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Project-Based Learning in General Psychology Class for Undergraduate Students

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Abstract

The aim of this study was to investigate the effects of project-based learning on the learning achievement and satisfaction of undergraduate learners in General Psychology. The study included 30 undergraduate students enrolled in a general psychology class. The research utilized a project-based learning management plan, a learning achievement test, and a satisfaction questionnaire as the instruments. The results of the study revealed significant positive impacts of project-based learning on both the learning achievement and satisfaction of students in the context of general psychology. These findings highlight the effectiveness of project-based learning in enhancing students' learning outcomes and overall satisfaction in the field of general psychology. The study contributes to the existing body of literature supporting the benefits of project-based learning as an instructional method for undergraduate education.

Keywords: project-based learning, psychology education, undergraduate education

1. Introduction

Psychology classes play a crucial role in providing undergraduate students with a fundamental understanding of human behavior and mental processes (Searight et al., 2010). These courses often attract students from a diverse range of majors, offering an opportunity for interdisciplinary learning and the exploration of psychological principles in various academic contexts. Understanding the basic ideas of psychology equips undergraduate students with valuable knowledge and skills that are applicable to various aspects of their lives (Landrum et al., 2019). It provides students with insights into the complexities of human nature and the factors that influence individuals' thoughts, emotions, and actions. By learning about concepts such as perception, cognition, personality, motivation, and social interactions, students gain a deeper understanding of themselves and others. This knowledge not only fosters self-awareness and empathy but also enhances their ability to navigate personal relationships, make informed decisions, and solve problems effectively (Ugur et al., 2015). Additionally, studying psychology cultivates critical thinking skills, encouraging students to analyze and evaluate information, consider multiple perspectives, and approach challenges with a scientific mindset (Halonen et al., 2008). As undergraduate students prepare to embark on their professional careers and engage in various social contexts, the foundational understanding of psychology equips them with the tools necessary to thrive and adapt in an ever-changing world.

However, it is essential to recognize that psychology is a multifaceted and intricate field that requires a thorough comprehension of various theoretical perspectives, research methods, and intricate psychological phenomena (Negrii, 2013). Students must delve into topics such as cognitive processes, developmental stages, deviant behavior, and psychological disorders as part of their study of psychology. In addition, psychological research frequently involves statistical analysis, experimental design, and evaluation of empirical studies. The complexities of psychology can be challenging for undergraduate students, especially those with no background in the field. Sometimes, the abstract character of psychological theories and the need to integrate knowledge across multiple domains can be overwhelming (Njoku & McDevitt, 2015). Nonetheless, these obstacles should not deter students from pursuing the subject. Instead, they emphasize the significance of providing effective and engaging instructional methods, such as project-based learning, to facilitate the understanding and application of psychological concepts

Lecture-based teaching, as a traditional method employed in psychology instruction, may present certain limitations and challenges. Psychology is a dynamic and interactive field that encompasses a wide range of topics and theories, often requiring students to actively engage with the material rather than passively receive information (Alaagib et al., 2019). However, lecture-based instruction primarily focuses on one-way information transmission, with the instructor delivering content through lectures and students assuming a more passive role as recipients of knowledge. This approach can hinder active student engagement, critical thinking, and a deeper understanding of psychological concepts (Solomon, 2020). Additionally, the abstract and complex nature of psychology may not be effectively conveyed solely through lectures, as it necessitates hands-on exploration, practical application, and interactive discussions.

To address these limitations, alternative instructional strategies, such as project-based learning (PBL), can be presented to foster active student participation, encourage critical thinking, and promote a deeper grasp of psychological principles. In a PBL environment, learners can apply what they've learned about psychology in real-world circumstances through PBL's emphasis on group work and simulations. This method encourages analytical thinking, problem-solving, and the synthesis of information from several branches of psychology. Students can gain a more thorough understanding of psychological phenomena through hands-on experience gained through project-based learning. Moreover, PBL promotes students' active participation, peer interaction, and autonomy, all of which boost students' enthusiasm and engagement. The purpose of this research was to determine whether using PBL principles to instruct a general psychology course improved students' knowledge retention, analytical reasoning, and interest in the material.

