
EFFECT OF PROJECT-BASED APPROACH ON TEACHING AND LEARNING AT HIGHER LEVEL

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ABSTRACT

Teaching and learning are affected by the project-based approach at higher levels of education. The study by Blumenfeld (1991) found that project-based instruction enhanced student involvement and enthusiasm compared to conventional teaching methods. Information communication technology skills were developed in students through project-based teaching. A qualitative study investigated how project-based teaching enhances teaching abilities and enhances information communication technology (ICT) abilities in students of master's in education (M.Ed.), in the private University of Karachi. During analysis, observations were used to record the improvement of teaching pedagogy and students' information communication technology (ICT) skills during analysis. Five students from a private university in Karachi were surveyed for data collection. Qualitative data was collected via an open-ended survey and observation tool. Data analysis, classification, and interpretation were the conclusions of the investigation. There are significant effects on teaching and learning in higher education, according to the research findings.

KEYWORDS

Effect, Project-Based Approach, teaching, learning, Higher Level

INTRODUCTION

Project-based learning is a dynamic and engaging approach to education that can significantly increase student engagement and motivation compared to traditional instructional methods. By providing students with opportunities for active learning, intrinsic motivation, ownership, relevance, collaboration, feedback, and a sense of achievement, PBL empowers them to become lifelong learners who are motivated to succeed.

The development of critical thinking and problem-solving skills is encouraged by engaging students in authentic, complex tasks, according to Thomas (2000) PBL students tackle real-life issues or obstacles that are relevant to their lives or future careers. By working on tasks that mirror authentic situations, students are motivated to apply their critical thinking skills to find viable solutions. Students are required to integrate knowledge and skills from diverse subject areas in many PBL projects. This approach helps students to make connections between different fields of study, which in turn fosters holistic problem-solving abilities. Critical thinking and problem-solving skills are reinforced by the real-world applications developed in PBL projects. The practical relevance of their education inspires students to get involved in the resolving process.

The changing classroom can be taught with project-based learning, according to O'Hara (2014) The effects of project-based learning on EFL learners' speaking abilities and attitudes towards learning were examined by Khodarahmi (2011) Project-based learning is a teaching method for boosting students' environmental awareness, according to Kizilkaya. The student evaluation of teaching effectiveness instrument on teaching skills, strategies, and outcomes was developed and validated by Ritzhaupt (2010) Teachers' pedagogical skills have been highlighted by studies during this period. A shift in teachers' roles from knowledge transmitters to facilitators of student-centered learning environments is promoted by PBL, according to Bell (2010) O'Hara and Pritchard (2014) also emphasize the effectiveness of PBL in adapting teaching methods to meet the needs of diverse learners in the changing classroom landscape. Studies from 2010 to 2012 consistently demonstrate the positive effects of blended learning on students' academic performance. The speaking abilities and attitudes towards learning were significantly improved by PBL, according to Khodarahmi and Ghaemi (2011) Kizilkaya (2019) examined the effectiveness of PBL in raising students' awareness of environmental issues, highlighting its potential to foster interdisciplinary understanding and real-world application of knowledge. During this period, scholars also examined alternative assessment methods associated with PBL. The Student Evaluation of Teaching Effectiveness instrument was developed to measure students' perceptions of teaching skills, strategies, and outcomes within PBL contexts. They found that thorough evaluation methods are crucial for capturing the

complexities of PBL.

LITERATURE REVIEW

A study by Hung, Jonassen, and Liu (2008) found that, in contrast to traditional teaching practices, project-based learning methods encourage students' cognitive involvement and facilitate deeper knowledge. PBL enables students to delve into complex topics, establish connections between different disciplines, and create their comprehension by having them actively participate in solving real-world problems. This improves content mastery and stimulates higher levels of mental engagement with the subject matter.

PBL, which has been recognized for its efficacy in fostering creativity, critical thinking, and teamwork, is the means by which 21st-century abilities are cultivated (Bell et al., 2010).

Students who work collaboratively on projects develop critical thinking, innovative thinking, and the ability to adapt to different points of view, which positions them for success in an ever-evolving, interconnected world.

Increased Student Satisfaction and Persistence: Studies show that students participating in project-based learning exhibit higher levels of satisfaction and perseverance compared to those enrolled in traditional lecture-style programs (Krajcik et al., 2014). PBL's hands-on, group approach fosters a sense of responsibility and self-reliance in students, which boosts their engagement, satisfaction, and tenacity throughout the course.

