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# Impact Of Project Based Learning Strategy (PBLS) On Achievement in Science at Secondary School Level

Dr Jisha G R

*Assistant Professor In Physical Science, Kerala University College Of Teacher Education, Kariavattom, Thiruvananthapuram, Kerala, India*

***Abstract*-- We are blessed with physical elements include plants, animals, microorganisms and man. Besides physical and biological elements, cultural elements also constitute in the making of our environment. Lack of stabilized environment is a serious problem affecting the current generation. Our education has the responsibility to make them conscious about environmental issues happening around them. Project based learning (PBL) is a dynamic classroom approach in which students actively explore real-world problems and challenges and acquire a deeper knowledge. It can provide opportunities for students to interact with environment. This strategy helps not only to provide information about environmental issues but able to give deeper awareness about the issues. The present study was conducted to determine the impact of Project based learning strategy (PBLS) on learning environmental issues in science at secondary school level.**

***Keywords*-- Project based learning (PBL), Project based learning strategy (PBLS), Environmental issues.**

## I. INTRODUCTION

Project Based Learning (PBL) is a teaching method in which students learn by actively engaging in real-world and personally meaningful projects. In Project Based Learning, teachers make learning come alive for students. Students work on a project over an extended period of time that engages them in solving a real-world problem or answering a complex question. They demonstrate their knowledge and skills by creating a public product or presentation for a real audience. As a result, students develop deep content knowledge as well as critical thinking, collaboration, creativity, and communication skills. Project Based Learning unleashes a contagious, creative energy among students and teachers.

Project Based Learning is a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question, problem, or challenge.

## II. WHAT IS PROJECT-BASED LEARNING IN SCIENCE?

Put simply, project-based learning is a way for students to actively engage in learning by tackling a real-world question or problem together.

More formally, it is defined as "a teaching method in which students gain knowledge and skills by working for an extended period of time to investigate and respond to an authentic, engaging, and complex question, problem, or challenge." In the case of projects like dioramas or posters, a product that may be creative but does not require active scientific inquiry, critical thinking, or collaboration. The hands-on portion of the lesson, if there is one, is intended to demonstrate material that has already been presented and learned, rather than being a process of discovery. In PBL, the students are assigned with a problem and giving them the time and tools to explore, understand the boundaries and limitations of the problem, brainstorm, test, and develop a solution or conclusion themselves. It is an interdisciplinary process, where students will often need to apply content knowledge and skills from multiple academic domains to the project. As they apply their knowledge and skills in a new context and engage in inquiry, they engage in a level of academic rigor that builds their enhanced level of achievement. And as they complete and present their projects, they develop a level of independence, confidence, and ownership of their work that provides a firm foundation for future studies and workplaces.

The distinguishing feature of experience based learning (experimental learning) is that the experience of the learner occupies the central place in all considerations of teaching and learning. This experience may comprise earlier events in the life of the learner, current life events or those arising from the learner's participation in activities implemented by teachers and facilitators. A key element of experience based learning is that learners analyse their experience by reflecting, evaluating and reconstructing it (sometimes individually, sometimes collectively, sometimes both) in order to draw meaning from it in the light of prior experience. This review of their experience may lead to further action. According to Boud, Cohen , Walker (1993) , in experience based learning experience is the stimulus for learning, learners actively construct their own experience and learning is socially and culturally constructed. Project learning is experience centered teaching strategy and it advocates that education should be related to life situations. Markham (2011) describes project based learning (PBL) as: "PBL integrates knowing and doing.

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Students learn knowledge and elements of the core curriculum, but also apply what they know to solve authentic problems and results that matter. PBL refocuses education in the student, not the curriculum -- a shift mandated by the global world, which rewards intangible assets such as drive, passion, creativity, empathy and resiliency. These can't be taught out of a textbook, but must be activated through experience."

## III. Need And Significance Of The Study

Project based learning offers a wide range of benefits to both students and teachers. The use of Project based learning in school can engage students; enhance cooperative learning skills as a result improves academic performance. The student's improved attitude towards learning, self reliance, leadership quality, responsibility and social skills are the products of PBL. Also opportunities to develop complex skills such as higher order thinking, problem solving, collaborating and communicating can be developed in students. The mere discussion sessions in the classroom can only provide just knowledge about the content. But besides awareness the application has to play the foremost role. This strategy helps not only providing information but also giving them opportunities to collect data from problem areas and to prepare projects. The prominent importance given to this strategy in the class room can develop intellectual as well as social skills in children.