2. Literature Review

2.1 What Is Project-Based Learning?

Project-based learning (PBL) is an instructional approach that revolves around engaging students in learning activities and real-world tasks that present them with challenges to solve. According to Stivers (2010), PBL involves students participating in authentic projects, which require them to tackle problems and find solutions. Bell (2010) further defines PBL as a student-driven approach in which students take part in a genuine project, formulate their own questions or inquiries, and create a project to share with a specific audience, all under the supervision of teachers. In this process, teachers assume the role of facilitators, overseeing and approving the students' choices and guiding them toward a common goal. The core aspect of PBL is that it revolves around a driving question or problem, which guides and shapes the learning activities, ultimately leading to the creation of a final product that addresses the initial question (Blumenfeld et al., 1991). PBL can be described as a collaborative, inquiry-based teaching method that fosters the integration, application, and construction of knowledge as students work together to generate solutions for complex problems (Guo et al., 2020).

2.2 Principles in Designing a Project-Based Learning Environment

It can be noted that the PBL environment utilized real-world problem-based learning circumstances to develop learners' skills. Learner-centered and collaborative learning is also a foundation for the instructional method. Scholars (e.g., Condliffe, 2017; Krajcik & Shin, 2014; Le, 2018) have presented the key features of project-based learning and it can be summarized that learners' engagement, authentic problems, scaffolding, collaborative learning, and product creation play a crucial role in the project-based learning environment. To provide a detailed discussion of each component of Project-Based Learning (PBL), the following details are provided.

2.2.1 Learners' Engagement

In Project-Based Learning (PBL), learners' engagement plays a vital role in their active participation and ownership of the learning process. PBL encourages students to become active learners by immersing themselves in hands-on activities, investigations, and problem-solving. Through meaningful projects, students are motivated to explore, inquire, and apply their knowledge and skills. PBL creates an environment where learners are actively engaged, fostering their curiosity, critical thinking, and creativity. By being actively involved in their own learning, students develop a deeper understanding of the subject matter and are more likely to retain knowledge and transfer it to real-world contexts.

2.2.2 Authentic Problems

One of the key features of Project-Based Learning is the incorporation of authentic problems or challenges. Authentic problems reflect real-world scenarios, issues, or situations that students may encounter beyond the classroom. These problems are relevant and meaningful, providing students with a context in which to apply their knowledge and skills. By tackling authentic problems, students develop a deeper understanding of the

subject matter, as they must navigate complexities and make connections between theoretical concepts and practical applications. This approach helps students develop problem-solving skills, critical thinking abilities, and the capacity to apply their learning in meaningful ways.

2.2.3 Scaffolding

In Project-Based Learning, scaffolding refers to the support and guidance provided to students throughout the learning process. Teachers act as facilitators, offering assistance, structure, and resources to help students navigate the project successfully. Scaffolding ensures that students have the necessary tools, knowledge, and skills to work through the challenges and complexities of the project. It involves providing initial guidance, breaking down tasks into manageable steps, and gradually reducing support as students gain confidence and proficiency. Scaffolding in PBL promotes student autonomy and empowers them to take ownership of their learning, while still providing a safety net for guidance and assistance when needed.

2.2.4 Collaborative Learning

Collaborative learning is a fundamental aspect of Project-Based Learning, fostering teamwork, cooperation, and peer-to-peer interactions among students. PBL creates opportunities for students to work together, share ideas, and engage in collective problem-solving. Collaboration allows students to benefit from diverse perspectives, share expertise, and develop important interpersonal skills. By collaborating, students learn from and with each other, enhancing their communication skills, teamwork abilities, and appreciation for different viewpoints. Collaborative learning in PBL cultivates a supportive and inclusive learning environment that reflects real-world collaboration and prepares students for collaborative work in their future careers.

2.2.5 Product Creation

Product creation is a central element of Project-Based Learning, where students develop a tangible artifact or product as a result of their project work. The product serves as evidence of students' understanding, skills, and solutions related to the project's driving question or problem. The creation of a product encourages students to synthesize and apply their knowledge, think critically, and demonstrate their learning in a meaningful way. The process of designing and producing a final product in PBL allows students to showcase their abilities, creativity, and mastery of the subject matter. It also provides a sense of accomplishment and pride, as students have a tangible outcome that can be shared with an audience, whether it's their peers, teachers, or a broader community.

2.3 Previous Studies

Scholars have recognized the advantages of project-based learning (PBL) in higher education due to its compatibility with the learning environment and the characteristics of learners. The primary goal of higher education is to equip individuals with the necessary skills to effectively address challenges in their chosen professions. Previous studies have yielded positive outcomes, indicating that PBL enhances learners' knowledge and skills (Çelik, Ertaş, & İlhan, 2018; Eckardt et al., 2020; Ernst, 2013; Rodríguez et al., 2015), as well as their attitude towards the learning experience (Guo et al., 2020; Poonpon, 2018; Vogler et al., 2018). However, it is worth noting that limited research has explored the implementation of PBL specifically in psychology classes for non-major students, who can apply the acquired knowledge to their personal lives rather than their careers. Consequently, the present study aims to address this gap by utilizing PBL in the context of a general psychology course. The objectives of the current study are twofold: first, to examine the learning achievement of undergraduate learners in General Psychology after engaging in PBL; and second, to assess the satisfaction of undergraduate learners with PBL as a teaching method for General Psychology.