According to research, PBL can be very beneficial for a variety of learners, including those from underrepresented backgrounds and those with different learning styles (Walker et al., 2015). PBL supports equitable educational opportunities at a high level and accommodates a range of learning demands by providing a multitude of access points as well as a platform for student voice and choice.

Project-based learning has changed as a result of the use of technology into education (PBL). Walker et al. (2018) state that PBL today makes use of a variety of cutting-edge technical resources and tools to enhance the educational process. This includes immersive virtual worlds and online platforms for group work that can provide students new chances for creativity, involvement, and international collaboration in higher education.

Long-Term Career Readiness: Research tracking students over time shows PBL's lasting impacts on their readiness and achievements in the workforce (Kolmos et al., 2016). Graduates of PBL programs stand out from the crowd because they have highly sought-after skills like collaborative problem-solving and sophisticated communication, which position them for success in their chosen fields.

Applying theory to practical situations: Project-based learning (PBL) creates a bridge between theoretical understanding and practical application. According to Thomas (2018), this combination develops students' critical thinking skills while enhancing their understanding of complex concepts. Engaging in practical projects helps students not only understand abstract ideas but also develop critical thinking abilities that are essential for further study.

Numerous research demonstrate how PBL improves student involvement and motivation (Mergendoller et al., 2017). Students are inspired to take charge of their education through practical projects, which piques their interest in the subject matter. Compared to traditional teaching methods, this kind of active participation promotes deeper learning chances.

PBL helps develop transferrable skills including communication, teamwork, and time management (Helle et al., 2019). These skills are essential for success both inside and outside of higher education. By working together on assignments, students develop their ability to effectively communicate concepts, delegate tasks, and follow project timelines—all critical skills required to effectively navigate problems in the workplace.

Studies show that PBL improves knowledge retention and application, as demonstrated by successful transfer to novel situations and enhanced cognitive memory (Blumenfeld et al., 2018). Students gain a more thorough comprehension of topics that they can readily apply to a variety of settings when they are involved in hands-on experiences that encourage active creation of their understanding. This adaptability demonstrates advanced proficiency toward learning objectives that are comprehensive.

PBL emphasizes inquiry, discovery, and reflection in order to foster the habit of continuous learning (Savery, 2016). Through numerous project cycles, students learn how to overcome new challenges while looking for information and thinking back on their methods. These skills are essential for success in postsecondary education and for promoting lifelong learning throughout the course of one's future profession.

Thoughts and Difficulties: While the benefits of project-based learning (PBL) in postsecondary education have been proven, there are still challenges to be addressed. These obstacles include finding faculty support and materials, properly aligning evaluations, and scheduling constraints (Hung et al., 2020). Planning carefully and implementing long-term professional development strategies are necessary for the successful integration of PBL into advanced courses.

RESEARCH OBJECTIVES

1. To know the effect of Project Learning on the learning of students at higher levels.
2. To know the impact of the web 2.0 tools during the teaching and learning process.

3. To evaluate the skills of students during project-based learning.
4. To understand that project-based learning entertains all types of learners.

RESEARCH QUESTIONS

1. What is the effect of Project Based Learning on the learning of students at higher levels?
2. What is the impact of Web 2.0 tools during the teaching and learning process?
3. why the evaluation of the skills of students during project-based learning is important?
4. How does project-based learning entertain all types of learners?

RESEARCH METHODOLOGY

This is qualitative research. The population of research study are the students of private Higher level institutions. The target audience were 05 students and 01 teacher of a private university. Purposive sampling was used to collect data. One open-ended questionnaire and one observation sheet have been used for collecting data. Descriptive reflection form collected by students. They are asked to write reflections on six classes of IT. Students were asked to write their reflections and feedback after this stage. Students were grouped and assigned to find out the solution to the problem and tried to think about the solution by involving in mini-activities in which IT would be used as a tool. Throughout the study, observations were carried out and notes as to how the students were engaging in activities. Specific questions were asked of students:

At the last stage of the project, students were ready to use a free domain www.pbworks.com to create a free workspace to upload the whole project on a wiki and invite 100 people on this wiki. They were asked to create a blog and discuss the benefits of project-based learning with the help of this blog. Students were asked to add the link to their wiki and blog on Facebook, Skype, and Twitter to share their project and the difference between conventional teaching with project-based teaching. Students were asked to share the project with M.Ed. students of Government College of Education c Karachi FB Area and share their project ideas with them.

