



# A STUDY ON THE EFFECT OF GENDER IN DEVELOPING CRITICAL THINKING SKILLS OF SECONDARY SCHOOL STUDENTS THROUGH KOLB'S EXPERIENTIAL LEARNING TECHNIQUE

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**Abstract:** This research paper tries to explain about whether gender has an effect on critical thinking skills of secondary school students while using Experiential Learning Technique. The researcher developed intervention programmes based on Kolb's Experiential Learning Technique in the subject of science. This experimental study used pre-test post-test control group design. The tool for measuring critical thinking skills was a test of critical thinking developed by the researcher. The sample consisted of 60 students in a class of grade 9 where 30 students were girls and 30 students were boys. The study was conducted in a school in Maharashtra, India. Pre-test was conducted before and post-test were conducted after the intervention programme. The study shows that there is no effect of gender on critical thinking skills of students. Critical Thinking skills were equally developed in girl students and boy students in the sample.

**Index Terms -** Experiential Learning, Secondary school students, critical thinking skills, Gender.

## 1. INTRODUCTION

By education we mean the all-round development of the individual. This all-round development is to be understood clearly by all of us. The real meaning of all-round development is holistic development of the child. Our educational system should focus on this holistic development of each and every child. But how far this meaning of education is conceived by the stakeholders of education is an interesting question. Most of the times we give emphasis to bookish knowledge in our schools. The development of thinking skills is not being taken care of always. But we have to understand that thinking skills are most important for each and every one of our students. Especially, critical thinking skills are to be considered with utmost importance in schools for the holistic development of children. Critical thinking skills helps our children to be successful in life. If the development of thinking skills is our priority, then we should be careful about the methods of teaching that we use in our classrooms. We should use child centered methods for teaching our students.

The researcher used Kolb's Experiential Learning Technique for teaching of science in this study. Science is considered as an intellectual subject. In this study, Science is used as subject for developing critical thinking skills in students. The gender difference in learners is also taken in to account for the study as the present research focusses on the effect of gender on critical thinking skills. The researcher wanted to check whether gender is a factor to be considered in developing critical thinking skills of school students.

## II. NEED OF THE STUDY

Critical thinking skills are very essential for every child to lead a successful life. The competency of the child can be enhanced by improving his critical Thinking skills. Science is a subject that is to be taught through experiences and activities. When we use learner centered method for teaching science, the thinking skills especially, critical thinking skills of the child can be enhanced. Kol's Experiential Learning Technique can be used to teach the concepts of science effectively. In this technique, the concepts are taught by giving direct experience to the students. This follows the principle of constructivism put forward mainly by Jean Piaget. The role of teacher is that of a facilitator. Students construct knowledge by their own from the experiences they get in the class.

It is of great importance that whether gender has any role in developing critical thinking skills of students. Majority of the schools in India are co-educational schools where girls and boys are treated equally and form equal numbers (mostly) in the class. Through this research, the researcher wanted to study whether the skill development of boys and girls are equal or one group is superior or inferior to the other group in terms of critical thinking skills.

## III. THOERETICAL FRAMEWORK

### • KOLB'S EXPERIENTIAL LEARNING TECHNIQUE

David A Kolb put forward the theory of experiential learning mainly from the works of Jean Piaget, John Dewey etc. This theory of experiential learning is based on the principle of constructivism. In experiential learning, students are given direct experiences related to the concept. From the experiences they get in the process of learning, they construct the meaning and levels of the concept. Experiential learning consists of a cycle where there are four stages. The stages of experiential learning are as follows:

- ❖ **Concrete Experience:** In the process of learning, the child is provided with authentic situations where he come across concrete experiences related to the concept.
- ❖ **Reflective Observation:** One of the significant steps in experiential learning is reflective observation where, the student reflects on his experience. Through this process, the student reflects or understands about the experience given to him.
- ❖ **Abstract Conceptualisation:** In this stage, from reflection the student forms abstract concepts or understanding about the concept.
- ❖ **Active experimentation:** The abstract concept are then tested in new situations where the concept formation happens.

### • CRITICAL THINKING SKILLS

According to Facione, "Critical thinking can be defined as the process of purposeful, self-regulatory Judgement"(1). In the process of tool development (test for measuring critical thinking skills) the Delphi Report, 1990 is used as the key reference document. The subskills of critical thinking skill was set on the basis of this Delphi Report.

The development of Critical Thinking skills is to be seen with utmost importance. These skills help our children to lead a successful life in future.

## IV. OBJECTIVES OF THE STUDY

- ❖ To develop activity plans based on Experiential Learning for secondary school children.
- ❖ To study the effect of gender on critical thinking skills of secondary school children.

## V. HYPOTHESIS OF THE STUDY

- ❖ There will be no significant difference between the mean scores of pretest and post test of experimental group in developing critical thinking skills in science subject when their pre-critical thinking skills were taken as covariate.

## VI. METHODOLOGY OF THE STUDY

The research design used for this study is one group pre-test post-test design. The researcher conducted activity programs based on Kolb's Experiential Learning Technique for the students of the selected school. The program was conducted for a time period of 5 weeks. Activity plans were made for the topics in Laws of Motion of Grade 9. The results of the test were analysed through one way ANCOVA.

### 4.1 Tools and techniques used for the study

The tools used for this study are as below:

- ❖ Activity plans based on Kol's Experiential Learning Technique.
- ❖ Test for measuring critical Thinking skills in science for secondary school students.

