

## The Effectiveness of Project-Based Learning to Improve Motivation, and Communication Skills of Polytechnic Students

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### Abstract

Many approaches and methods have widely emerged to fulfil the needs of learners to help them to improve their 21st-century skills; among many students centered techniques project-based courses are much more appropriate for polytechnic classrooms NEP 2020 talks about experiential learning, where students develop real-time experience of the projects of the theories taught in the classroom Polytechnic education is aimed at gaining practical knowledge of the ideas introduced in classrooms, but as time flows, it has become just like every average traditional classroom This paper is aimed to examine the gradual enhancement of communication skills, comprehension, and cognitive skills of polytechnic students with project based learning as an instruction and to see how far this project based learning is effective when it is blended with inquiry based learning This project-based learning enhances a collaborative workspace that provides practical hands-on experience The study is significant from recognizing the students' need for communication skills and cognitive skills.

**Keywords:** polytechnic students, project-based learning, inquiry-based learning classroom, collaborative learning, and self-directed learning and communication skills.

### Introduction

The need for a shift in expectations for educational outcomes and didactic methods has increased in post-industrial society. There are many gaps between industry expectations and academic preparations. Polytechnic students show only interest in acquiring skills other than graduating with fundamentals of engineering sciences and computer literacy. Though they have the subject knowledge, they need more real-time practice. The researcher has picked project-based learning, a new inductive approach to teaching motivation and

communication skills that can engage students actively in education and help them excel in their academic careers. This type of learning results from working toward understanding or resolving a problem Project-Based Learning (PBL) is now an instructional strategy that may be suitable for a range of student requirements. In addition, to providing a skill-based exercise, it also represents the emphasis on student participation, exhibition, and creativity.

The outcome of education itself is learning. Learning should be constructive, self-directed, collaborative, and engaging students metacognitively, motivationally, and behaviorally. Group work and collaboration in teams have the potential to help students to learn. In the polytechnic practicum, most core subjects are traditionally discovered on lecture-based, teacher-centered educational approaches. Language and communication skills cannot be understood by heart with their basic structures when learning a language; the student has to dream and imagine real-time conversations and build and think creatively.

The primary objectives of this research are to study students' motivation and desire to learn communication skills using Problem-based learning and to examine learners' perceptions of the impact of PBL on enhancing their abilities, including teamwork and communication. It is a student-centered instructional design where students work collaboratively to solve real-time projects and can develop self-motivation, reasoning skills, and self-directed learning. This thesis first explores general PBL characteristics that are valid to any college subject and then focuses mainly on the features of PBL that are distinctive to English classroom background at polytechnic colleges. The work tries to identify significant aspects of polytechnic students' acquisition of communication skills through project-based learning.

The study is carried out in four phases.

The first phase is to test the polytechnic student's interpersonal competency, willingness to communicate, self-disclosure, empathy, social relaxation, assertiveness, and interaction management in group learning.

Next phase, based on the need assessments of the participants, the teacher comes up with a real-time scientific project, a complex and open-ended problem. Students learn to work both independently and collaboratively in small groups to share, evaluate and critique each other's work where the teacher would be a facilitator. Students brainstorm their ideas on their prior knowledge and identify where they must research further; this is where the need for inquiry-based learning methods has occurred.

The students create an action plan for researching all the unknown facts utilizing every member of the group. Information may be drawn from the internet, reading blogs, databases, and other online resources about that specific Problem. Digital interaction supports their collaborative communication. Comprehension is a more focused skill in this stage.

The fourth phase consists of constructing and implementing the solution to the problem project. In this study, the researcher aims to identify the relationship between learning communication skills through mediating a Project-based learning approach using a guided inquiry-based method. A quasi-experimental pre-test and post-test are used in the study. The sample study is conducted with second-year diploma students of government

polytechnics in Kothagudem, Telangana. The measured dependent variable in this study is polytechnic students' communication skills, and the independent variable is the approach to teaching.

#### Background of The Study

John Dewey, an educational reformer in the United States at the turn of the 19th and 20th centuries, is credited with pioneering project-based learning. He is regarded as the ideological father of PBL and the leading figure in progressive education at the time. Dewey viewed a 'kid' or a 'student' as a multifaceted human being. He sought to instill in his students a desire to learn and an understanding of why they were studying Coufalová (2006), has enforced the motto "learning by doing" and laid the theoretical foundations of PBL. However, the founder of the PBL method is considered to be his colleague, the American pedagogue William Heard Kilpatrick, who emphasized the importance of student interest and proposed concentrating the educational content into project work. His primary concern was the development of children's personalities. He emphasized student accountability for their education.

