

# Promoting learners autonomy through experiential learning among secondary school students

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**Abstract:** The research paper ascertains learner autonomy through experiential learning among the students of standard eight. Experiential learning in science could be learner-friendly and endeavours to foster learner autonomy by the implementation of 5E's constructivist instructional module. In experiential learning students are playing an active role and learn to reflect on their learning experiences. Thus helps in developing skills, attitudes, and new ways of thinking among the learners. In the present study, the researcher has reviewed prior studies and in-depth analysis of literature was done to formulate hypothesis. The quasi-experimental method was designed for students from the SSC board and English as the medium of instruction. The 41 students were taught using the conventional method of teaching and 43 students were taught using 5 E's constructivist instructional module and experiential learning. The 5E's constructivist instructional module prepared for the topic of physical and chemical change. The 5E constructivist learning model includes Engage, Explore, Explain, Elaborate and Evaluate. The Pre-test was conducted before the implementation of the program and the post-test was administered after the program. Data were analyzed by applying the t-test and the hypotheses were tested. The study revealed that the experimental group has performed better in the achievement test in science as compared to the control group. The researcher found that experiential learning in science increases the autonomy among the learners, and it is best achieved when teacher acts as a facilitator of learning. Thus, it can be said that instructional program based on 5E's constructivist approach and experiential learning activities enhances learner autonomy. The study recommended that, such learning can be imparted in different curriculum and also for different age groups of students.

**Key Words:** Experiential Learning, 5E's constructivist Instructional Module, learner Autonomy, Achievement

## 1. INTRODUCTION:

“Tell me and I forget,  
teach me and I may remember  
involve me and I learn”

~ Benjamin Franklin.

Today's Education scenario is incorporated with technology. Modular teaching is one of the widespread and recognizes teaching-learning technique. Considering individual difference among the learners, it is necessary to plan appropriate teaching strategies for them. Such learning can impart through experiential learning with instructional module. The learning which enhances hands-on experiences leads to meaningful learning among the students.

Experiential Learning is one of the approaches of constructivist learning (Amin 2011). As stated by Lewis and Williams “In its simplest form, experiential learning means learning from experience or learning by doing”. Experiential education first immerses learners in an experience and then encourages reflection about the experience to develop new skills, new attitudes or new ways of thinking.” (Lewis & William 1994, p.5)

## 2. LITERATURE REVIEW:

Sanya Sachdeva (2017) has highlighted the role of experiential learning which encourages dialogue, involves students, and requires them to act. The inquiry was based on how students in Indian classrooms feel different when they are taught with experiential learning. The author emphasized the perception of students towards learning of economics with experiential learning. Sati Shinde (2016) studied the constructivist approach to mathematics instruction for eight standard students. The researcher has developed an instructional program for the students and studied the effectiveness on problem-solving skills. A factorial design was used to conduct an experiment, considering two groups of the study as a control and experimental group in SSC board school. The study found that a constructivist approach based instructional program was effective in enhancing problem-solving skills among the students. Onwu, I. C., & Anyor, J. W. (2014) investigated the effect of autonomous learning using a matrix laboratory on integrated science education for students of the university of agriculture. The post-test quasi-experimental research design was adopted with 30 students in the experimental group and 44 students in the control group. The results revealed that there was a significant difference in mean achievement scores of students in the experimental group. Abdulkadir (2013) studied the effect of

the 5E learning cycle model, based on the constructivist approach for teaching trigonometry for the 10<sup>th</sup> grade of elementary mathematics education. The statistical findings of the research showed that experimental group has scored significantly high in achievement as compared to control group. **Khalid, A., & Azeem, M. (2012)** studied constructivist versus traditional approach in teacher education. The instructional module was based on a constructivist approach and implemented for the experimental group. The traditional method adopted for the control group in teacher education at science college. The study found that there was a significant difference in the experiment group due to teaching student teachers of the experimental group with a constructivist approach. **Mehra and Kaur (2010)** conducted a study on the effectiveness of experiential learning strategy on the enhancement of environmental awareness among primary school students. The experimental group was exposed to experiential learning strategy and students of the control group were taught the same topic by traditional learning method. The findings of the study revealed that the students taught EVS by experiential learning strategy exhibited better environmental awareness than those taught by traditional learning methods. The prior research helped researcher to adhere experimental study and decided to promote learner autonomy using experiential learning among secondary school students.

### 3. THE RATIONALE OF THE STUDY:

The present education scenario is changing, so there is a need to promote learning based on a learner-centered approach. The idea of the experiential learning with 5E's constructivist instructional module in science provides a meaningful learning experience among the students of standard eight. And the instruction focuses on building the learners to reflect on the learning process at their own pace. The instructional module program could be used for enhancing achievement in science and influence learner autonomy through experiential learning. The 5E's of the constructivist approach are Engage, Explore, Explain, Elaborate, and Evaluate. The study was intended for eight standard students of SSC board curriculum.

### 4. SIGNIFICANCE OF THE STUDY:

Learning is the process of acquiring new skills, knowledge, behavior, attitudes, and achievement of values. It involves an ongoing, active process of inquiry, engagement, and participation in the learning process. Engaging the learners in the different learning process in science increases their attention and motivates them to practice critical thinking skills which intern promote autonomy for insightful learning experiences. The researcher believed that there is an urge to incorporate the instructional strategies in the science classroom with experiential learning to promote learner autonomy in classroom which leads to a fun learning environment. The study has implications for curriculum designers to include instructional module for different grade levels. The study also expected to be beneficial to students in science subjects, as well as other subjects can be incorporated through it. As a consequence of teaching learner through the experiential learning with instructional program would enhance their achievement scores to higher level.

