WWW.IJRPR.COM

International Journal of Research Publication and Reviews

Journal homepage: www.ijrpr.com ISSN 2582-7421

Empowering Girls through the Development of Critical Thinking Skills in Science by Kolb's Experiential Learning Technique

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ABSTRACT

This study aims to investigate how girl students can be empowered through development of critical thinking skills in science. The researcher was interested in studying the effectiveness of Kolb's experiential learning in developing critical thinking skills of secondary school girl students. One group pretest-posttest design was used for this study. The tool used for this study was a test for measuring critical thinking skills in science which was constructed by the researcher. The sample of the study consisted of 40 girl students selected froma school in Palghar district, Maharashtra. The data of pretest and post-test wereanalysed through paired sample t test. The results of the study shows that the treatment was very effective in developing the critical thinking skills of girl students of secondary schools.

Keywords: critical thinking skills, girl students, Kolb's experiential learning, secondary school

Introduction

Children are considered as the future of any nation. If the future of a nation is to become bright, we have to make our children mentally, physically, emotionally and morally stable and balanced. The knowledge and skills of children are to be made more advanced and this make them capable of living in today's world. This should be the most important aim of education for a country. Now a days, Girls education is given more importance everywhere. Like boys, girls are able to do everything and if our girls are made more efficient, the future of our country becomes more bright. Science is considered as an important subject in school education. The importance of science in our daily life is well understood by all of us. In the olden days, the meaning of science was understood as the systematic acquisition of knowledge about the natural phenomenon. But now, we understand about the process aspect and also the product aspect of science. Process aspect is considered equally important with product aspect. This means that the method thatwe use for learning science is to be considered important.

Need of the study

It is a well-accepted fact that science teaching is to be done through activity method. Science is not to be considered as a theoretical subject.To quote a Chinese proverb, "What we hear, we forget. We may remember what we see. But when we do something, we understand it fully." But in our classes there is little regard to students' special needs or individual learning styles, and it is expected that some students will not absorb the material taught.(Rapaport, 2013) If the conditions in schools are to be changed there should be a change in the method used in teaching science. The traditional methods of teaching such as lecture method and demonstration methods are to be replaced by child centred methods.

Enrolment of girls in our schools have increased now. But how far the girls in our classrooms are benefitted from the learning process that we conduct in our schools are a matter of interest. In this study researcher had implemented Kolbs's experiential learning technique to enhance the critical thinking skills of girl students of secondary schools.

Kolb's Experiential Learning Cycle

Based on the works of Dewey, Piaget and Lewin, David Kolb put forward the theory of Experiential learning in 1970. The main concept of experiential learning was that learning occurs from experience. If the learning is to be made permanent, students should be given experience related to concept.
Kolb's experiential learning cycle consisted of the following four statges

- Concrete Experience

In this stage, the learner is provided with authentic situation and is engaged in this given situation

- Reflective Observation

The learner will be observing this situation carefully where he is also a part and will be reflecting on the experience. This is an important step in learning as reflection provides the base for learning

- Abstract Conceptualisation

During this stage, the reflection that the learner had in the previous stage will be transferred to abstract concepts.

- Active Experimentation

The concepts formed are tested in new situations and thus the process of learning is made more meaningful here.

Critical Thinking Skills

According to Facione "The ideal critical thinker is habitually inquisitive, well-informed, trustful of reason, open-minded, flexible, fair minded in evaluation, honest in facing personal biases, prudent in making judgments, willing to reconsider, clear about issues, orderly in complex matters, diligent in seeking relevant information, reasonable in the selection of criteria, focused in inquiry, and persistent in seeking results which are as precise as the subject and the circumstances of inquiry permit. Thus, educating good critical thinkers means working toward this ideal".(Facione, 1990)

Critical thinking skills are very essential for every one to lead a successful life in today's world. In this paper, researcher had developed intervention program based on Kolb's experiential learning technique for secondary school girl students.