The term "Project-Based Learning" does not have a clear meaning According to Coufalová (2006), there is no clear-cut definition of Project-Based Learning because different authors, within their reports, highlighted various aspects of PBL While some stressed the relevance of the project's end goal, others emphasized the necessity of active learning and students' prior knowledge and experience Tomková, Kaová, and Dvoáková (2009) corroborated that PBL can be defined and categorized differently; at times, it can be seen as a sophisticated approach to education, while at other times, it can be ranked among organizational styles Additionally, it might be considered a method of teaching Project-based learning, as defined by Thomas (2000), is "a methodology that organizes learning around projects" he describes projects as demanding assignments that are "based on challenging questions or problems, that involve students in design, problem-solving, decision-making, or investigative activities; allow students to work relatively autonomously over extended periods; culminate in realistic products or presentations" In light of the wide variety of PBL definition as "learning by doing it" couflaova (2006) enforced four primary principals.

1. PBL comes from the needs and interests of students to have new experiences
2. Comes from a concrete situation, not restricted by college premises
3. Interdisciplinary
4. An enterprise of students

PBL is usually carried out in groups;

This definition characterizes well all-important features of PBL, and Coufalová considers this definition the main criterion when judging whether a specific PBL has fulfilled its fundamental essence. Moreover, Tomková et al. (2009) add that PBL is mainly based on an active student's approach towards their learning and, like Coufalová, expresses the need to distinguish PBL from the concept of thematic tuition (TT), which shares some similar features with PBL and is sometimes incorrectly labeled this way Furthermore,

Haines claims that this PBL is students centered not a syllabus-centered approach, he also defines that once students begin working on a project, it is their responsibility to make critical decisions about the project's focus, methodology, and outcome.

### **Advantages of PBL**

1.PBL uses student cooperation and communication; it encourages teamwork and critical personal traits such as responsibility, autonomy, and an enterprising spirit.

2.Heines (1989) emphasizes that project work promotes student enthusiasm and interest in the subject. According to him, students' engagement in selecting the working project boosts their intrinsic drive since each student brings their ideas, perspective, and approach to the work. Here, PBL serves all abilities within a class, and even relatively weak pupils may be able to utilize other valuable skills for the group's success.

3.PBL promotes contact with the real world, allowing students to apply their academic knowledge and attempt to solve practical problems.

4.PBL promotes integrating knowledge from other school disciplines and teaches students how to deal with information from various sources, including the internet, books, and news from friends and parents.

5.It turns out that working on projects fosters the creative development of students According to Taddei (2013), creativity is now as essential as literacy. Taddei suggests that schools should encourage teachers' imagination and students' imagination and design programs in which students can work on individual and group projects.

### **Role of teacher in Project-based learning:**

Teachers' traditional roles as a lecturer or classroom expert gives way to more functions that are generated from individual PBL stages, as argued by Jezberová et al. (2011) Depending on the setting and the level of PBL, teachers can play various roles, some of which are listed by Heines (1989) He identifies the fundamental duties of a teacher as a guide, facilitator, manager, counselor, or evaluator, depending on the educational situation and PBL level The second critical piece is the part played by the students To implement PBL successfully, all students must participate in the project process Therefore, teachers should structure each student's activities such that they bring their best effort to the assignment teachers should guarantee that each student understands what they are learning Hutchinson (1992) argues that students should be involved in every aspect of the project, from its inception to its final presentation and evaluation This means that while the teacher may have initially conceived of PBL, it is the students who ultimately give the concept its concrete form; in this way students feel more connected to the piece as a whole In the same way, teachers should make sure that students regulate their process of learning and that they learn how to assess their peers or their performance self-assessment As Dvořáková (2009) states, on the one hand, the PBL method can relate either to one or more subjects that have both theoretical and practical orientations PBL can be done exclusively in the classroom, focusing on training core competencies and teaching facts. Still, it is far more effective if the

realization element extends beyond the academic setting Teachers have the power to prepare children for everyday reality.

### **Types of Projects.**

There are numerous methods to classify and categorize PBL. It depends on multiple elements, such as the age of the pupils, their level and interest, the limit of time and space, or the level and extent of the teacher's PBL experience.

William Kilpatrick, the founder of the project-based method, distinguished only four types of project works in consideration of the aims.

- a) Problem-based projects
- b) Construction-based
- c) Evaluation-based projects
- d) Drill-based projects
- e) Pilot Study

The researcher has surveyed two different groups of second-year polytechnic students from Kothagudem. Two other groups are assigned a project "design an app" with three months of a specific period to complete the project one group forwarded this project with a lot of discussions in the classrooms and teamwork, where they have improved their communication, active listening, and public speaking abilities; they were willing to speak in English confidently to their peer groups and other computer subject teachers The other group has also been assigned the same project, but the guided inquiry method has been introduced to this group This group has been given the task of reading comprehension over the given project, and one computer subject teacher is assigned as in charge of this group The teacher is a facilitator here This group went on a lot of research over reading on how to design an app. ultimately, this group has increased productive communication skills along with good comprehension, cognitive skills, and critical thinking The project-based learning approach is used to test the communication skills of polytechnic students; in addition to this Inquiry-based learning method is mixed to test the reading comprehension and cognitive skills of the students The study focused on how project-based learning influences the students to adopt motivation and communication skills and how inquiry-based learning advances the project with comprehension, and cognitive skills of polytechnic students.

