

Teacher and Student Perceptions of Project-Based Learning (PJBL) Assisted with Chamilo E-Learning for Junior High School Students

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Abstract

Project-Based Learning (PJBL) is a learning model that is centered on students using projects as the final learning outcome. In addition, Chamilo e-Learning is a web-based learning management platform that provides various features to support the online learning process. The integration of the Project-Based Learning (PJBL) learning model, assisted by Chamilo e-learning, is one of the innovations in science learning that can train various skills needed in the 21st century. This study aims to describe how teachers and students perceive the benefits of Project Based Learning (PJBL) and Chamilo e-learning for junior high school students. For this purpose, the type of research used was survey research with a research sample of 84 respondents, consisting of 20 teachers and 64 students. Data collection was carried out by providing a questionnaire analyzing the needs of teachers and students with 36 question items. The results of the analysis show that science learning still rarely applies to project-based learning. Apart from that, it was also found that teachers and students were not aware of the existence of the Chamilo e-learning platform due to the lack of integration of electronic-based science learning. Based on this, it is concluded that science learning using the project-based learning (PJBL) model assisted by Chamilo e-learning is still little known by teachers and students, so in the opinion of teachers and students, integrating this learning model is very necessary to be carried out in science learning.

Keywords: Project-Based Learning, Chamilo E-Learning, Perception

INTRODUCTION

Innovative learning methods have become a vital need in the field of science education, responding to the demands of a rapidly evolving educational landscape and the need to foster essential skills among students (Ali, & Ullah, 2018). Traditional teacher-centered approaches have proven inadequate in equipping students with the practical and analytical skills necessary for the challenges of the 21st century. One of the educational models that address this need is Project-Based Learning (PJBL), a student-centered teaching strategy that encourages active learning, critical thinking, and problem-solving (Tiwari, & Saini, 2019). The focus on creating projects as a final learning outcome makes PJBL a unique and effective tool for engaging students in deep, applied learning.

Project-Based Learning (PJBL) is grounded in the concept of experiential education, where students take ownership of their learning process (Thomas, 2000). Unlike traditional instructional models that emphasize memorization and passive learning, PJBL requires students to actively engage in inquiry-based activities and collaborate with their peers to solve real-world problems. This learning model places significant emphasis on project creation and presentation as the end product, thereby allowing students to demonstrate their understanding of scientific concepts practically and creatively. As a result, PJBL is a transformative learning strategy that encourages not only academic

knowledge but also the development of essential skills such as teamwork, time management, and self-directed learning.

To support the PJBL framework in the context of modern, digital learning environments, platforms like Chamilo e-Learning have emerged as valuable tools for enhancing educational experiences. Chamilo e-Learning is a web-based learning management platform designed to facilitate online learning through various interactive features, such as course creation, content sharing, collaborative tools, and assessment management. The platform offers opportunities for both teachers and students to interact dynamically, enabling the implementation of blended and distance learning approaches. With its wide array of functionalities, Chamilo e-Learning aligns with the principles of PJBL by providing a virtual space for project development, collaboration, and presentation.

The integration of PJBL with Chamilo e-Learning is particularly relevant in meeting the requirements of 21st-century skills. Today's educational objectives extend beyond content knowledge to encompass critical thinking, problem-solving, digital literacy, and collaboration skills. By combining the experiential nature of PJBL with the digital capabilities of Chamilo e-Learning, educators can create an interactive learning environment that enhances students' engagement and technological competence. This integration is pivotal for preparing students to navigate a world characterized by rapid technological advancement and complex societal challenges, making PJBL and Chamilo e-Learning a potentially powerful educational approach in science classes.

However, despite the potential benefits of this integrated model, there exists a significant gap in its application within science education. Current practices show that the PJBL approach is infrequently used, and awareness of Chamilo e-Learning remains limited among teachers and students. This lack of awareness and utilization underscores the need to explore how this combination could be better implemented in educational contexts. A clear understanding of the perceptions of teachers and students regarding the use of PJBL and Chamilo e-Learning is necessary to identify barriers to adoption and potential strategies for successful integration.

