

Implementing Project Based Learning in Teaching English to Engineering Students  
*Sarika Tyagi and Dr. R. Kannan*

**ABSTRACT**

Project Based Learning (PBL) is a process that puts the student at the center of their learning. PBL can be introduced in any subject and in any grade level. The projects can be a mini project based on specific topic from the syllabus or it can be a major project covering a unit or the entire syllabus. Even the time period may vary from one week to a month or more than it depending upon the nature of the project and time period available. PBL involves lot of planning on the part of the teacher as the end result of the project should be accomplishments of the course objectives. In PBL the role of teacher is immense as he/she is no more a 'task master' but a 'facilitator' or an 'instructor'. The present paper will highlight what is project based learning and how we can introduce project based learning in English classroom with an analysis of student's project as per the seven essentials of PBL given by John Larmer and John R. Mergendoller. The study was carried out with first year engineering students from different branches studying in VIT University. The finding of this study reveals that PBL is indeed a better way of learning putting theory into practice and increases the employability skills of the students. The study also gives certain recommendations for effective using of PBL pedagogy.

**Key words:** Creativity; Interpersonal Communication; group work; role of instructor; feedback; teaching-learning process

## 1. Introduction

Learning is the lifelong process of transforming information and experience into knowledge, skills, behaviors, and attitudes (Cobb, 2009). With the advent of globalization and information technology the importance of English as a language has tremendously increased. It is no more the language of the elite or the few section of the society known as the 'educated class' but is now studied by people from all walks of the life. To address the needs of the learners there has been a huge paradigm shift in the type of teaching we want to have in our classrooms. The shift is a resultant cause of the fact that researchers are increasingly emphasizing on the learners need and aspirations before any teaching method can be implemented. This has put the class into a stage where the teacher is not the only performer but there is an equal participation of the audience who are our students. The focus is more on the learning aspects and trains the students to gain practical knowledge of the concepts and also to imbibe the 21<sup>st</sup> century skills which would enable them to face the complexities of the world. According to 'Future Work Skills 2020' report these skills are as, "Sense making, social intelligence, novel and adaptive thinking, cross-cultural competency, computational thinking, new-media literacy, transdisciplinarity, design mind-set, cognitive load management, virtual collaboration". Thus, learning should be an active process rather than a passive one.

*"I want to talk about learning. But not the lifeless, sterile, futile, quickly forgotten stuff that is crammed in to the mind of the poor helpless individual tied into his seat by ironclad bonds of conformity! I am talking about LEARNING - the insatiable curiosity that drives the adolescent boy to absorb everything he can see or hear or read about gasoline engines in order to improve the efficiency and speed of his 'cruiser'. I am talking about the student who says, "I am discovering, drawing in from the outside, and making that which is drawn in a real part of me." I am talking about any learning in which the experience of the learner progresses along this line: "No, no, that's not what I want"; "Wait! This is closer to what I am interested in, what I need"; "Ah, here it is! Now I'm*

*grasping and comprehending what I need and what I want to know!" (Carl Rogers, 1983, pp. 18-19)*

## **2. Project Based Learning (PBL)**

*Project Based Learning is a dynamic approach to teaching in which students explore real-world problems and challenges, simultaneously developing cross-curriculum skills while working in small collaborative groups. (Edutopia, 2013)*

PBL is a strategy that involves learning through a project based on the curriculum. It can be introduced in any subject and at any grade level. For example, students studying environmental studies can undertake the project of surveying their nearby industrial areas and the kind of pollution generated from those industries. They can also suggest measures for pollution control or recycling of the waste and their report can be useful for the local government. A student of management can have a project based on how self help groups can be created in their local areas and then mobilize the NGOs to work in such direction. The time duration can also vary from few days to weeks and if the topic is complex which involves details investigation or field work the project can go for one semester also. PBL can also be combined with collaborative learning (students working in groups) and cooperative learning (students learn through positive interdependence). Collaborative learning will help them in brainstorming and innovative ideas. PBL is proved to be an effective way of learning. "Researchers have investigated the impact of project-based learning (PBL) in a wide variety of educational contexts ranging from early childhood education to medical and legal education. PBL (and related instructional approaches) has generally been shown to be effective in increasing student motivation and in improving student problem-solving and higher order thinking skills (1998)." The role of an instructor has to be carefully performed in PBL, as Dakowsa

(2009, p.15) says, “The teacher is the leader in the education process, if we understand ‘the leader’ as someone who has the vision for the future and a way of convincing others to work towards this goal. What a good and honest leader needs is not only the vision, but realistic and rational understanding of what it takes to accomplish it”.

