level. The findings revealed that cooperative teaching tactics such as group collaboration in class or generating small-group projects had a beneficial impact on students' attitudes toward science. Student attitudes regarding school science seem to be more closely linked to social contact or cooperation.

**Key words:** Perception towards Science, relevance of science teaching, Secondary Science, Student Survey

## INTRODUCTION

ORGANISATION OF CLASSROOM

The employment of advanced technology tools is increasingly becoming the norm around the world. With the advancement of science and technology, there is a higher demand for people to study science (Anwer, Iqbal and Harrison, 2012). Science and technological advancements have a direct or indirect impact on our life.

High levels of technological innovation are linked to the usage of mechanical instruments, chemical substances, communication, and medical services. The advancement of science and technology necessitates the hiring of skilled and disciplined individuals with a lesser degree of education (Mabula, 2012).

Some aspects of teaching are associated with student accomplishment and social development. Emotional support, classroom organisation, and instructional support are the three major categories that each of the 10 qualities comes under.

Education is a process that aims to prepare students to become community members who make a good contribution.

Teachers provide emotional support to students by assisting them in developing warm, supportive relationships, experiencing satisfaction and excitement about learning, feeling at ease in the classroom, and experiencing appropriate levels of autonomy or independence. This includes the following:

- A positive climate — the teachers' satisfaction and emotional connection with students, as well as the type of peer relations;
- Negative climate — the degree to which teachers and/or students express negativity in the classroom, such as anger, hostility, or aggression;
- Teacher sensitivity — teachers' responsiveness to students' academic and emotional needs; and
- Regard for student perspectives — the degree to which teachers' interactions with students and classroom activities place an emphasis on students' intelligence.

Teachers assist children develop skills to govern their own behaviour, get the most out of each school day, and retain interest in learning activities through classroom structure. This includes the following:

- How successfully teachers monitor, prevent, and redirect misbehaviour;
- Productivity — how well the classroom runs in terms of routines, how well students understand the routine, and how well teachers provide activities and directions so that students can spend as much time as possible learning; and
- Instructional learning formats — how teachers engage students in activities and facilitate activities so that learning opportunities are maximised.
- The techniques in which teachers effectively support pupils' cognitive development and language progress are referred to as instructional support. This includes:
- Concept development — how teachers use instructional discussions and activities to promote students' higher-order thinking skills and cognition rather than rote instruction;
- Quality of feedback — how teachers use feedback to students to increase participation and learning; and
- Language modelling — the extent to which teachers stimulate, facilitate, and encourage students' use of language.

## RATIONALE OF THE STUDY

## OBJECTIVES

The objective of the present study is:

1. To study opinions of Science teachers on Active learning in Science
2. To study opinions of Science male and female teachers on Active Learning in Science

To study opinions of Science graduates and post- graduates teachers on Active Learning in Science.

## RESEARCH QUESTIONS

1. What are the opinions of students on Active learning in Biology?
2. What are the opinions of male and female students on Active Learning in Biology?
3. What are the opinions of Secondary and Higher Secondary students on Active Learning in Biology?

## RESEARCH METHODOLOGY

This study is a survey-based descriptive research study.

**Population**

The population comprises of Science teachers of English Medium Schools across Gujarat.

**Sample**

The sample for the study comprised of

**Sampling Technique**

The researcher had use Random sampling techniques to select the sample.

**Research Tools**

The researcher had use an opinnionnaire to collect the opinions from Science teachers on Active learning in Science.

**Data Analysis Technique**

The researcher had use percentage analysis to analyze the collected data.

## ATTITUDE SURVEY

(1) Teaching strategies, (2) students interest in Biology, (3) Aptitude in Biology, (4) Students Independent Learning, (5) Activities in Biology Class, and (6) laboratory experiences.