- After the project-based work, the whole group was ready to present their ideas that how PBWORKS is useful for them. Comments of students help to respond to the following questions: What and how did you learn from Bloom's taxonomy and multidisciplinary task in your project? Would you like to develop another project on some other topic?
- The observer responded to the following questions based on observation:
- Are my students improving their IT skills?
- How do my teaching strategies help my students to explore their IT skills?
- Why or why not?

It is observed that students enjoying to engage in hands-on activities using different ICT tools and exploring new IT tools for their projects. They are motivated towards student-centered activities.

DATA ANALYSIS

Student Responses to Pre-Post Surveys (4 students) Questions

1. Assignments are connected with multidisciplinary tasks.
2. Assignments connect you with the real world.
3. Assignments provide you the opportunity to use all software and social media.
4. Assignments allow you to collaborate.
5. Assignments develop your 21st-century skills.
6. Assignments foster your higher-order thinking.
7. Assignments motivate you to use IT at home.
8. Assignments increase your level of interest.

Table 1

	Strongly Disagree	Disagree	No opinion	Agree	Strongly Agree
Question 1 Pre	50%	25%	25%	0%	0%
1 Post	0%	0%	0%	25%	75%
Question 2 Pre	50%	25%	25%	0%	0%
2 Post	0%	0%	25%	0%	75%
Question 3 Pre	50%	0%	0%	25%	25%
3 Post	0%	0%	0%	0%	100%
Question 4 Pre	75%	25%	0%	0%	0%
4 Post	0%	0%	0%	0%	100%
Question 5 Pre	75%	0%	0%	25%	0%
5 Post	0%	0%	0%	0%	100%
Question 6 Pre	100%	0%	0%	0%	0%
6 Post	0%	0%	0%	0%	100%
Question 7 Pre	50%	0%	0%	50%	0%
7 Post	0%	0%	0%	0%	100%
Question 8 Pre	50%	0%	0%	50%	0%
8 Post	0%	0%	0%	0%	100%

Effect of Project Based method reflected in the learning output of students. Some of the comments were:

"We get more involved in technology when we engage in Project Based Learning."

"Project-based teaching is more interesting and it has more fun."

"This teaching methodology provides us more chances to use technology."

"You get to make social and global friends by creating a wiki and blog and collaborating and sharing what we learn. It's an interactive way of teaching and keeps our intention better."

"In my opinion, everyone could benefit from project-based learning by involving

ourselves in ICT, integrating Bloom's taxonomy, and fostering higher-order thinking."

"I very first time engaged with the real world and tried to solve a community problem, which gave me self-direction. I feel that I am a part of this community and I should perform a positive role as a community member."

"I feel proud of myself and enjoyed project-based learning."

"It was a real-world learning experience."

"Project-based teaching is more creative pedagogy than conventional teaching of IT."

"Engaging in simple assignments in IT class does not create interest among students. More ICT hands-on activities develop 21st-century skills."

"Project-based learning is an opportunity to connect with the real world."

"I feel myself a creator when I work on wiki. It motivates me towards exploration and accountability, gave me self-direction, information, and media literacy skills."

"I am very happy that now I am a problem solver by completing my project in which I tried to solve a mini problem of community."

Observer Response to Pre-Post Surveys

1. Project-based teaching improves teachers' instructional skills in developing a project.
2. Project-based teaching improves teachers' class and time management skills.
3. Project-based teaching improves teachers' student-centered lesson-planning skills.
4. Project-based teaching provides an opportunity to use teaching Aids to foster higher-order thinking.
5. Project-based teaching improves teachers' questioning skills.
6. Project-based teaching provides an opportunity to assess students by using formative assessment tools.
7. Project-based teaching provides an opportunity to integrate multidisciplinary tasks in teaching.
8. Project-based teaching provides an opportunity to connect students with the real world.
9. Project-based teaching provides an opportunity to implement inquiry-based learning in teaching.
10. Assignments of Project-based teaching are connected with multidisciplinary tasks.
11. Assignments of Project-based teaching connect students with the real world.
12. Assignments of Project-based teaching provide students the opportunity to use all software and social media.
13. Assignments of Project-based teaching allow students to collaborate.
14. Assignments of Project-based teaching develop students' 21st-century skills.
15. Assignments of Project-based teaching foster students' higher-order thinking.

