# Implications of Project-Based Learning in the Twenty First Century Classrooms

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## Abstract
It is a well known fact that good communication skills play a pivotal role in shaping a person's personality and help him be successful in his/her career. Especially, when a person is unable to vocalize his ideas fluently, he is at a great disadvantage of not being identified as a potential achiever. Some students with disadvantageous social, cultural and financial background are seen with this drawback where they are beaten and suppressed by their more fortunate counterparts because of their fluent speaking skills. This paper discusses on the efficacy of engaging 'Project Based Learning' as a methodology in classrooms which would effectively bridge this gap between the students.

## Introduction
The teacher buzzing away the lessons to a large class of 60 or 70 students is a very common sight, be it primary, secondary, high school or tertiary-level education, in India. The students shift in their seats listlessly, waiting for the lecture to be over. In such classes, the takeaway knowledge is minimal, as the students hardly relate the topics discussed to their practical implications in the real world. Research has shown that boredom in class room has a direct leaning towards less learning (Krajcik & Blumenfeld, 2006). Gardner (1991) concurred on the fact that the knowledge acquired by school students was superficial, lacking in-depth conceptual understanding, be it in arts, science or any other subject. A methodology of teaching that incorporates theory and practice at the optimum level is what will bring a clear understanding and application of the concepts studied. Project-based learning (PBL) is one such approach that entices the student to learn and apply the concepts learnt. "The outcome of PBL is greater understanding of a topic, deeper learning, higher-level reading and increased motivation to learn" (Bell, 2010). Research also tells us that students in a PBL classroom score better than their counterparts in traditional classrooms (Marx et. al., 2004) because PBL motivates understanding and enables students to master the content through practical application.

## What is PBL?
PBL is a teaching methodology wherein the teacher kindles the inquiring spirit of the student by motivating him to identify specific problems in real life that are connected with the subjects studied at school/college and facilitates the student in finding suitable solutions to those problems via a systematic approach. PBL has its beginnings in the time-tested assignment of projects and 'hands-on' activities followed by a few teachers to break the monotony of classroom teaching. Mathew (2000) defines PBL as "complex tasks, based on challenging questions or problems, that involve students in design, problem-solving, decision making, or investigative activities; give students the opportunity to work relatively autonomously over extended periods of time; and culminate in realistic products or presentations."
Further, Mathew (2000) posits, "the device of distinguishing PBL from didactic instruction has its roots in similar distinctions made between traditional classroom instruction and 'discovery learning' some twenty years ago." Thus, PBL is distinguished as a concept that is unique from the traditional teaching methodology of teaching concepts theoretically in a classroom. However, this gives rise to the difficulty of pinning down one particular approach or theory as PBL. For example, some teachers provide the problem statement and motivate the students to carry forward the research with only occasional inputs. Some others may provide a framework as well, within which the students work. Yet another teacher may leave even the identification of the problem to the students. Hitherto, any methodology that engages the students in applying the concepts to real-life situations is accepted as PBL. This liberty though gives immense scope to the teachers, yet remains a limiting aspect for researchers in PBL who find it difficult to devise any definite model or theory of PBL. So, does any methodology that assign 'projects' or 'hands-



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on activities' be considered as PBL? It cannot be so; instead, a PBL project is identified based on the following innate criteria:

- PBL projects are an integral part of the curriculum, not that function independently.
- The ratio of student-teacher involvement in the projects is 80:20.
- The projects are based on real-life problems that demand real-life solutions, not simulated ones.
- PBL projects are not rigid but remain open-ended with regard to their outcomes.
- The projects generally insist on team/group work.
- Lastly, PBL projects work to specific time frames.

Thus, a teacher in a PBL class incorporates all the above said criteria in the projects given to his/her students.

**Advantages of PBL**

PBL has several advantages apart from enabling the students to acquire in-depth knowledge of the subject and thereby score better in examinations. It helps in character building as it drives the students to collaborate, reflect and build a rapport with the external world. For example, one of the tasks assigned by this author in her English class was a study on old age homes. The students were assigned the task of interacting with the inmates of the homes and gathering information on various aspects, such as, the reasons for their stay in the home, the quality of life in the homes, their physical and psychological challenges in coping with a new environment, their social life and so on. This study opened the students' eyes to the plight of senior citizens which made them vow that they would never allow this happen to their parents or grandparents. What was heartening was that they found various alternatives to make the lives of the inmates of old age homes more comfortable: one student took the responsibility of providing them with the necessary medicines on time, while another spent a day every week with them, which helped them cope with their loneliness. This shows that PBL improves critical thinking and problem solving skills apart from character building (Shepherd, 1998; Tretten & Zachariou, 1995). Thus, PBL has far-reaching implications than just gaining mastery over the subject. Some of the other advantages of PBL are as follows:

- Goal setting: The students are assigned specific tasks that have to be completed in a specific time and they strive to fulfil it.
- Accountability: The students are responsible for the tasks assigned to them and stick to completing them on time.
- Group dynamics and teamwork: Most importantly, the students learn to work in teams; they learn to understand and collaborate with their fellow teammates. They also learn to adjust and adapt to different personalities, work cultures and work ethics and to make the most of it.
- Social learning: As students interact with people in the real world in real-time situations, they acquire social skills that are crucial to any profession.
- Negotiation: This is another important skill developed as the students cajole and coax the required information from total strangers, at least in the initial stages.
- Listening skills: Students are fine-tuned to good listening skills as they listen intrinsically to the information given by several people and consolidate it to fulfil their project.
- Intrinsic motivation: Finally, the students are motivated from within; this is a crucial trait to suceed in both personal and professional lives.