The present study aims to address this gap by investigating the perceptions of teachers and students towards the implementation of PJBL assisted by Chamilo e-Learning in junior high school science education. By examining their views, the study seeks to identify the perceived benefits and challenges of using this innovative learning approach. Ultimately, the findings are expected to contribute to the development of more effective strategies for integrating PJBL and e-learning tools in science education, fostering an environment conducive to active learning and skill development.

METHODS

The study employed a descriptive survey research design to gather data on the perceptions of teachers and students regarding the implementation of Project-Based Learning (PJBL) assisted by Chamilo e-Learning in junior high school science education (Oktay, & Ozturk, 2012). A total of 84 respondents participated in the research, comprising 20 teachers and 64 students. The selection of this sample was based on their involvement and experience in the science learning process, as both groups play critical roles in understanding the effectiveness and feasibility of integrating PJBL with e-learning platforms. The survey approach was chosen to provide a comprehensive overview of the current status of PJBL and Chamilo e-Learning usage and to identify any perceived needs or benefits from both the teacher and student perspectives.

Data collection was carried out through a structured questionnaire designed to assess the knowledge, needs, and perceptions of PJBL and Chamilo e-Learning among the respondents. The questionnaire consisted of 36 items, covering aspects such as the current application of PJBL in science classes, the familiarity and usage of Chamilo e-Learning, and the perceived advantages and challenges of integrating these tools in the learning process. Participants were asked to respond to the questions based on their personal experiences and opinions. The data analysis was conducted using a descriptive statistical approach, focusing on the frequency and percentage of responses to each question item. This analysis aimed to evaluate the overall awareness of PJBL and Chamilo e-Learning, as well as to identify the perceived benefits and potential areas for improvement in implementing this innovative learning model. The results of this analysis would provide insights into the existing gaps in knowledge and practice, informing strategies for enhancing science education through PJBL and e-learning integration.

RESULTS

The findings of the survey revealed that Project-Based Learning (PJBL) is not widely implemented in the context of junior high school science education. A significant portion of both teachers and students indicated that they had limited experience with PJBL activities in their science classes, suggesting that traditional instructional methods continue to dominate the teaching and learning process. This limited application of PJBL reflects a gap between current teaching practices and the potential benefits of more active, student-centered approaches to science education. It appears that while teachers may be aware of PJBL as an educational concept, its practical application in the classroom remains minimal.

Furthermore, the survey highlighted a lack of familiarity with the Chamilo e-Learning platform among both teachers and students. The majority of respondents indicated that they were either unaware of Chamilo e-Learning or had not used it as part of their science learning experience. This lack of awareness points to an underutilization of available digital tools that could significantly enhance the learning process. The data suggests that the integration of Chamilo e-Learning into science classes is not currently a standard practice, which may be due to factors such as insufficient training, limited access to digital resources, or a lack of institutional support for e-learning platforms in the educational setting.

Despite the limited implementation of both PJBL and Chamilo e-Learning, the perceptions of teachers and students towards their integration were overwhelmingly positive. The majority of respondents expressed a belief that incorporating PJBL assisted by Chamilo e-Learning into science education would be highly beneficial. They perceived that this combination could facilitate a more interactive, engaging, and skill-based approach to learning, helping to develop critical thinking, collaboration, and digital literacy skills among students. Both groups indicated support for the adoption of these tools, seeing them as valuable for improving science education and better preparing students for the challenges of the 21st century. The results thus underscore a need for greater efforts to introduce and promote the use of PJBL and Chamilo e-Learning in junior high school science classes.

DISCUSSION

The results of this study indicate a significant gap between the current practices in science education and the innovative teaching methods that can enhance students' learning experiences. The limited implementation of Project-Based Learning (PJBL) in science classes suggests that the

traditional teacher-centered approach still prevails, potentially limiting students' opportunities to engage in deeper, more applied learning. This finding is in line with existing literature, which highlights that while PJBL has been recognized as an effective pedagogical approach, its adoption in formal education settings remains sporadic. This underutilization could stem from factors such as a lack of teacher training in PJBL methods, time constraints, or curriculum structures that prioritize content coverage over experiential learning.