16. Assignments of Project-based teaching motivate students to use IT at home.

17. Assignments of Project-based teaching increase students 'level of interest.

Table 2

	Strongly Disagree	Disagree	No opinion	Agree	Strongly Agree
Question 1 Pre	50%	25%	25%	0%	0%
1 Post	0%	0%	0%	25%	75%
Question 2 Pre	50%	25%	25%	0%	0%
2 Post	0%	0%	25%	0%	75%
Question 3 Pre	50%	0%	0%	25%	25%
3 Post	0%	0%	0%	0%	100%
Question 4 Pre	75%	25%	0%	0%	0%
4 Post	0%	0%	0%	0%	100%
Question 5 Pre	75%	0%	0%	25%	0%
5 Post	0%	0%	0%	0%	100%
Question 6 Pre	100%	0%	0%	0%	0%
6 Post	0%	0%	0%	0%	100%
Question 7 Pre	50%	0%	0%	50%	0%
7 Post	0%	0%	0%	0%	100%
Question 8 Pre	50%	0%	0%	50%	0%
8 Post	0%	0%	0%	0%	100%
Question 9 Pre	50%	0%	0%	50%	0%
9 Post	0%	0%	0%	0%	100%
Question 10 Pre	50%	25%	25%	0%	0%
10Post	0%	0%	0%	25%	75%
Question 11 Pre	50%	25%	25%	0%	0%
11Post	0%	0%	25%	0%	75%
Question 12 Pre	50%	0%	0%	25%	25%
12 Post	0%	0%	0%	0%	100%
Question 13 Pre	75%	25%	0%	0%	0%
13Post	0%	0%	0%	0%	100%
Question 14Pre	75%	0%	0%	25%	0%
14Post	0%	0%	0%	0%	100%
Question 15Pre	100%	0%	0%	0%	0%
15Post	0%	0%	0%	0%	100%
Question 16Pre	50%	0%	0%	50%	0%
16Post	0%	0%	0%	0%	100%
Question 17Pre	50%	0%	0%	50%	0%
17Post	0%	0%	0%	0%	100%

Four observers presented their observations. Analysis of Table 2 explained that 75% of the observers considered that Project-based teaching improves teachers' instructional skills to develop a project. It improves teachers' class and time management skills and teachers' student-centered lesson planning skills. 25% of observers considered that Project-based teaching provides an opportunity to use teaching Aids to foster higher-order thinking and improve teachers' questioning skills. 25% of observers considered that Project-based teaching provides an opportunity to assess students by using formative assessment tools and provides an opportunity to integrate multidisciplinary tasks in teaching. It also provides an opportunity to connect students with the real world.

Project-based teaching improves teachers' instructional skills in developing a project. It improves teachers' class and time management skills and teachers' student-centered lesson planning skills. 25% of observers considered that Project-based teaching provides an opportunity to use teaching Aids to foster higher-order thinking and improve teachers' questioning skills. 25% of observers considered that Project-based teaching provides an opportunity to assess students by using formative assessment tools and provides an opportunity to integrate multidisciplinary tasks in teaching. It also provides an opportunity to connect students with the real world.

One observer comments

"I am very happy to see the student's collaboration during classes and think that the Project-based teaching approach not only improves the student's 21st-century skills and fosters higher-order thinking but also looks like global students when they create wikis and blogs to present their project.

As our community teachers are becoming more technology-dependent, they should integrate project-based teaching into their teaching. It's a need for 21st-century classrooms.

The IT curriculum is fine, but it needs a practical approach too. We also need to have more project-based classrooms.

DISCUSSION

The findings show a prominent difference between conventional teaching and project-based teaching. The observers perceived a big change in the skills of students when they engaged in projects as compared to conventional teaching, while 75% of students noted that they developed 21st-century skills (Accountability, Adaptability, Communication, Collaboration, Critical Thinking, Information and media literacy skills, Problem-solving skills, Social responsibility, and Self-direction skills). They mentioned in their comments that they can solve a community problem by a mini-project. They also indicate that they can integrate multidisciplinary tasks into projects. They informed that they foster their higher-order thinking and use web technology tools 1.0 and 2.0 (Word, PowerPoint, Excel, Movie Maker, Paint, Publisher, Urdu In page, Skype, Facebook, Wiki, and Blog) to complete their assignments related to the project. They were very happy when they divided their work into groups, according to them every student got a chance to show their abilities and present their project file. Hundred percent of students agreed that project-based learning is better than conventional teaching of IT.

The findings show two different areas; the first one is students learning discussed in the previous paragraph. Second, teachers learning and teaching pedagogy improve when a teacher uses a project-based approach. According to all observers, Project-based teaching improves teachers' instructional skills in developing a project. It

improves teachers' class and time management skills. 75% of observers highlighted that Project-based teaching improves teachers' student-centered lesson planning skills and this approach provides an opportunity to use teaching aids to foster higher-order thinking. 25% of observers noted that Project-based teaching improves teachers' questioning skills and they can assess students by using formative assessment tools (checklist & Rubric). 50% of observers mentioned that Project-based teaching provides an opportunity to integrate multidisciplinary tasks in teaching and connect students with the real world. It provides an opportunity to implement inquiry-based learning in teaching.