## **2.1 Characteristics of project- based learning**

Educationists believe that it is important to use a correct pedagogical process to ensure an optimum output. The end should not justify the means but the means should justify the end. Some of the basic components of PBL are given below:

- Students make decisions within a prescribed framework.
- There’s a problem or challenge without a predetermined solution.
- Students design the process for reaching a solution.
- Students are responsible for accessing and managing the information they gather.
- Evaluation takes place continuously.
- Students regularly reflect on what they’re doing.
- A final product (not necessarily material) is produced and is evaluated for quality.
- The classroom has an atmosphere that tolerates error and change. (GSN, 2013)

## **3. Case Study**

### ***3.1 Objective***

The Project based learning was introduced in the English curriculum for undergraduate engineering students. The objective of this study was to enable the students to develop the 21st century skills and to explore interesting details on various aspects of written and oral communication, instill creativity by

designing various documents and understand the intricacies of the sentence construction and grammatical accuracy.

### ***3.2 Time Duration***

The time duration was one semester as the projects given involved a detailed study.

### ***3.3 Group Size***

A group comprised of six students as they could easily define their roles in the project work. Besides, the monitoring would be easier for the facilitator due to the large classroom size.

### ***3.4 Way of forming groups***

The students were made into the groups as per their register numbers in which normally the students of the same branch gets associated.

### ***3.5 Mode of Evaluation***

The students had to submit a report and give a power point presentation of their project work. In addition to it, there were two project reviews before they gave the final presentation. There was a marks distribution for Project Review 1(mid term review), Project Review 2(final review) and the final presentation. Each group member had to contribute in the presentation so as to assess the performance of the individual as well as the group.

### ***3.6 Nature of the topics***

- I. Report on the effectiveness of the Interpersonal Communication in various clubs/student chapters and societies operating in your university
- II. Creating a children's book

- III. Usage of English as a spoken language in the campus
- IV. Influence of mother tongue on spoken English

### ***3.7 Discussion***

This case study discusses the first project topic and is analysed based on the 'Seven Essentials for Project-Based Learning' given by John Larmer and John R. Mergendoller. They are as follows:

- I. "A Need to Know - by launching a project with an "entry event" that engages interest and initiates questioning
- II. A Driving Question—captures the heart of the project in clear, compelling language, which gives students a sense of purpose and challenge.
- III. Student Voice and Choice - for making a project feel meaningful to students, the more voice and choice, the better
- IV. 21st Century Skills - collaboration, communication, critical thinking, and the use of technology
- V. Inquiry and Innovation- leads to generating new questions, testing ideas, and drawing their own conclusions.
- VI. Feedback and Revision – emphasizes creating high-quality products and performances
- VII. A Publicly Presented Product - When students present their work to a real audience, they care more about its quality". (2010, p.34-37)

### ***3.8 Analysis of Project 1 as per the seven essentials for PBL***

#### **I. A Need to Know**

The first unit of the syllabus deals with communication and its various aspects. In the classroom, students were briefed about what is communication, what are the types of the communication, barriers to communication and how we can avoid these barriers to have an effective communication. A case study on

communication barriers was also given to each student wherein they studied the case and identified the barriers in that particular case. An awareness was created among the students about the topic on 'Communication' before they could undertake their project work.

## **II. A Driving Question**

This project was done by one group comprising of six students. The students were asked to study the aspects of interpersonal communication. Then they were asked to prepare a common questionnaire and interview the students associated with at least five clubs / Chapters / society running in the university. The basis of the questionnaire was to identify the effectiveness of interpersonal communication while operating the club. The driving question was to identify the real life barriers to effective communication and suggestions to overcome these barriers.

## **III. Student Voice and Choice**

Once the students were aware of the driving question they could decide among themselves about selecting the club depending upon their interest and association with the particular club. The student had the choice of preparing an open ended or a close ended questionnaire. The students also had the freedom to choose the type of technology for presenting their report. This particular group made a short video on interpersonal communication with audio-visual effects. In addition to it, they presented their questionnaire, responses, findings and suggestions in the form of powerpoint presentation.