**Challenges in PBL**

PBL is faced with several challenges. A few of them are elaborated here:

- Student autonomy: The difficulty in ascertaining the teacher's role and involvement in projects is a major challenge in PBL. For PBL to be successful, it needs to promote learner autonomy to a great extent. This becomes a problem to a few teachers as they feel they are losing control over the students; hence, they insist on teaching the concepts in the traditional way (Blumenfeld et al., 1994) and then allowing the students to go on with their projects. This approach sometimes hinders the inquiring spirit of the students that is fundamental to PBL.
- Time: Time plays a crucial factor in PBL, be it for the students or teachers. Students find it difficult sometimes as there are a lot of external factors involved that makes it challenging for them to complete the task on time. As



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for the teachers, some of them complain that there is never enough time to complete the syllabus with the projects taking up a considerable time.

- Selection of topic: The topics selected for the projects are decisive of the success or failure of PBL. At times, some teachers find it difficult to strike the right balance between the curriculum and the topics chosen for projects (Krajcik, Blumenfeld, Marx, & Soloway, 1994; Snyder & Snyder, 2008). Yet others might lack the expertise in instructing and guiding the students in their chosen topics (Grant & Hill, 2006; Howard, 2002).
- Managing large classrooms: When the number of students in the class goes up to 60 or 70, and when two or three such classes are assigned to the teacher, one can imagine the sheer number of projects the teacher tackles. Assuming that there are five students in a team, each class will have a minimum of twelve teams and three classes will have a total of thirty six teams. The teacher then has to come up with thirty six different topics. It does not stop there, given the amount of work the teacher puts in to organise, monitor and regulate all the teams to the successful completion of their projects.
- Assessment in PBL: Assessment in a PBL class does not rest solely on the final outcome but most importantly, on the process as well. The rubrics and portfolios prepared by the students, their discussions with teammates and teachers, weekly reports, periodical reviews and sometimes, even self-assessments (Grant & Hill, 2006; Barron & Darling-Hammond, 2007) are taken into account in assessing the projects. Thus, assessment in PBL is multifaceted and the teacher should be adequately equipped to assess the students fairly and properly.

**PBL: A case study**

As an example for the above deliberated traits of PBL, a project that was assigned as part of the English language class to engineering students in VIT University, Vellore, India is cited and discussed. One of the several projects assigned to the first year engineering students for two credits in English was 'Creating a page in Wikipedia'. The project was meant to enhance the languages skills of the students; hence, the topic was chosen to involve all the four skills, namely LSRW. The duration of the project was ten weeks and a team of five students were involved. Here, the teacher drafted the framework as the students were new to the university and most importantly, to PBL. Giving the students a framework at the beginning kept them focused and put them on the right track. The framework is given in Table 1 to serve as a reference.

**Table 1 Action plan**

| Week | Action Plan |
|---|---|
| 1 | Browse and secure details regarding 'How to create a page in Wikipedia?'<br>Choose an appropriate topic to research |
| 2 | Gather information from different journal articles and zero in on 25 articles related to the chosen topic |
| 3 | Read the articles thoroughly |
| 4 | Read the articles thoroughly |
| 5 | Extract the information needed for your page |
| 6 | Start writing your own article based on the information |
| 7 | Write the article |
| 8 | Include references in your article<br>Edit and fine-tune the article |
| 9 | Edit and fine-tune the article<br>Submit the article to Wikipedia |
| 10 | Prepare and submit the project report |

Table 1 gives a fair idea of the work the students had to put in with three periodic reviews to monitor their progress and offer appropriate guidance. Initially, the students brainstormed several topics that would be of interest to the general public and most importantly, those that are not already available in Wikipedia. The students then zeroed in on writing an article about Palamathi Hills, a tourist attraction near Vellore, Tamil Nadu. The students chose this place as it was easily accessible to them and no information was available in Wikipedia about this place. The second stage saw several field trips by the students, exploring the place with the help of locals and gathering extensive information. This involved laborious communication with the locals, some of whom could not converse in English. This exercise brought to the fore the excellent communication skills of the students as they engaged in both verbal



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and non-verbal modes of communication. The next stage involved reading several articles in journals and on the Internet that gave information on Palamathi Hills. Once the arduous task of compiling the information was over, came the process of narrowing it down to the details necessary for a one-page article in Wikipedia. They could not write extensively but provide hyperlinks to any information that needed elaboration. This type of writing was exacting as the students had to be precise yet incorporate every detail about the place. Finally, the article was submitted for review and after several rounds of review, the article was accepted and published in Wikipedia. The pleasure of writing an exam and scoring marks was no match for the sense of achievement and satisfaction of the students in this PBL project. Apart from self-gratification, the students felt that they acquired better language skills as all four skills were applied simultaneously.

**Conclusion**

Thus, it is seen that PBL encourages a multi-level approach, lays a strong foundation and prepares the students to meet the challenges they encounter in real-life situations and trains them for autonomous learning. As PBL "allows in-depth investigation of a topic" (Harris & Katz, 2001), it strengthens the students' creative and analytical thinking which in turn will help them in any situation outside the portals of the educational institution. It also focuses on team participation which helps the students shed their inhibitions and metamorphose from being passive listeners to active participants. This in turn boosts their self-confidence and develops their personality which goes a long way in helping them succeed in their respective careers.

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