The above mentioned tools were made under the guidance of experts in the field of Education in Maharashtra and the validity and reliability was also established.

### 4.2 Population and Sample of the study

The students of grade 9 are taken as population and the sample was selected through convenient sampling method from a school in Maharashtra.

## V. Findings of the study

Table 1 shows the results of one way ANCOVA which was conducted on the test results. Gender-wise analysis of the test results with corrected mean scores are given in Table 1

Table 1

Summary of One Way ANCOVA of post test scores of Critical Thinking Skills of Secondary School Students by taking their Pre-Critical Thinking Skills as Covariates

Source of Variance	df	SSy.x	MSSy.x	Fy.x	Remark
Gender	1	0.55	0.55	0.072	p>0.05
Error	58	671.85	7.635		

From table 1, we can understand that the adjusted F-value for Gender is 0.72 which is not significant at 0.05 level. Thus the null hypothesis that There will be no significant difference between the mean scores of pretest and post test of experimental group in developing critical thinking skills in science subject when their pre-critical thinking skills were taken as covariate is accepted.

It is now clear from the data in the table that the adjusted mean scores of critical thinking skills of secondary school students do not differ significantly when their pre-critical thinking skills were taken as covariates.

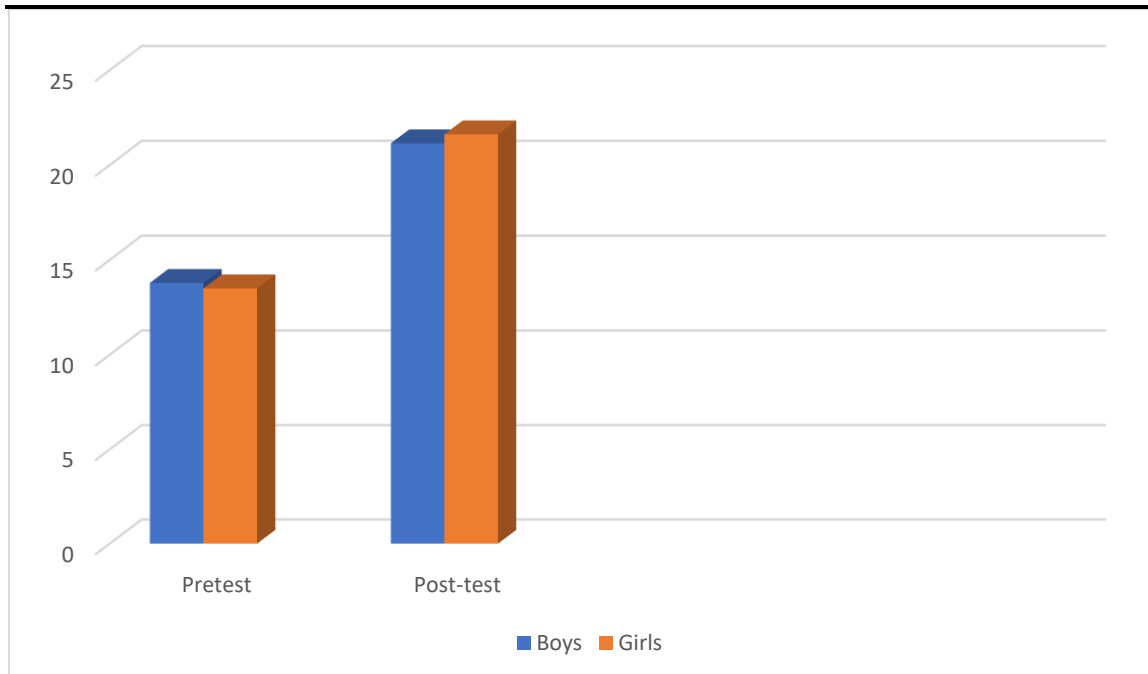
Table 2 shows the adjusted mean scores of post-test critical thinking skills of girl students and boy students of the experimental group.

Table 2

Adjusted mean scores of girls and boys of Experimental Group

Group	Gender	Adjusted Mean	Std. Deviation
Exp	Girls	21.61	3.87
	Boys	21.153	4.59
	Total	21.80	4.30

From Table 2, we can observe that the adjusted mean score of Girl students in post test was 21.61 and that of boy students in post test was 21.15. Thus it is clear that secondary school girl students and boy students did not differ in critical thinking skills. The adjusted mean scores can be graphically shown as in graph 1



**Graph 1**

**Comparison of adjusted mean scores of pretest and post test of secondary school boys and girls in terms of critical Thinking skills**

### Discussion of Results

The present study was conducted to analyse the effect of gender on developing critical thinking skills of secondary school students. From the above set of data in table 1 and 2 and graph 1, it is clear that there is no significant difference between the mean scores of secondary school boys and girls with respect to critical thinking skills. Thus we can conclude that the average performance of secondary school boy students and girl students were equal. Gender was not an influencing factor in developing critical thinking skills of secondary school students.

### Conclusion

Kolb's experiential learning technique can be efficiently used to enhance the critical thinking skills of students. We should also understand that through experiential learning, thinking ability especially critical thinking skills of students with no regard to gender. The study revealed that Kolb's Experiential learning can be equally effective for boys and girls. So this type of techniques are to be employed in our schools for the benefit of our students. Teachers must be first made capable of handling these techniques for the process of learning in our schools. This can have a positive impact on the future of every nation.

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