### 5. OBJECTIVES OF THE STUDY:

- To study the pre-test achievement scores from experimental and control group of eight standard students.
- To study the post-test achievement scores from experimental and control group of eight standard students.
- To study the effectiveness of developed instructional module with traditional method of teaching in relation to achievement scores of experimental group of standard eight.

### 6. HYPOTHESIS OF THE STUDY:

To facilitate present study the following hypotheses were formulated and tested at 0.05 level of significance.

- There is no significant difference between the pre-test achievement scores from experimental and control groups of eight standard students.
- There is no significant difference between the post-test achievement scores from experimental and control group of eight standard students.
- There is no significant difference between the mean scores of pre-test and post-test achievement in science from experimental group of eight standard students.

### 7. METHODOLOGY OF THE STUDY:

The study was based on the quasi-experimental method along with pre-test post-test parallel group design. The aim was to enhance learner autonomy through experimental learning for experimental group and conventional method for control group students. Also find out the effect on learning of topic physical and chemical changes through instructional module. The population of the study consists of students of standard eight from SSC board curriculum and English as a medium of instruction. The experimental and the control group included 43 and 41 students respectively. The experimental group was taught by experiential learning with instructional module, and control group was taught the same topic by conventional method of teaching.

### 7.1 Intervention Program

The intervention program was conducted for the experimental group and conventional method was used for the control group of the study. The program was validated by the expert, their suggestions and feedback was incorporated and module was modified accordingly. The appropriate learning experiences were developed by the researcher. The program includes varied task, group and individual activities, think and share with partner, videos & group discussion, students’ reflection on learning for the aforementioned topic in science.

The pre-test was conducted for both experimental and control group of students. After execution of the program post-test was conducted for both the groups. The effectiveness was measured by comparing pre-test and post-test scores of control and experimental group using statistical techniques. The significant difference was measured by comparing pre test and post test achievement scores of experimental group.

### 8. RESULTS AND ANALYSIS:

**Null hypothesis 1:** There is no significant difference between the pre-test achievement scores from experimental and control groups of eight standard students.

**Table 1. Pre test achievement scores of EG and CG**

Group	N	Mean	SD	‘t’ ratio	P (two tailed)
Experimental Group	43	11.76	3.53	1.35	0.1807
Control Group	41	10.85	2.55		

Table 1 shows that the obtained t- ratio was 1.35 (P = 0.1807). The difference between the mean is not significant at 0.05 level. Hence null hypothesis is accepted. The mean scores in achievement test of samples from experimental group do not differ significantly. There is no significant difference in achievement between experimental group and control group. Therefore, the null hypothesis stating that, there is no significant difference in mean scores of pre-test achievement in science between experimental and control group before implementation of the program.

**Null hypothesis 2:** There is no significant difference between the post-test achievement scores from experimental and control group of eight standard students.

**Table 2. Post test achievement scores of EG and CG**

Group	N	Mean	SD	‘t’ ratio	P (two tailed)
Experimental Group	43	18.04	2.79	7.76	<.0001
Control Group	41	13.95	1.96		

Table 2 shows that obtained t- ratio was 7.76 (p<.0001).The difference between the mean is significant at 0.05 level. Hence null hypothesis is rejected. The mean scores in achievement test from experimental group are significantly greater than control group. Therefore, the null hypothesis stating that, there is a significant difference in mean scores of post test achievement in science between experimental and control group after the implementation of the program.

**Null hypothesis 3:** There is no significant difference between the mean scores of pre-test and post-test achievement in science from experimental group of eight standard students.

**Table 3. t-test between mean scores of pre-test and post-test Experimental Group.**

Experimental Group	N	Mean	SD	‘t’ ratio	P (two tailed)
Pre test	43	11.76	3.53	9.15	<.0001
Post test	43	18.04	2.79		

Table 3 shows that obtained t- ratio was 9.15 (P <.0001).The difference between the mean is significant at 0.05 level. Hence null hypothesis is rejected. The mean scores in post-test are significantly greater than the mean scores of pre-test from experimental group. It means there is a significant difference in post test scores after implementation of the program. The finding shows that the experimental group was benefited with the program.

### 9. FINDINGS AND DISCUSSION:

In the present study, it was found that there is no significant difference in pre- test mean scores in science between experimental and control group before implementation of experiential learning among the students of students eight. The study revealed that there is a significant difference in post-test achievement scores in science between experimental and control group after the treatment. Instructional module was found to be effective than traditional method of teaching. After implementation of the experiential learning there was a change in students’ perception and

contributed to promote the learners autonomy. The 5E's of constructivist approach found to be significant in raising achievement scores of students from experimental group as compared to traditional approach from control group students. Sanya Sachdeva (2017) has given importance to role of experiential learning and encouraged dialogue, involvement of students in learning process. Study conducted by Abdulkadir showed that the 5E learning cycle based on constructivist approach has a positive effect on achievement levels and attitude of the experimental group of the study. Thus, this study has provided evidence which support the result of present study. Engaging learners in learning process increased their autonomy, and motivated to be creative in sharing their learning experience. The researcher found that experiential learning with 5 E's constructivist instructional program strengthens students' potential to develop their deeper understanding of concepts.

## 10. CONCLUSION:

The study concluded that experiential learning in science promotes learner autonomy among the students of standard eight. Moreover, the 5 E's constructivist instructional module is effective in enhancing achievement in science as compared to the conventional method of teaching. The innovative approaches in teaching-learning will be beneficial for learners to boost their deeper understanding as well as interest in science among the students. The study concluded that experiential learning in science enhances learner autonomy, and it is best achieved when teacher acts as a facilitator of learning. In sum up, the results of the study would provide a framework for educators to implement best practices that will lead to raise the achievement level of students in science.

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