Objectives of the study

- To develop an instrument based on Kolb's Experiential learning for testing critical thinking skills of secondary school students.
- To test the effectiveness of the program based on experiential learning on girl students od secondary schools.

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.

Methodology of the study

The present study is an experimental one which used the one group pre-test post-test design. Activity plans based on Kolb's experiential learning was implemented on the experimental group for 6 weeks. Pre-test was conducted before the experiment and post-test after the experiment. The results of the tests were analysed using paired sample t test.

Tools and techniques used for the study

The following tools were used for the experimental study.

- Intervention program based on Kolb's Experiential Learning technique.
- Critical thinking test in science

The tools were constructed by the researcher and were standardised by establishing the validity(face validity & content validity) and reliability(split half method).

Population and sample of the study

The population of the present study consisted of girl students of grade 9 in Palghar district, Maharashtra, India.

The sample was selected through convenient sampling method. 40 girl students of Shanti Ratan Vidya Mandir, Boisar were taken as sample for the study.

Findings of the study

Table 1 shows the comparison of mean and standard deviation of scores before and after treatment.

Table 1

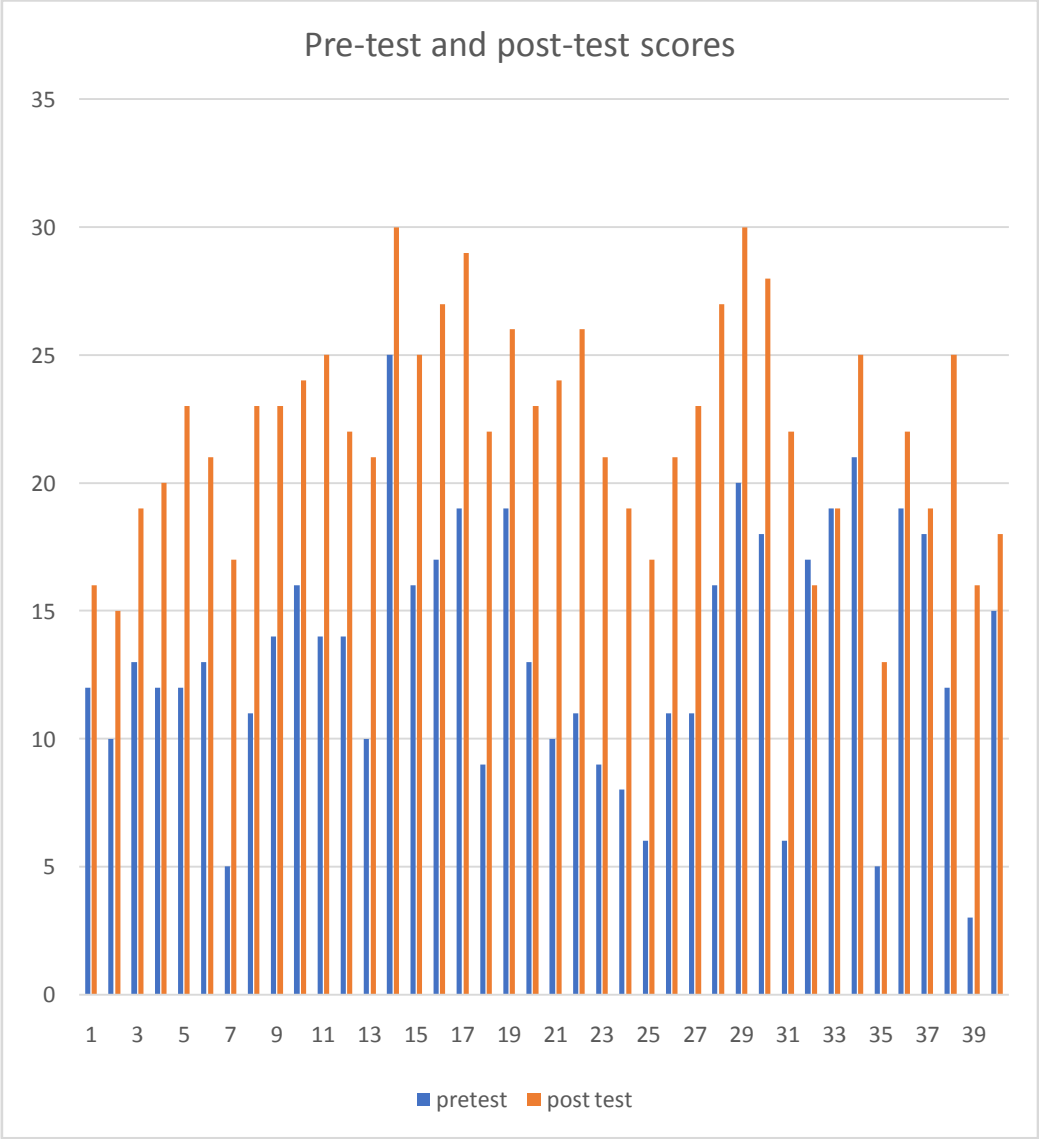
Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Score before treatment	13.2250	40	4.92241	.77830
	Score after treatment	22.0500	40	4.21201	.66598

