



# EFFECT OF EXPERIENTIAL LEARNING TECHNIQUE ON ACHIEVEMENT IN SCIENCE AMONG IX CLASS STUDENTS

Alka Sharma

Research Scholar, Department of Education, Panjab University, Chandigarh, India

Dr. Gurmit Singh

Associate Professor, Malwa Central College of Education for Women, Ludhiana, Punjab, India

## Abstract

*The study was undertaken to investigate the effect of experiential learning technique on achievement in science of IX grade students. Out of the two Government Schools chosen for the experiment in the Ludhiana District of Punjab (India), two complete sections of the IX class were taken. Every school had an experimental group assigned to one segment and a control group assigned to the other at random. The students who attended 85% classes during experiment were taken as sample for the analysis. The Sample thus consisted of 106 students of IX class (52 Experimental Group + 54 control Group). Random pre-test -post-test design was used. Test of academic achievement in science for IX graders developed by investigator was used to check the achievement in science. The study's findings revealed that the achievement in science of group exposed to experiential learning technique was significantly better than that of group taught through traditional technique.*

**Key words:** Achievement in science, experiential learning, IX class students.

## Introduction

Academic performance, often called scholastic achievement, is a student's ability to perform satisfactorily in academic subjects, such as science or arithmetic, as demonstrated by their grades or school marks. It is the most obvious sign that someone has learned anything. Thus, learning cannot be recognized unless performance in related activities is demonstrated. Academic accomplishment is primarily determined by learning, although low achievement is not always a sign of a lack of learning.

Achievement in science can be defined as knowledge gained or a skill developed as a result of studying science as a topic (Kumar, 2010). Any changes in human behavior brought about by a variety of scientific learning experiences, both theoretical and practical, are referred to as scientific achievement. Therefore, the level of accomplishment or expertise attained in a particular scientific discipline is referred to as science achievement. It generally relates to the scientific course grade (Bala, 2019). According to Suman (2020), academic achievement in the sciences is defined as students' performance on standardized tests, which

is expressed in grades or units based on their level of knowledge, ability to learn, or proficiency in assignments.

Understanding scientific concepts, applying knowledge to new situations, and applying logic to interpret data, identify gaps in the information, and other tasks are examples of achievement in science.

Research has indicated that instructional methods have a noteworthy impact on students' academic performance of students. One such approach is experiential learning, which is regarded as a progressive mode of instruction that gives pupils the chance to develop a deeper comprehension of the subject matter.

### **Experiential Learning**

A variety of terms have been used to describe learning from experience. The term "experienced-based learning" was first used by Wolfe and Byrne (1975), but John Dewey (Dewey & Dewey, 1915) discussed "learning by doing." The theory of experience learning is a new theory based on an old idea. Experiential learning has always been employed in education, even though Kolb developed the concept and his Learning Styles Inventory in 1971 (Kolb, 1971). Experience-based learning, often known as learning by doing, began when some of our primate ancestors opted to teach their offspring how hunt or start a fire by having them do it themselves. The most well-known manner that it has been introduced into contemporary education for a long time is through field excursions.

Learning by doing or via experience is referred to as experiential learning (Northern Illinois University Center for Innovative Teaching and Learning, 2012). Personal experience serves as the primary learning tool in experiential learning because it enables students to evaluate the viability of the concepts they have developed. Wurdinger and Carlson (2010) compare experiential learning to taking students to the zoo to see or engage with the animals rather than having them read about them in a book. As a result, rather than hearing about or reading about other people's experiences, students learn new things and have personal experiences.

As the process' facilitator, the instructor must actively participate in experiential learning, as does the student body. According to the Center for Teaching Excellence at Miami University (2023), it is meant to be a dynamic, engaging substitute for traditional classroom instruction that fosters collaboration and interaction among participants.

### **Emergence of the Problem**

According to Shivani (2018), Raina (2019), Thote and Gowri (2020), Nwuba and Osuafor (2021), Rukhsana et al. (2022), and Lal (2023), science achievement has been significantly enhanced by the experiential learning technique.

On the other hand, Yousaf and Nawaz (2020) and Okoye and Oluchi (2022) found no significant difference in achievement between groups taught using traditional methods and experiential learning. Conversely, De Bilde et al. (2015) came to the conclusion that not all experiential techniques were linked to higher learning gains in terms of academic achievement.

It is found that there are not enough studies being done in India on the suggested topic of science for ninth-graders. The influence of the experiential learning technique on achievement in science among students

in the IX grade cannot thus be concluded with certainty, which makes the planned study seem entirely legitimate.

### Objective

1. To investigate the significance of difference in achievement in science of the groups taught experiential learning technique and group taught through traditional method of teaching.

### Hypotheses

1. There will be no significant difference in achievement in science of the groups taught through experiential learning technique and group taught through traditional method of teaching.

**Experimental design:** To study the effectiveness of experiential learning technique on achievement in science randomized group pre-test post-test design was used.

**Sample:** Two Government Schools of Ludhiana district, Punjab (India) which permitted the investigator to conduct experiment were selected. Two intact sections of IX class were selected from each selected school. The selected sections were matched on the basis of achievement in science pre-test. One section was randomly assigned to experimental and the other to control group in each school. The students who attended 85% classes during experiment were taken as sample for the analysis. The Sample thus consisted of 106 students of IX class (52 Experimental Group + 54 control Group).

### Result and Discussion

To investigate the significance of difference in achievement in science of groups taught through experiential learning and traditional teaching, mean, standard deviation and t-ratio were worked out and the values are given in table 1.

**Table 1: Significance of difference in Achievement in Science of groups taught through Experiential Learning and Traditional teaching.**

Groups	N	Mean	Standard Deviation	t-ratio
Achievement in Science (gain scores) of Experimental Group	52	13.36	5.99	10.27*
Achievement in Science (gain scores) of Control Group	54	2.49	4.87	

*\*Significant at 0.01 level of significance*

Table 1 reveals that the value of mean of achievement in Science for experimental and control groups are 13.36 and 2.49 respectively. The value of standard deviation of achievement in Science for experimental and control groups are 5.99 and 4.87 respectively. The value of t-ratio is 10.27 which is significant ( $p < 0.01$ ). The achievement in science of the group exposed to experiential learning is significantly better than that of control group. Hypothesis 1 which states that "There will be no significant difference in achievement in science of the groups taught through experiential learning technique and group taught through traditional method of teaching, is thus rejected.

This result is consistent with previous research by Raina (2019), Thote and Gowri (2020), Nwuba and Osuafor (2021), Rukhsana et al. (2022), Lal (2023), and Shivani (2018). However, it conflicts with the findings of research by Okoye and Oluchi (2022) and Yousaf and Nawaz (2020).

Nowadays, experiential learning has overtaken the conventional approach to education, in which students were taught certain behaviors using a behavioral approach and were expected to remain passive (Javed et al., 2014; Jeyaraj, 2019). Experiential learning occurs when students apply what they have learned in the classroom to real-world situations in order to deepen their comprehension and learning (Chana, 2012). Students like experiential learning and believe that it is a more effective form of instruction than what is taught in a typical classroom (Phipps et al., 2001). This demonstrates why studying science through experience is preferable than traditional methods.

**Implementations:** The study's findings demonstrated that experiential learning is superior to traditional science teaching methods. Science-related subjects call for experiential learning activities that may transform the topic, material, and concept to co-create learning. These activities also give students a high level of incentive to apply their intellect to achieve the desired learning outcome. Thus, it is suggested that teachers employ the method of experiential learning when teaching science to their students.

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