| S. NO. | STATEMENT | Always | Often | Sometimes | Rarely | Never |
|---|---|---|---|---|---|---|
| | **Teaching strategies** | 366 | | | | |
| 1 | Questions asked at the end of chapter make me remember biology concepts easily. | 32 | 23 | 130 | 125 | 56 |
| 2 | Biology class become interesting if they are accompanied by activity | 128 | 110 | 59 | 38 | 31 |
| 3 | I learn Biological concepts easily during the class lectures and I learn best when I am an active participant in class. | 119 | 126 | 61 | 40 | 20 |
| 4 | I enjoy participating in classroom activities. | 206 | 91 | 37 | 23 | 9 |
| 5 | Every topic is accompanied by a quick revision. | 98 | 101 | 92 | 46 | 29 |
| | **Students interest in Biology** | | | | | |
| 6 | I don't like to study Biology subject. | 77 | 76 | 34 | 93 | 96 |
| 7 | If given choice I will always like to learn concepts of biology. | 103 | 83 | 66 | 32 | 34 |
| 8 | While reading or watching anything related to biology I always give a pause and like to know about it. | 131 | 111 | 93 | 21 | 10 |
| 9 | I like biology but the huge content in biology vanishes all my interest. | 123 | 115 | 56 | 41 | 31 |
| 10 | Biology is related to daily life that is why it draws my interest, but I would not choose biology as my career option. | 99 | 86 | 93 | 78 | 10 |
| | **Aptitude in Biology** | | | | | |
| 11 | I prefer to learn topics in biology which improves critical thinking ability. | 78 | 86 | 69 | 74 | 59 |
| 12 | I can easily relate biological concept taught in class in my day to day life. | 133 | 101 | 95 | 29 | 8 |
| 13 | I prefer activities done in class rather that simple teaching. | 191 | 96 | 42 | 30 | 7 |
| 14 | For the most part, the activities done in the class are too simple for my level. | 62 | 48 | 39 | 117 | 100 |
| 15 | Reading the textbook will assist me in comprehending the topics presented in class. | 74 | 86 | 81 | 71 | 54 |

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Students Independent Learning** | | | | | |
| 16 | I don't like to work in group, as I can handle things on my own. | 49 | 53 | 61 | 96 | 107 |
| 17 | I feel that learning the content taught in this class is entirely my responsibility. | 95 | 97 | 102 | 68 | 4 |
| 18 | I like to communicate with people in class rather than answering questions aloud. | 86 | 75 | 74 | 62 | 69 |
| 19 | I prefer classes where the only method of instructio n is lecture. | 49 | 52 | 68 | 83 | 114 |
| 20 | Doing rather than listening is how I learn. | 105 | 102 | 59 | 50 | 50 |
| | **Activities in Biology Class** | | | | | |
| 21 | I always have doubt at the end of activity conducted in the class. | 63 | 71 | 86 | 91 | 55 |
| 22 | Working in groups is something I enjoy doing. | 103 | 88 | 72 | 66 | 37 |
| 23 | When I study, I occasionally find myself wondering about the activities. | 95 | 96 | 89 | 62 | 24 |
| 24 | I'll learn more about the content if I do the exercise s in the student workbook. | 69 | 76 | 72 | 59 | 90 |
| 25 | In class, I enjoy taking part in group discussions. | 82 | 86 | 90 | 63 | 45 |
| | **Laboratory experiences** | | | | | |
| 26 | Working in groups is something I enjoy doing. | 111 | 72 | 83 | 38 | 62 |
| 27 | Lab activity make me connect the theory concepts of biology. | 88 | 90 | 70 | 93 | 25 |
| 28 | I learn best when I am doing the activity alone. | 63 | 81 | 96 | 30 | 96 |
| 29 | I remember most of the biological content when I work in lab. | 96 | 52 | 68 | 72 | 78 |
| 30 | I don't like to work in biology laboratory. | 42 | 66 | 90 | 73 | 95 |

## FINDINGS OF THE STUDY

### (1) Teaching strategies

The character of "whom" we are educating is an aspect of classroom instruction that appears to be continually overlooked. Students are frequently considered as interchangeable things, despite the fact that individual students, their learning histories, and personal qualities play a crucial part in the student-centered nature of "how" we strive to teach. Teachers can create classroom environments to maximise student learning in constructivism, but learning is the responsibility of students. As a result, each student's prior experience, attitude, and motivation toward the material being learned, confidence in his or her ability to learn, and relative

participation in the learning environment are all thought to be important factors in promoting the learning of new ideas, whether biological or not. Finally, putting individual students in classrooms results in group interactions that can help or hinder learning for different people. Striking to create biology classroom environments that maximise fairness, in which all students have opportunities to speak up, all students can see their personal connections to biology, all students have time to think, all students can pose questions and build their biology knowledge, and all students are explicitly welcomed into the intellectual discussion of biology.