### **The objective of the study.**

- a.To examine instructional delivery methods' results and determine if the PBL method yields higher academic achievements for polytechnic students.
- b.To compare the academic growth score of students taught through the PBL approach with those taught through a traditional lecture-based course.
- c.To explore the perception of students with their engagements in projects, their contribution to their peers in projects, and teamwork.

Literature review

New national standards and the history of low performance, as measured by state and federal student testing, call for a change in approach, and a logical element of such change would be a new method of instructional delivery (DeSilver, 2017) This chapter includes a literature review of the constructivist learning approach, cooperative learning, and PBL Project-based learning is not a new concept, but research indicates that when properly implemented, it is an effective tool in increasing academic achievement for students, particularly underserved students (Bell, 2010) The purpose of polytechnic education is to acquire subject knowledge and communication skills by engaging students in hands-on experience; Ihmeideh, Ahmad, and Dababneh (2010) and Cleland, Foster, and Moffat (2005) found that a positive communication environment provides opportunities to students to learn how to communicate, and thus, have better communication skills In practice, students are not up to the standards set by the industry; even after three years of studying their respective courses for a diploma, they lack communication skills This is because of the same unvarying techniques and procedures tracked in conventional classrooms The reason for this may be found in the word "method." Polytechnic Students have been left with a lack of competitiveness compared to the sophisticated technical world cause of lecture-based and teacher-centered instructions. Even if a student possesses a good number of credits under their belt, they need to be more reach the standards set by the industry. The students need more opportunities to improve their language competence or abilities in a traditional classroom.

The teacher facilitates student learning through various experiences and, most importantly, at the student's developmental level (Baken, 2014). Piaget recognized that within different learning levels, opportunities existed to allow learners to work together and help build understanding for each learner. Concrete, hands-on experiences helped students create connections between new information and previous knowledge in such learning efforts.

The PBL approach required a shift from a provider of information to a facilitator of learning (Park, Rogers, et al., 2010) PBL places demands on both the teacher and the student (Boss, 2011) Additional professional development was necessary for teachers to understand their role and the research into cognitive development using PBL Boss concluded that PBL would best promote the skills needed to prepare students and honor the requirement to meet state standards The researcher has used a project-based learning approach to make classrooms and students more actively engaged in the educational process Within the context of group instruction, the researcher in this study places greater emphasis on students' capacity for collaborative skills, communication, and self-motivation This quasi-experimental study is conducted with second-year polytechnic students at Government Polytechnic Kothagudem The researcher has conducted a pilot study with two different sections of 70 members in each class Students were assigned project work Pre-test and post-test were conducted On these specific results, further research is carried out based on the needs of the participants The classroom action research model design used was the Kurt Lewin model This design consists of four components, namely 1) Planning,



2) Action, 3) Observations, and 4) Reflection While the approach used in the learning process is project-based learning with a guided inquiry-based learning.

PBL is necessary to plan for one thing from the viewpoint of time and position of the project within the curriculum; for another, planning should cover the knowledge of the educational goals that should be met and the level of their difficulties Preparation is the key to making project work a success and Hutchinson (1992) argues that understanding of project work and the ability to deal with it lies in a learner-centered characteristic of PBL which dwells not in the question What But instead in the question Who Who makes the decisions It has been mentioned above that spontaneous projects are rare, so it is usually the teacher who provides the primary topic; nevertheless, the content and the product are determined principally by the learners who on the one hand are given the space for creative work and independent decisions, yet, on the other hand, all that happens in a carefully prepared teacher's plan The planning itself represents a very demanding activity for teachers.

Inquiry-Based learning to improve reading Comprehension of polytechnic Students. The researcher employs the inquiry-based learning approach, which offers constructivist modeling in teaching reading instruction, to enhance the student's reading comprehension. The method aids students in connecting the materials they are reading and real-world situations.

The conventional way of teaching and learning should move away from traditional classrooms to support the growth of communication skills and abilities. The inquiry-based approach is a model that makes students the center of the school and allows the teacher to facilitate and guide them By using formal inquiry templates for planning, designing authentic and engaging lessons, and providing informal check-ins regarding self-reflection (Bybee et al., 2006).

The classroom, which is fuelled by inquiry, has these qualities.

a.Breaks free from the traditional and transactional model to promote connections to past knowledge and build new understandings

b.Allows students to direct their learning

c.Promotes moments of self-reflection and metacognition.