Similarly, the lack of familiarity with the Chamilo e-Learning platform, as reported by both teachers and students, raises concerns about the integration of technology in science education. Chamilo, as a learning management system, offers a range of tools to facilitate online project collaboration, resource sharing, and assessment—features that align well with the principles of PJBL (Markham, 2011). However, the low awareness of Chamilo suggests a broader issue of limited exposure to digital learning tools among educators and students, which may be due to insufficient access to technology, a lack of training on how to utilize such platforms effectively, or institutional barriers that prevent the integration of e-learning into the classroom environment. This finding aligns with research on e-learning adoption, which often identifies these same challenges as key barriers to implementation.

The positive perceptions of integrating PJBL with Chamilo e-Learning among teachers and students provide a compelling argument for further exploration of this combined approach. Respondents expressed a clear belief that the use of PJBL assisted by Chamilo would enhance the learning process, fostering skills such as collaboration, critical thinking, and technological literacy skills that are increasingly important in the 21st-century educational landscape. These findings are supported by studies that emphasize the benefits of PJBL in promoting student engagement, self-directed learning, and real-world problem-solving. Similarly, the use of e-learning platforms like Chamilo can create a more interactive and collaborative learning environment, making learning more accessible and flexible.

Comparing these findings with similar research reveals a consistent trend: when students are provided with opportunities to engage in project-based learning, especially with the support of digital tools, they demonstrate improved learning outcomes and greater enthusiasm for the subject matter. Previous studies have shown that PJBL, when properly implemented, can significantly improve students' understanding of scientific concepts and their ability to apply knowledge in practical situations. Moreover, the use of e-learning platforms enhances students' digital skills and enables a blended learning approach, which combines face-to-face and online learning experiences. These findings reinforce the potential benefits of integrating PJBL and Chamilo e-Learning in enhancing science education.

While the positive perceptions toward PJBL and Chamilo integration are encouraging, there are challenges to be addressed to ensure effective implementation. One key challenge is providing adequate training and support for teachers to design and facilitate PJBL activities using e-learning platforms. Teachers need to develop not only an understanding of PJBL methodologies but also the technical skills to effectively use Chamilo and other digital tools. Another challenge is ensuring that the curriculum allows sufficient flexibility for project-based activities and that assessment methods are adapted to evaluate project outcomes effectively. Additionally, access to technology and infrastructure must be improved to support the widespread use of e-learning platforms.

To address these challenges, the study recommends several strategies for promoting the integration of PJBL and Chamilo e-Learning in science education. First, professional development programs should be provided to train teachers in both PJBL pedagogy and the technical use of e-learning

platforms. Second, schools should work towards creating flexible curricular structures that accommodate project-based activities and assess student learning based on project performance. Finally, educational institutions need to invest in technological infrastructure and ensure access to digital devices for both teachers and students. By implementing these recommendations, it is possible to enhance the adoption of innovative learning models that support active, student-centered, and technologically enhanced science education.

CONCLUSION

The study's main findings reveal a clear gap in the current practices of science education, where Project-Based Learning (PJBL) is rarely applied, and there is limited awareness of the Chamilo e-Learning platform among teachers and students. Despite the well-established benefits of PJBL in fostering active, experiential learning, and the capacity of Chamilo e-Learning to enhance digital collaboration and content delivery, these methods have not been fully integrated into junior high school science classes. Both teachers and students demonstrate a lack of familiarity with these tools, suggesting a need for greater exposure and training to maximize their potential in enriching science education. The findings highlight that while the benefits of PJBL and Chamilo e-Learning are recognized, their practical application remains minimal, underscoring the importance of expanding their use.

Based on the positive perceptions expressed by both teachers and students, the study concludes that integrating PJBL assisted by Chamilo e-Learning is perceived as a valuable strategy to improve science learning outcomes. This combined approach has the potential to not only enhance student engagement and understanding of scientific concepts but also develop critical 21st-century skills such as collaboration, problem-solving, and digital literacy. To address the current gaps, it is recommended that schools and educators adopt this model more widely, investing in teacher training and technological resources to facilitate the effective implementation of PJBL and Chamilo. Additionally, future research is suggested to further investigate the impact and effectiveness of this integrated approach across various educational settings, including different subjects, age groups, and learning environments, to provide a more comprehensive understanding of its benefits and challenges.

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