From the values of the mean, we can understand that the there is a significant difference between the scores before treatment and after treatment. The

scores of the students can be graphically shown as below in graph1

Graph 1
Comparison of scores of pre-test and post-test



Also, the test scores were analysed using paired sample t test. The findings are as shown in table 2

Table 2
Paired Samples Test

		Paired Differences					t	df	Sig.
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Score before treatment - Score after treatment	-8.82500	4.05025	.64040	-10.12033	-7.52967	-13.780	39	P<0.05

From the table, it is clear that the p value is less than 0.05. So 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 is rejected.

Findings of the study

The present study was conducted to check whether Kolb's experiential Learning Technique enhances critical thinking skills in girl students of secondary schools. From the analysis of the data, it was found that there is a significant difference in the test scores of girl students when the scores before treatment and after treatment was compared. From this we can understand that Kolb's experiential learning technique can be effectively used in our science classrooms for enhancing the critical thinking skills of girls students.

Conclusion

If you educate a girl, you educate a nation

-Helene D Gayle

Education of girls strengthen the resource of a country and this can lead to more productive and progressive society where everyone gets a chance to fulfil their potential. It is very important to develop the thinking skills, especially critical thinking skills of girls from the very young age. Education given to them should be more meaningful, useful and should develop their creative potentials to the highest. If we are using child centered methods in our classrooms this aim is not a distant goal. Kolb's experiential learning method can be effectively used in our classrooms for developing the critical thinking skills of girls.

References

Kolb, A. Y., & Kolb, D. A. (2009). Experiential learning theory: A dynamic, holistic approach to management learning, education and development. *The SAGE Handbook of Management Learning, Education and Development*, *May 2015*, 42–68. https://doi.org/10.4135/9780857021038.n3

Facione, P. A. (1990). Critical Thinking : A Statement of Expert Consensus for Purposes of Educational Assessment and Instruction Executive Summary " The Delphi Report. *The California Academic Press*, *423*(c), 1–19. http://www.insightassessment.com/pdf_files/DEXadobe.PDF

Glaser 1911-, E. M. (Edward M. (1941). *An experiment in the development of critical thinking / by Edward M. Glaser*. Bureau of Publications, Teachers College, Columbia University.

Kolb, D. A. (1984). *Experiential Learning: Experience As The Source Of Learning And Development How You Learn Is How You Live View project Executive skills of Family Medicine Faculty View project*. http://www.learningfromexperience.com/images/uploads/process-of-experiential-learning.pdf

Pandya SR. Educational Research. A P H Publishing Corporation; 2016. 489 p.