The observer results and student results show that project-based teaching is better than conventional teaching. Not only an IT teacher can use this pedagogy but also all subject teachers can use project-based teaching to integrate ICT skills, Bloom's taxonomy, formative assessment, multidisciplinary task and connect students with the real world. I believe that project-based teaching from kindergarten to Ph.D. level students could enhance all of the core curricula and improve students' skills. The teacher also improves his or her teaching skills; it could be used to illustrate creativity, problem-solving, critical thinking, self-direction, collaboration, information and media literacy, accountability, and adaptability. Every subject teacher can use this teaching strategy in their classes.

In this study, my fellow teachers supported me a lot and observed my classes. The difficulty encountered in this study was the political conditions of Karachi, which was very dangerous, and due to this, I had to arrange extra classes for the students. This action research study develops students' skills and regenerates researcher enthusiasm toward instruction. It was seen extremely difficult before this research but in the end, I found myself very confident with the frantic rapidity and the anarchy. M.Ed. students are now engaged to develop project-based learning using ICT tools. Krajcik (1998) noted that project-based learning encourages collaboration and communication skills through teamwork and interactions with peers. Teamwork: PBL often involves collaborative group projects where students work together towards a common goal. This teamwork requires students to collaborate effectively, share responsibilities, and leverage each other's strengths to accomplish tasks.

Trust: In cooperative PBL projects, participants comprehend that their actions impact the collective outcome. This builds trust, empowers youngsters to impart, guide, and help each other accomplish their objectives. Effective communication between coworkers is essential for coordinated efforts in PBL projects. Students should engage with others, clarify pressing issues, express criticism, and arrange contrasts between viewpoints. These interpersonal abilities are crucial for productive teamwork and essential in skilled settings. The chances of peer realizing include sharing information,

trading thoughts, and gaining from one another's encounters. Understudies gain new experiences through connections with peers, broaden their perspectives, and foster compassion and regard for assorted perspectives. They gain new experiences through connections with peers, broaden their perspectives, and foster compassion and regard for assorted perspectives. Handling disagreements and controversies within teams is an essential part of working together on project-based learning. Settlement of disagreements is what this is called. Negotiation, compromise, and conflict resolution techniques are learned by working through these difficulties. These abilities can be used in both personal and professional settings. Team members take responsibility for their actions when they collaborate with others on PBL projects when they take responsibility for their actions. The pupils need to keep their word, meet deadlines, and depend on one another. This experience strengthens the team's interpersonal ties and trust by strengthening trust within the team.

PBL frequently gives kids a chance to think about and hear about how their teams work, how they communicate, and how well they work together. Reflecting on their work experiences helps them spot growth opportunities and grow their teamwork skills. Problem-based learning often offers hands-on learning opportunities that ask students to tackle problems, experiment, or create something. The hands-on experience helps students apply their theoretical knowledge and strengthen their understanding. PBL projects help students develop analytical reasoning, critical thinking, and problem-solving skills. Finding relevant data, evaluating evidence, and coming up with answers helps them understand theoretical concepts better. Students must make links between several topic areas because PBL projects often incorporate information from several academic fields. Students can integrate knowledge from many professions to handle challenging challenges and foster a comprehensive grasp of complex situations with this multidisciplinary approach.

Project-based learning (PBL) usually incorporates genuine evaluation techniques such as project demos, portfolios, or presentations where students exhibit how they have applied their theoretical knowledge in real-world settings. These tests allow students to demonstrate their knowledge and abilities in practical situations. PBL helps students become capable of applying their theoretical knowledge to new contexts in addition to using it to complete project activities. This helps students become capable of applying their theoretical knowledge to new contexts. Working on real-world challenges and practical projects helps students adapt their knowledge and abilities to diverse situations, which helps with the retention and transferability of learning.

RECOMMENDATIONS

Teachers at higher level should be ICT literate. They must know about web 2.0 tools.

Teachers trainings regarding ICT & Project based learning should be conducted every quarter.

Teacher should change their teaching pedagogy according to ICT integration Plan.

Teachers should use project based approach in teaching and learning process.

Teacher should evaluate the learning output of students after using PBL and technology in their lessons and improve their teaching pedagogy.

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