3. Methodology

3.1 Participants

The participants of this study consisted of 30 undergraduate students who were enrolled in a general psychology class. The population from which the participants were selected comprised a total of 60 students. The selection of participants was conducted using a simple random sampling method, ensuring that each student had an equal chance of being chosen. The participants were treated with utmost caution to address ethical considerations related to human research. Informed consent was obtained from all participants, emphasizing voluntary participation, confidentiality, and the option to withdraw from the study at any point without repercussions. Confidentiality of participants' personal information and data was strictly maintained throughout the research process.

3.2 Instruments

3.2.1 Project-Based Learning Management Plan

A comprehensive learning management plan was developed for the General Psychology class with the aim of enhancing learners' acquisition of basic knowledge in psychology. The plan covered a variety of topics essential to General Psychology, including Introduction to Psychology, Research Methods in Psychology, Biological Psychology, Cognitive Processes, Social Psychology, and Abnormal Psychology. These topics were carefully selected to provide students with a well-rounded understanding of the fundamental principles and concepts in psychology.

To foster active and meaningful learning experiences, the learning management plan incorporated a project-based learning framework, offering students a range of engaging activities. These activities included conducting a research project, where students designed and executed a small-scale study to explore a psychological phenomenon or hypothesis of their choice. This involved formulating research questions, collecting and analyzing data, and presenting their findings.

In addition, students had the opportunity to analyze real-life case studies, applying psychological theories and concepts to understand and propose solutions for various psychological issues or challenges. Collaborative problem-solving was another component of the plan, allowing students to work in groups to tackle complex psychological problems. By utilizing their collective knowledge and skills, students engaged in brainstorming, research, and the presentation of innovative solutions to the class. Moreover, the learning management plan involved the creation of multimedia presentations. Students were tasked with developing presentations on specific psychological topics, incorporating visual aids, videos, and interactive elements to enhance understanding and engagement.

Throughout the semester, the learning management plan underwent rigorous evaluation by experts in the field of psychology education. Their valuable feedback and suggestions were incorporated to ensure the plan met high academic standards, aligned with the intended learning objectives, and effectively promoted active learning and meaningful outcomes. The implementation of this thoughtfully designed learning management plan provided students in the General Psychology class with an engaging and comprehensive learning experience. It equipped them with a solid foundation in the basic principles and knowledge of psychology, fostering their understanding and appreciation of the subject matter.

3.2.2 Learning Achievement Test

The learning achievement test utilized in this study consisted of 15 items that were specifically designed as multiple-choice questions. The test aimed to assess the participants' understanding of basic knowledge in psychology. The Inter-Item Correlation (IOC) for the test ranged from 0.6 to 1.0, indicating a good level of consistency among the items. The difficulty (p) ranged from 0.25 to 0.78. The discrimination of each item (r) ranged from 0.22 to 1.0. The reliability of the test, as indicated by Cronbach's alpha, was calculated to be 0.854, suggesting a high internal consistency of the test items. These psychometric properties demonstrate that the learning achievement test was a reliable and valid instrument for assessing the participants' knowledge acquisition in psychology.

3.2.3 Satisfaction Questionnaire

The questionnaire used in this study was designed using a 5-point Likert scale to measure participants' perceptions and attitudes. The questionnaire consisted of 19 items, which were divided into three parts: learning management aspect, learning activity aspect, and learning experience. The learning management aspect comprised four items, focusing on the effectiveness of the instructional management strategies employed. The learning activity aspect consisted of seven items, assessing the engagement and active involvement of students in the learning process. The learning experience part included eight items, capturing participants' overall experience and satisfaction with the project-based learning approach. Each item in the questionnaire exhibited good Inter-Item Correlation (IOC), ranging from 0.67 to 1.0, indicating the items' ability to measure the intended constructs effectively. The questionnaire provided valuable insights into participants' perceptions of learning management, learning activities, and overall learning experience within the project-based learning context.