**(2) Students interest in Biology**

The majority of students have a positive interest in Biology, as evidenced by their preference for direct, active participation in the process of information acquisition through the study and exploration of living organisms, as well as the execution and assessment of practical tasks and experiments. Students were asked whatever aspects of biology they were interested in learning more about. When it comes to topics like biotechnology, botany, zoology, genetics, microbiology, and biochemistry, the research shows that genetics, zoology, and microbiology are the most popular. The students are questioned about why they find biology to be both intriguing and necessary. When the inputs are examined, it becomes evident that they find it intriguing and necessary, as biology contains information about nature and human beings, human anatomy, healthy nature, healthy existence, genetics, and medicine.

**(3) Aptitude in Biology**

Biology has always attracted students with its beautiful curriculum and arena. Majority of the students believes that sometimes the critical thinking is improved by biological topic whereas average number of students are not in the favour of the statement. Most of the students were of the opinion that topics in biology can be easily applied in their daily life however very few percentage stated that they could not apply the biological concepts in their daily life. Female students have a greater insight of application of biological information in day to day life. Few students opined that the activities done in the biology lecture is very simple for their level while moderate students are of the opinion that activities done in biology class is as per their level of understanding. Many students opined that reading the help them to comprehend in biology topic. Students of higher secondary feel that the activities are too simple for their level while students of secondary level enjoy the activities.

**(4) Students Independent Learning**

Average number of students said that they don't like to work in group, as they could handle things by themselves while majority students liked to work in group. Many students accepted that learning the content taught in this class is always their responsibility, while some said that learning the content taught in the class is sometimes their responsibility. Many female student and students of higher secondary level were of the opinion that learning the content is entirely their responsibility. Boys opined that they like to communicate with people in class rather than answering questions aloud. Whereas few girls said that they like to answer the questions asked during the class. Majority students said that activities performed in the class is always better

that classes where the only method of instruction is lecture. While some feel that activities performed in the class is sometimes better that classes where the only method of instruction is lecture

**(5) Activities in Biology Class**

Many girls opined that they always have doubt at the end of activity conducted in the class. While some ranted that they rarely have doubt at the end of activity conducted in the class. Students of all grades told that they always enjoy working in groups while some told that they never like to work in groups. Average number of the students accepted that most of the time they wonder about the activities done in the class and help them to recall the biological concepts. While very few students opted that they never or rarely wonder about the activities done in the class. Many girls were found to always prefer to learn the content of the exercise given in the textbook, while senior secondary students admitted that learning the content from textbook is sometimes beneficial to them and most of the time it is not helpful. Students of secondary level always like to take part in group discussions whereas students of higher secondary level rarely like to take part in group discussions.

**(6) Laboratory experiences**

Girls are less likely than boys to handle laboratory equipment, and this is linked to a lack of enthusiasm in science and self-confidence in science abilities in girls. It's likely that assisting females in developing instrumentation skills will encourage them to participate more actively in science and increase their enthusiasm for learning. According to some study, traditional laboratory experiences centred on the acquisition of practical skills can assist students in achieving other objectives. Those concentrating on student accomplishment or other cognitive outcomes are far more common than those focusing on the effect of typical laboratory experiences on student engagement. Positive attitudes are formed as a result of laboratory experiences. Students frequently lack a clear concept of the general or specific goals of their work in normal science laboratory activities, and their perception of lesson goals frequently differs from their teachers' goals for the same sessions. The objective of a normal laboratory study and the design of the experiments are frequently overlooked by students. They don't relate the experiment to what they've done before, and they don't notice the differences between their own concepts, their colleagues' concepts, and the scientific community's concepts.

**CONCLUSION**

Human learning is a brain biological phenomena. Synapses need time to activate, and critical brain circuits take time to recruit. However, the organisation of class time with students frequently does not allow for time for pupils to think about and discuss biology. Waiting time practise may not be adequate for some pupils to assemble their thoughts and/or to gain the confidence to share those thoughts. Many students may want more scaffolding—instruction and guidance—in order to make the best use of the time they have been allocated to think. Allowing students to write is one method instructors might manage the learning environment to increase the amount of students who have access (in this example, adequate time) to participate in biological thinking. In undergraduate science classes, changing the nature of the classroom setting to be more participative and

encouraging a collaborative, rather than competitive, atmosphere. Students may also discover new confusions or points of dispute about topics with their peers during these pair talks, prompting queries to be asked of the instructor. As previously stated, there is reasonable evidence that integrated instructional units assist students in learning scientific inquiry methods. Such instructional units, on the other hand, do not appear to assist students acquire powerful ideas of the nature of science on their own.

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