

# Project Based Learning-An Innovative approach to enhance higher order skills

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**Abstract:** Project based learning (PBL) is an approach of active learning in which students search real-world challenges and problems and work on it in small collaborative groups to get solution. Group of students work together to achieve common goal. During this process certain skills are developed viz. research and inquiry skills, organization and time management skills, communication and presentation skills, group participation and leadership skills, self-assessment and reflection skills and critical thinking. In implementation heterogeneous groups are formed. Through discussion and brain storming, problem statements are finalised. From circuit simulation, results are observed and checked those results using breadboard implementation. Printed circuit boards are created and all components are soldered. Circuits are tested to check results. Report is documented and uploaded on MOODLE. This is considered as one of the In-Semester Evaluation (ISE) components. The assessment is carried out using rubrics. In addition, students’ feedbacks are taken. It has been observed that there is improvement in ISE performance. Students enjoyed learning by doing. Learners have learned applying theoretical knowledge to solve practical problems. Students learnt to use simulation tools, circuit mounting and testing, troubleshooting the circuits.

**Keywords:** Project based active learning; higher order skills, Hardware implementation

## 1. Introduction

Learning is long process to develop students with number of skills. Traditional teaching is mostly reading, listening and viewing images/videos. This is not effective in changing future as students are from different environments and their learning styles are different. In outcome based education outcomes are defined first and accordingly teaching learning methodologies are decided and implemented. In this active learning is alternate option to traditional teaching learning methodology. Research claims that students learn more through active learning in comparison with traditional teaching techniques. It is applicable to any subject. Also students enjoy the class more and able to retain the information for long duration. The researchers also claimed that active learning allows students to learn in the classroom with the help of instructor, rather than learning on their own [1]. Cone of Learning shows that students learn more if they do things themselves i.e. Learning by doing [2]. To achieve active learning

number of techniques are available and day by day new techniques are experimented and tested. One of such active learning is project based learning (PBL) in which students work in group to complete certain project.

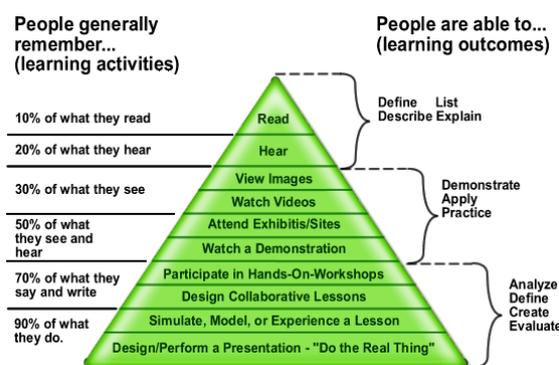


Fig.1 Cone of learning

Bloom’s Taxonomy is a framework that starts with remember and understand levels of thinking as important bases for pushing our brains to higher order levels of thinking—helping us move beyond remembering and recalling information and move deeper into application, analysis, evaluation, and creation [3].

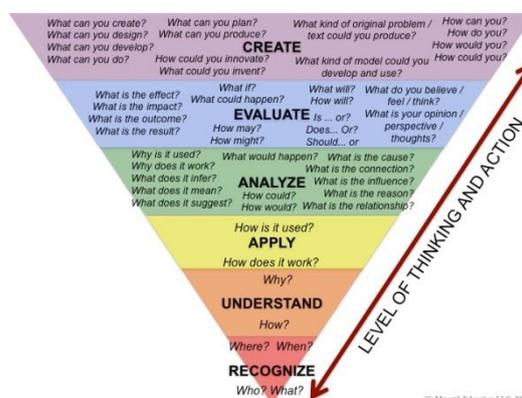


Fig.2 High level thinking approach

## 2. Why PBL

Research shows in learning process if hands on performance are present, learning takes place in better manner and long lasting. Learning by doing can be done by different ways such as Jigsaw, Flipped classroom; Problem based learning and many more. Project based learning (PBL) is the active learning technique which concentrates