3.3 Data Collection and Data Analysis

Data collection for this study involved a pre-test and post-test design, with a single group of participants. Prior to the implementation of the project-based learning intervention, participants completed a pre-test to assess their baseline knowledge of psychology. Following the intervention, a post-test was administered to measure their learning achievement. In addition to the test scores, participants' perceptions and experiences were gathered

through a questionnaire administered at the end of the study.

To determine if there was a significant difference in the participants' test scores before and after the intervention, a paired samples t-test was utilized. The paired samples t-test provides insights into whether the project-based learning intervention led to a statistically significant improvement in the participants' learning achievement. The results gained from the questionnaire were analyzed by descriptive statistics.

4. Results

Table 1. Effects of project-based learning on Participants' learning achievement

Learning achievement	N	($\overline{X}$)	%	(S.D.)	t	p
Pre-test	30	11.9	79.33	2.37	3.776**	0.000
Post-test	30	13.43	89.53	1.70		

Note. *p > 0.05.

The results of the study demonstrate a positive effect of project-based learning on the participants' learning achievement in general psychology. The mean score of the pretest was 11.9 (79.33%), with a standard deviation of 2.37, while the mean score of the posttest was 13.43 (89.53%), with a standard deviation of 1.70. The paired samples t-test revealed a significant increase in the participants' test scores after the implementation of the project-based learning intervention, as indicated by the t-value of 3.776 and a p-value of 0.00. The significant difference observed between the pretest and posttest scores suggests that the project-based learning intervention was effective in facilitating knowledge acquisition in the context of general psychology education.

Table 2. Participants' satisfaction with the project-based learning management

Items	$\overline{X}$	S.D.	Degrees of agreement
Learning management			
1. Learning management provides opportunities for learner participation in activities.	4.04	0.98	High
2. Learning management fosters a sense of self-responsibility and group accountability among learners.	4.24	0.72	High
3. Learning management allows learners the freedom to engage in activities independently.	4.08	0.76	High
4. Learning management promotes diverse thinking among learners.	4.27	0.73	High
Aspect average	**4.16**	**0.80**	**High**
Learning Activities			
5. The learning activities are well-suited to the content.	4.04	0.99	High
6. The learning activities promote knowledge and idea exchange among learners.	4.47	0.78	High
7. The learning activities stimulate critical thinking and decision-making significantly.	4.03	0.70	High
8. The learning activities encourage learners to think and respond.	4.02	0.76	High
9. The learning activities provide opportunities for learners to express their thoughts.	4.02	0.77	High
10. The learning activities enhance learners' comprehension of the content.	4.31	0.68	High
11. Learning activities foster collaborative learning experiences.	4.13	0.68	High
Aspect average	**4.15**	**0.78**	**High**
Benefits			
12. Learning management facilitates easier comprehension of the content.	4.07	0.90	High
13. Learning management supports long-term retention of knowledge.	4.11	0.71	High
14. Learning management empowers learners to independently construct knowledge and understanding.	4.18	0.70	High
15. Learning management enables learners to apply learning strategies to other subjects.	4.16	0.67	High
16. Learning management facilitates the development of higher-order thinking skills in learners.	4.16	0.53	High
17. Learning management aids learners in making reasonable decisions.	4.09	0.87	High
18. Learning management enhances understanding and familiarity with peers.	4.18	0.86	High
19. The learning activities in this teaching approach promote collaborative work with others.	4.20	0.53	High
Aspect average	**4.14**	**0.72**	**High**
Overall	**4.15**	**0.76**	**High**

The results of the study indicate that the participants expressed a high level of satisfaction with the learning experiences of project-based learning. The overall mean satisfaction score was 4.15, with a standard deviation of 0.76, suggesting a positive evaluation. Specifically, the participants agreed with statements highlighting the

positive aspects of the learning environment, such as the provision of opportunities for learner participation, the fostering of self-responsibility and group accountability, the freedom for independent engagement in activities, and the promotion of diverse thinking. Additionally, the participants acknowledged the benefits of the learning activities, including the promotion of knowledge and idea exchange, stimulation of critical thinking and decision-making, encouragement of learner expression, enhancement of comprehension, fostering of collaborative learning experiences, and the promotion of collaborative work with others. These findings underscore the effectiveness of project-based learning in facilitating a satisfying and enriching learning experience for the participants, allowing them to develop essential cognitive and collaborative skills while comprehending and applying psychological concepts.