## IV. Objectives Of The Study

- To find out the impact of project based learning strategy (PBLS) on achievement in Science at secondary school level.
- **T**o find out the impact of Discussion method (DM) of teaching on achievement in Science at secondary school level.
- To compare the impact of the instruction based on Project based learning strategy (PBLS) and the discussion method (DM) on achievement in Science at Secondary level.
- To compare the post test scores of boys and girls taught through Project based learning strategy (PBLS).

## V. Hypotheses Of The Study

- There will be significant difference in the post-test scores of students taught through Project based learning strategy (PBLS) and that of those taught through Discussion method (DM).
- There will be significant difference in the post-test scores of boys and girls taught through Project based learning strategy (PBLS).

## VI. Sample Size And Technique

The study was conducted on a sample of 100 Std IX students (40 in Experimental group and 40 in Control group) of GHSS Kulakkada in Kollam District. The experimental group was taught through Project based learning strategy (PBLS) and the control group through Discussion method (DM).

## VII. Tools Used

The various tools employed for the study are achievement test (pre-test and post test), Project based learning materials and learning materials on Discussion method

## VIII. Statistical Techniques Used

Descriptive statistics such as mean, standard deviation and the inferential statistics't' test are used to analyze the data.

## IX. Result And Discussion

Results of the study are presented below in three different parts.

- *Result of post achievement test in Science of the Experimental group.*

**Table 1:**
**Post-test scores of experimental group**

| Group | Number of students | Treatment | Mean | SD |
|---|---|---|---|---|
| Experimental group | 50 | PBLS | 42.73 | 4.11 |

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The mean score indicates that the experimental group exposed to Project based learning strategy (PBLS) shows high achievement.

- *Result of post achievement test in Science of the control group.*

**Table 2:**
**Post-test scores of control group**

| Group | Number of students | Treatment | Mean | SD |
|---|---|---|---|---|
| Control group | 50 | DM | 33.35 | 5.62 |

Table 2 shows the post-test scores of the group of students taught through Discussion method (DM). The mean score indicates that control group shows average performance in Science.

- *Result of significance on the mean scores of experimental and control groups.*

**Table 3:**
**Result of significance on the mean scores of two groups.**

| Group | Mean | Standard deviation | Critical ratio | Level of significance |
|---|---|---|---|---|
| Experimental group | 42.73 | 4.11 | 9.53 | 0.01 |
| Control group | 33.35 | 5.62 | | |

Table 3 shows the post test scores of the experimental and control groups. The t-value is 9.53 which is significant at both levels.

- *Result of significance on the mean post test scores of boys and girls of experimental group.*

**Table 4:**
**Result of test of significance of difference in post achievement test scores of boys and girls of experimental group.**

| Group | No. of students | Mean | SD | CR | Level of significance |
|---|---|---|---|---|---|
| Boys | 24 | 39.50 | 4.20 | 1.66 | NS |
| Girls | 26 | 40.83 | 3.82 | | |

Table 4 reveals that there is no significant difference between boys and girls in their post achievement.

## X. FINDINGS

- The test of significance of difference between mean post test scores of the PBLS and DM groups show that the difference between mean is statistically significant. This reveals that the PBLS group is superior to DM group in post test.
- The mean post test scores of boys and girls of PBLS group reveals that there is no significant difference between the boys and girls in their post test achievement. Thus PBLS is effective for both boys and girls.

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## XI. CONCLUSION

The present study was an attempt to explore the impact of Project based learning strategy (PBLS) on achievement in Science at secondary level. The study revealed that Project based learning strategy (PBLS) is significantly superior to Discussion method (DM) on learning science concepts. Implementing Project based learning strategy (PBLS) in classrooms can not only just provide information about environmental issues but also giving opportunities to apply the knowledge to solve problems. Doing projects provide stronger learning opportunities and encourage pupil's active inquiry and higher level thinking. It promotes better team working and development of an integrated knowledge base. Hence it can be effectively used in our classrooms.

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