## **IV. 21st Century Skills**

The aim of this project was also to enable them to acquire the 21<sup>st</sup> century skill. The students were put into groups so that they can work collaboratively and assign work roles for each member. They were asked to resolve their differences with little intervention of the instructor. The group was also motivated to make use of the technology. At the initial stage the group members had some problems wherein one member was trying to overdo the others and was authoritarian. Gradually, the group was able to resolve these differences, carry out the project work successfully and made optimum use of the technology.

#### **V. Inquiry and Innovation**

No project could be complete unless the students are put into a situation wherein they come out with the problems associated with the particular task and give solutions to the same. In this project work, the student had a brainstorming session with their group members and identified the nature of questions to be included in the questionnaire. The questionnaire is given below:

- a) What's your club all about, and, how do you facilitate the promotion and spreading of your club objectives?
- b) Does your club/society attract students from different ethnic backgrounds and diversity? If yes what are the main features of your club that interests them to join.
- c) Considering the fact that VIT University, attracts students from all over the country; how do you handle the linguistic communication/understanding barriers that occur while talking to them in groups?
- d) How do you handle the disputes that occur in groups/society members on different issues?
- e) How is the work distributed and divided among your group members and juniors?

- f) Do you assign certain group members that can talk to different people in their native language, so as to explain things better?

The clubs which were interviewed were:

- a) Dramatics Society
- b) Computer Science Society
- c) Editorial Society
- d) Dance Club
- e) Debating Society

After interviewing these clubs, the group members identified the reasons which facilitated the club/society members to maintain good interpersonal communication and manage the club effectively. They are given below:

- a) Promotion of the club is generally through announcements in each class, followed with assigning duties to certain people to promote the club within their peer group. Besides, the pamphlets, posters and banners are posted in the entire campus.
- b) Generally, students hailing from different places come together to be a part of the club. Interests like 'love & Music' have no language.
- c) English is generally understood by the members, incase some confusion arises, proper explanation of each and every point is given.
- d) The frequency of disputes being occurred is less keeping in mind the really large group of students that are present in the university. If there is a dispute, we immediately hush and probe until a mutually agreeable decision is taken.
- e) Club/society members are divided into various committees. There is a publicity and awareness committee, technical committee, core group that takes the major decisions and an executive committee which communication and binds the core and all the other committees for the effective functioning of the club.

- f) Yes of course, the major problem is not explaining everything but making sure that everyone is clear about the rules and the do's and don'ts. No loopholes are left. To handle this problem, the senior group members are assigned to talk in person (sometimes in their native language also) with the concerned member so as to make things clear.

## **VI. Feedback and Revision**

This is the time where the instructor has to play a key role. "Pair and group work sometimes produce a very high level of learner concentration and activity, but can only do exactly the opposite. A high degree of teacher sensitivity is needed here, together with very clear instructions, simple and well structured tasks and careful monitoring". (Penny Ur, 2000, p.283) The instructor conducted periodic reviews (mid term review & the final review) of the student projects, identified their shortcomings and channelized them in the proper way. Here, the students questionnaire was reviewed and also briefed them about the reading sources which will enable them to understand the concepts of interpersonal communication and improvise upon their questionnaire.

## **VII. A Publicly Presented Product**

After the group had completed their project work i.e. undertaken the study and came out with the findings, they were asked to give a power point presentation in the class which had a student strength of sixty. The group started with a short video which they had made on '*Introduction to Interpersonal Communication*', followed by the presentation where the questionnaire was shown with some of the answers from different club members. Finally, they concluded with their observations of how to maintain good interpersonal communication for the effective functioning of the club. They also highlighted

some of the common barriers like linguistic or psychological barriers which can lead to miscommunication and ways to overcome them. Besides, having good interpersonal skills the group also observed that a good leadership skills and management skills were also involved into the effective functioning of the club.