5. Discussions

5.1 Positive Effects of Project-Based Learning on Participants' Knowledge

The results of this study support the notion that project-based learning has a positive impact on students' learning achievement in the context of general psychology. These findings align with previous research that has also highlighted the benefits of this instructional method in higher education settings (Çelik, Ertaş, & İlhan, 2018; Eckardt et al., 2020; Ernst, 2013; Rodríguez et al., 2015). The positive effects observed can be attributed to several factors. It can be seen that project-based learning engages students actively in the learning process. By involving them in hands-on activities, such as conducting research projects, analyzing case studies, and collaborating on problem-solving tasks, students are encouraged to take ownership of their learning. Moreover, placing students at the center of the learning experience contributes to increased motivation, intrinsic engagement, and a sense of personal relevance, all of which positively influence learning outcomes. Furthermore, through collaborative activities and group work, students have the opportunity to share ideas, perspectives, and knowledge. This collaboration enhances their social and communication skills, promotes peer learning, and exposes them to diverse viewpoints, leading to a richer and more comprehensive understanding of the subject matter as evidenced by the results of the study.

5.2 Satisfying Learning Experiences in the Project-Based Learning Environment

The results of this study not only demonstrate the positive effect of project-based learning on students' learning achievement in the field of general psychology but also indicate that students had satisfying learning experiences within the project-based learning environment. These findings are consistent with previous research conducted by Guo et al. (2020), Poonpon (2018), and Vogler et al. (2018) that also highlighted the benefits of project-based learning in higher education settings. One possible explanation for the observed positive effects is that project-based learning aligns well with the learning styles and preferences of higher education learners. It provides them with the freedom and autonomy to explore their interests, make informed decisions, and take responsibility for their own learning journey. This learner-centered approach allows students to engage actively in the learning process and pursue topics and tasks that are personally meaningful to them. By allowing students to have a sense of ownership over their learning, project-based learning fosters intrinsic motivation, enthusiasm, and a heightened level of engagement, all of which contribute to improved learning outcomes. Furthermore, project-based learning provides a supportive and collaborative learning environment that encourages students to work together, exchange ideas, and learn from one another. This collaborative nature of project-based learning enhances students' social and communication skills, promotes the sharing of diverse perspectives, and facilitates a deeper understanding of the subject matter. Through collaborative interactions, students are exposed to different viewpoints and experiences, expanding their horizons and enriching their learning process.

The findings of this study, along with previous research, have significant implications for classroom settings and policy making. Firstly, educators should consider integrating project-based learning approaches into their classrooms. By designing projects that align with students' interests and providing opportunities for autonomy and responsibility, educators can create engaging and student-centered learning environments that enhance learning achievement and satisfaction. Additionally, policymakers and educational institutions should recognize and support project-based learning as part of their educational policies. This support can include providing resources, professional development, and incentives for educators to adopt project-based learning practices. By aligning teaching practices with diverse learning styles, educators can cater to the individual needs of students and foster intrinsic motivation and engagement. Moreover, fostering collaborative and supportive classroom environments promotes teamwork, communication skills, and deeper understanding of subject matter. Lastly, investing in professional development and training programs for teachers enables effective implementation of project-based learning. By taking these implications into account, educators and policymakers can enhance student learning outcomes and prepare them for future success.

6. Conclusion

In conclusion, the findings of this study highlight the positive impact of project-based learning on students' learning achievement and satisfaction in the context of general psychology. It was found that the implementation of project-based learning allowed students to develop their knowledge of general psychology and enjoy the learning atmosphere provided by the instructional method.

The pedagogical implications of this study suggest that incorporating project-based learning into general psychology classes can enhance students' learning outcomes and provide them with valuable skills applicable to their daily lives. By offering a learner-centered approach, project-based learning promotes critical thinking, problem-solving, collaboration, and autonomy, fostering a deeper understanding of psychological concepts and their practical applications. Educators should consider adopting project-based learning as an effective instructional method to engage and empower students in the learning process.

While the findings of this study provide valuable insights into the positive effects of project-based learning in the field of general psychology, it is important to acknowledge the limitations of the research. One notable limitation is that the study solely relies on quantitative methods. By exclusively using quantitative approaches, the study may have overlooked nuanced aspects of students' experiences and perceptions that could have been captured through qualitative research methods, such as interviews or focus groups. Quantitative data, while providing statistical evidence, may not fully capture the rich and contextual nature of students' learning experiences within the project-based learning environment.

Further studies in this area can expand the research scope by exploring the long-term effects of project-based learning on students' knowledge retention and transferability. Additionally, investigating the impact of project-based learning on other academic disciplines and diverse student populations would contribute to a more comprehensive understanding of its effectiveness and applicability. Furthermore, studies can explore the optimal design and implementation strategies for project-based learning, taking into consideration factors such as project duration, scaffolding techniques, and assessment methods.

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