Students moved through the five phases of inquiry-based learning:

a.Engage

b.Explore

c.Explain

d.Elaborate and

e.Evaluate

### **Research questions**

1.To what extent does Project- Based Learning Method keep the students motivated to learn communication skills?

2. What language skills does PBL Method enhance?
3. Do teachers who have used PBL as extensive professional development teach and access communication skills to a greater extent than teachers who have not had similar professional development or do not use PBL?
4. How PBL uses and teaches communication skills is influenced by other variables such as subject, grade, class, and academic achievement.
5. How does PBL differ from a more traditional style of teaching?
6. How much emphasis is placed on students' communication skills compared to knowledge and retention of skills?
7. How would you say students' communication skills have improved due to PBL being used as a method of teaching and learning?
8. What impact does project-based learning make when blended with a guided inquiry method to improve communication skills?

### **Research design and procedure**

A quasi-experimental method is used to study the impact of problem-based learning. The questionnaire was developed based on the available literature on communication skills and discussions among researchers in the team. A qualitative analysis of task outcomes will be done to analyze the improvement in students' language abilities. Students' performance is observed in group learning and team collaboration with the help of self-assessment questionnaires. The syntax of project-based learning is as follows:

1. Asking questions that come from surrounding phenomena,
2. Designing stages in project completion,
3. Arranging project implementation schedules,
4. Collecting, analyzing, and interpreting data
5. Preparation of project reports and presentations,
6. Evaluation of project processes and results.

### **Methodology**

The sample for the study comprises second-year students from the government polytechnic kothagudem, Telangana. The study consists of three phases:

1. The first phase includes testing the communication skills (collaboration, clarity of expression, willingness to speak in groups, confidence levels) of students with the help of a questionnaire and observing how project-based learning strategies can support the development of academic knowledge and skills.
2. The second phase includes a class of students grouped and provided with an unstructured project, generating ideas to deal with the Problem. Two groups are assigned different scientific tasks. After introducing the project's theme, every group of students is asked to interpret the music and decide how they would present their ideas on the role of science in society. Each group had two months to work on their presentation before performing or presenting their projects in class. For one group Guided inquiry method is used. Students



moved through the five stages of inquiry-based learning: Engage, Explore, Explain, Elaborate, and Evaluate Collaboration, Interaction, and Reflection will be encouraged throughout the process Scaffolding and feedback will be provided to participants. This project continues throughout the whole semester. The students will be given inputs through videos, and the material will be shared through Whats App groups. Tasks are provided through different platforms.

3.The final phase includes assessing their presentation; each group is interviewed about their project using the guided questions related to the project title, presentation style, student satisfaction with the production, benefits, and obstacles in doing the task. Interview data is recorded, fully transcribed, and translated into English by a research assistant. For reliability purposes, the researcher double-checks and corrects the decoded data.

**Instruments:**

The semi-structured interview allows the participants to reconstruct the details of their experience with the presentation of the projects through a series of open-ended questions that enable the interviewer to build upon and explore the answers to each question. The semi-structured interview allowed the researcher to supplement other relevant questions to obtain more information, apart from a written list of guided questions. The interviews are conducted in the student's native language (i.e., Thai) to avoid a language barrier in conveying a message. The questionnaire developed by Bateman (2008) will be used to assess the enhanced communication skills after the projects.

**Implications:**

The study provides few implications

- 1.When English learning is based on solving a problem, the knowledge and teaching English process becomes more motivating. It is because the students feel seriously engaged in solving the Problem. They enjoy the activity, and all of them work cooperatively.
- 2.Since PBL can encourage learners to use language skills learned from the English class and support learners' confidence in using English, using the project as part of the grading system seems reasonable.
3. The study investigates the enhancement of learners' language skills through PBL.
4. The study focuses on using a variety of project-based activities in the classroom and other measures to examine learners' language skills enhancement.
5. The mixed method of project-based learning and inquiry-based learning may yield the best communication skills.
6. Inner and social virtues are enhanced through the application of the PBL Method. The students felt they learned in this activity about self-confidence, cooperation, and tolerance.
7. Speaking is the language skill more promoted during the process. The students felt confident discussing the different target topics during the other presentations.

**Conclusion:**

The thesis deals with Project Based Learning and its application in English classrooms Project-based learning is a method that trains students to find practical solutions

to specific problems through the process of conducting research. Getting students used to studying various issues can practice high-level skills in students. The position of the teacher in the project-based learning model is as a facilitator who helps students find different information needed to answer existing problems. Project-based learning is an effective method for preparing multidisciplinary groups of learners. An approach with a project-based model creates more critical thinking, problem-solving, independent learning, adaptability, communication, and interpersonal skills. These skills are in line with 21st-century skills that must be possessed by students to have life skills. Project-based learning is a learning model that begins with a problem and leads to the final product produced by students through cooperation and active participation in the learning process to form students as a whole.

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