

# Introduction of project as a learning tool in forensic medicine

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## Abstract

Project Based Learning is a teaching method in which student gains knowledge and skills by working for an extended period of time to investigate and respond to a complex question, problem, or challenge. The aim of our study was to improve learning of Forensic Medicine in under graduate students. A batch of 100 under graduate students were given didactic lecture on injuries. After that 50 were divided into 5 batches of 10 each and allotted projects on injuries. Pretest and post test were conducted for all 100 students. The pre and post test were evaluated by student 't' test. Learning gain of the project subjected group was more as compared to traditional teaching ( $p = 0.000$ ). The absolute learning gain was much higher (228.80%).

**Keywords:** Projects, Learning gain, Forensic Medicine.

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## INTRODUCTION

Project Based Learning is a teaching method in which student gains knowledge and skills by working for an extended period of time to investigate and respond to a complex question, problem, or challenge.<sup>1</sup>

Project based learning is one of the student-centered learning approaches stemming from constructivist pedagogy. In Project based learning students are seen as active agents, responsible for formulating their own questions, identifying appropriate methodologies and creating collectively constructed knowledge through collaboration. Teachers role in this Project based learning mode is facilitating student activities rather than knowledge transmitters often seen in

the traditional classroom teaching, Project based learning has been widely used mainly in developed countries as an effective instructional approach to help students develop the 21<sup>st</sup> century skills, such as problem solving, critical thinking, collaboration, communication and creativity.<sup>2</sup>

The present study aims to evaluate and suggests the need for change in curriculum which is to be brought about in future in our subject. Taking into consideration acute deficiency in staff and allotted teaching hours in Forensic Medicine, the important and difficult topics are to be identified out and problem based learning should be implemented. Our study shows the significant gain in the learning among the test group subjected to project based learning as compared to old teaching pattern.

## AIMS AND OBJECTIVES

### Short term

To improve learning of Forensic Medicine in under graduate students.

### Intermediate

To make the undergraduate students apply their knowledge while dealing in practical examination.

### Methodology

A batch of 100 under graduate students were given didactic lecture on injuries. After that 50 were divided

into 5 batches of 10 each and allotted projects on injuries. They were advised to visit casualty and asked to observe at least 10 cases of each injury over a period of 3 months. Students were assured of the anonymity and confidentiality of personal information for all responses throughout the study period. During this period the students were mentored by the faculty tutor weekly. The focused group discussion and feedback arrangement for the 5 groups and further to have the presentation on the project. Pretest and post test were conducted for all 100 students. The pre and post test were evaluated by student 't' test.

## OBSERVATION

The total of 100 second year students participated in the study. Out of these 50 were divided into 5 groups of 10 each and was given project on abrasion, contusion, laceration, injury by sharp and pointed weapon and fractures. In the present study out of 45 females there were 27 (54%) within test group and 18 (36%) in the control group where as the male to female ratio was 1:1.174 in test group and 1:0.563 in the control group. The difference was not significant ( $p = 0.072$ ).

Table 1

Sr. No.	Male	Female	Total
Test	23	27	50
Control	32	18	50
<b>Total</b>	<b>55</b>	<b>45</b>	<b>100</b>

We found that the average age was  $19.1 \pm 0.51$  year within the test group whereas  $19.2 \pm 0.73$  year in the control group and the difference was not statistically significant (with  $p = 0.427$ ). In the test group we found that the mean of pre-test to be  $2.29 \pm 2.13$  whereas in the post-test was  $16.59 \pm 1.63$  and the result was statistically highly significant (with  $p = 0.000$ ). In the control group we found that the mean of pre-test to be  $1.24 \pm 1.74$  whereas in the post-test was  $8.74 \pm 2.19$  and the result was statistically highly significant (with  $p = 0.000$ ). The pre-test score of test and control group was also significant ( $p = 0.008$ ). The post-test score of test and control group was also highly significant ( $p = 0.000$ ). Our study shows the absolute learning gain was 228.80 % in the test group whereas it was 120.00 % in control group. The relative learning gain was found to be 624.45 % in the test group whereas it was 604.84 % in the control group. Class average normalized gain was 62.97 % in the test group whereas it was 31.57 % in the control group.

## DISCUSSION

In Indian medical schools, avenues for research in undergraduate curriculum are minimal. We emphasize the scope of student projects in fostering research skills in

undergraduate medical students. Students in this study the teachers were helped from teachers in achieving deeper learning, integration and application of knowledge. Consistent with the more collectivist approach where knowledge is acquired before learning can begin, students identified a lack of lectures or background support as a core weakness of PBL. Students within the PBL program, in the absence of prior teaching, could not derive facts from the discussion and thus became increasingly frustrated, findings which are consistent with others and reflect a failure of the hypothetico-deductive approach in developing reasoning skills. The students were either unable or unwilling to take the time to decipher the statistical and epidemiological concepts in the paper without the direct intervention of the tutor, perpetuating an unwillingness to engage with the teaching materials. Our findings indicate that when facts are necessary for understanding these need to be provided either through a preceding lecture or within the associated text / or materials. The focus group discussions further clarified the students' overall perception of each learning method, each with its pros and cons. Anecdotal evidence from tutor debriefings also indicated that in the absence of a prefacing statistical lecture students had difficulty with the appraisal and interpretation of the study findings and then applying the evidence to the clinical scenario.<sup>3</sup> Teachers cannot teach without students, but students can learn without teachers. This belated insight has transformed the role of teachers into that of learning facilitators, akin to a culture of "thinking apprenticeship". The reason of significantly higher knowledge scores among the students in PBL group may be that these students have more opportunities such as observations during field studies, work-shops or presentations to study on these two topics than those in the other group.<sup>4</sup>

## CONCLUSIONS

Following conclusions can be drawn from the present study:

1. Learning gain in the post-test was more in both the groups.
2. Learning gain of the project subjected group was more as compared to traditional teaching.
3. The absolute learning gain was much higher in project subjected group than the control group.
4. The relative learning gain was also more in project subjected group than the control group.
5. The class average normalized gain was high in project subjected group than the control group.

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