#### **4. Feedback on PBL**

##### ***4.1 Student's feedback***

Feedback is an important mechanism to understand as to how far we have achieved our objectives, analyse the shortcomings, understand the gaps which were left out and at the same time think of alternate solutions to overcome the shortcomings. According to Arne Duncan (n.d), "teachers support evaluations based on multiple measures: student growth, classroom observation and feedback from peers and parents." Also it is believed that unless and until we measure our own performance, we cannot achieve an appropriate growth. Some of the points put forward by the students after they completed the project work are as follows:

- I. Coordination was difficult with the group members as they belonged to different branches and stayed in different blocks in the hostel.
- II. Students felt that they were not given the choice of selecting their own topic for the project work.
- III. There was difficulty in starting the project work and if something went wrong they had to start from the scratch.
- IV. Majority of the students enjoyed the Project based Learning and felt that doing a project was a good learning experience.
- V. The students also emphasized that if given a chance they would again undertake PBL mode of learning in the next semester as they learnt practical knowledge of the concepts rather than just the theoretical information.

- VI. The students felt that PBL helped them acquire leadership skills especially while motivating and convincing some of the group members who showed up a 'tough or inappropriate' behaviour.
- VII. The students were able to overcome stage fear as they got the opportunity to present their work in front of the whole class.

#### ***4.2 Instructor feedback***

Every coin has two sides. Like the students the instructor also had their own observations. They are as follows:

- I. The instructor had an immense role in attaining group cohesion. Often the disputes among the group members were settled with instructor intervention.
- II. It was difficult to motivate students for timely completion of the task. Some of the groups didn't show much signs of progress when the Review 1 & Review 2 were conducted.
- III. Sometimes, student's thinking has to be geared up in the right direction.
- IV. It involves more time beyond the class hours and more involvement of the instructor in making them understand how the project has to be carried out as they were first semester engineering students who had no exposure to project based learning.

#### **5. Recommendations in Implementing PBL**

In review of the feedback from both the students and the instructor, it is felt that for successful implementing the PBL, the following suggestions should be taken in mind by every instructor:

- First, the topic for the project should be clearly identified.

- Second, the students should be given clear instructions and action plan of how they should carry out their project work so that they can proceed in a right direction.
- Thirdly, the mode of evaluation should be informed to them in the beginning with deadlines for each review to be stated very clearly.
- Fourthly, every review can be assigned some marks weightage which will propel the students to complete the work in a specified time.
- Fifthly, student's opinion can be taken before forming the groups so as to have proper coordination among them.
- Sixthly, few students can also be allowed to choose their own topic for project so as to involve more creativity. For ex. if any student is a creative writer they can be asked to choose any poet of their choice and compose their own poetry in that poet's style.
- Seventhly, the instructor can declare a 'discussion hour' once in a week where the students can meet the instructor in person and resolve the difficulties arising in their project work if any.
- Eighthly, the instructor has to perform the multifaceted roles from guiding them about the project topic to settling their interpersonal problems.

## **6. Conclusion**

Through this study, certain conclusions can be drawn. The aim of education should be 'effective teaching and learning' rather than just 'teaching and learning'. For this a teacher has to perform the role of an instructor or a facilitator to introduce best teaching practice and optimum learner output. "Instruction fitted to individual student needs is believed to be conducive to the emergence of a personal synthesis of understanding, that is practical, relevant to the learner's life and fully integrated into the individual's worldview".(Bansal, 2007, p.19) To attain this, PBL is an effective way of teaching and learning. In this study, various topics relating to the English syllabus were given to first year engineering students studying in VIT University. A careful attempt was also made so that the students learn something beyond the syllabus. In this case,

students learnt how to make questionnaires, understand the difference between open ended and close ended questions, got a hands on experience in interviewing different members of the club, preparing a report and making use of technology when they presented their work in a form of a short video and a power point presentation. Sometimes, due to the time constraint a teacher is not able to go beyond the syllabus but PBL provides a way for a teacher to expose their students to different topics also. Apart from this, students worked collaboratively and in groups. They got an understanding about group dynamics, were able to resolve conflict and accomplish their aim successfully. Thus, it improved their employability skills like communication skills, leadership skills, conflict management, working in teams and thinking skills. Last but not the least, the role of an instructor is very crucial as it involves careful planning and execution, the instructor has to get into a role of a successful captain of a ship who very well knows that in spite of all odds he has to lead a ship in a right direction and reach the destination at a right time.

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