



Contents lists available at [Journal IICET](#)
Jurnal EDUCATIO (Jurnal Pendidikan Indonesia)
ISSN: 2476-9886 (Print) ISSN: 2477-0302 (Electronic)
Journal homepage: <https://jurnal.iicet.org/index.php/jppi>



Literature review: the effectiveness of gamification-assisted problem based learning model to improve learning outcomes and student motivation in christian religious education

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Article Info

Article history:

Received Aug 12th, 2025

Revised Sep 22th, 2025

Accepted Oct 31th, 2025

Keyword:

Problem Based Learning

Gamification

Learning Outcomes

Motivation

SIR

ABSTRACT

This study examines the implementation of the PBL model with a gamification approach in the context of PAK. This study aims to assess the effectiveness of learning using the PBL model with a gamification approach in improving learning outcomes and student motivation. This study uses the Systematic Literature Review (SLR) method, with a research period of the last 5 years (2020-2025). The results of the analyzed study showed that the application of gamification increased student motivation and engagement. The implementation of the PBL model helps students in understanding material concepts regarding Christian values that can be applied in daily life. Although the lack of empirical research on PBL-Gamification makes the methods used less longitudinal, it does not reduce that PBL and gamification are ineffective. Therefore, the contribution in this study is to fill the study gap related to the application of the PBL model with a gamification approach in the context of PAK.



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Introduction

Christian religious education (PAK) is a learning process that centers on the character of students in fostering moral values and spirituality. PAK has the main goal in education, which is to shape the character and faith of students in a context that can be applied in daily life (Kandouw, 2025). PAK is not only about transferring knowledge about religious doctrines, but how students can internalize in the environment of life with different races and ethnicities. In addition, learners can grow their faith through action and build relationships and service across borders in a fragmented world.

As PAK in the contemporary multicultural educational landscape can no longer be reduced to a dogmatic discourse that is separate from the dialectic of reality in the environment of life (Roy Kolibu & Stepanus, 2025a). So the teaching of PAK that is carried out emphasizes more on transformation in the formation of morals and character as well as their attitude of integrity in upholding Christian values. But unfortunately, the rapid advancement of technology has brought the dynamics of social change that poses various challenges in PAK learning today. Moreover, the reality in the field that has occurred shows that PAK teaching is currently still for teachers. This means that teachers play a more important role than students, making students less likely to explore learning in depth. Conditions like this make the learning outcomes of students low in understanding concepts and lack of internalization of Christian values in life and low motivation in learning.

As in the midst of the onslaught of the current digital era, the curriculum implemented demands a change in the learning paradigm. Such as the shift in learning from teachers to students to encourage critical reflection and more contextual problem-solving with their lives. Not only relevant to the personal context but also in the community environment so that it makes a great contribution as a pluralistic society (Karo, 2024). Moreover, Christian religious lessons rely more on lecture methods and memorized verses in learning. Of course, it does not provide space related to an in-depth learning experience. In addition, this kind of learning cannot adequately meet the existing demands according to the times.

Research from Napitupulu and Simanjuntak (2023) shows that religious lessons are considered less challenging than other subjects. Of course, this is a comparison of different learning engagements and motivations. Moreover, technology that has been widely used in education, makes religious subjects must adopt technology and implement it into learning to make students involved effectively. The theoretical foundation also reveals that religious teaching is a transformation that requires the study of technology in the current digital era. Carr (2010), also said that there is an issue that is a gap in the field of education in an era that is full of distractions, which of course becomes a challenge in teaching PAK so that it requires a suitable learning strategy.

One of the learning strategies that can answer the challenges of the PAK learning method is the problem based learning (PBL) model. This learning model is very suitable because it is directly related to the real-life context, where learning places students to solve authentic problems in learning activities. The problem-based learning model is learning that uses thinking skills. Students will solve problems in a real environment and find solutions in overcoming problems, so that they are meaningful and relevant and contextual (June, 2020). The basic philosophy of PBL also emphasizes that learning can be considered as a constructive, independent, and collaborative activity if implemented with predetermined steps.

In addition, PBL as a pedagogical strategy offers an instructional framework because it supports active learning based on the belief that effective learning occurs when students can build ideas through social interaction and independent learning (Yew & Goh, 2016). The PBL model implemented in learning (PAK) can be directly related to Christian values in the personal, moral, and spirituality of students. However, keep in mind that the effectiveness of the PBL model applied depends on the level of learning motivation of the students as well. Because with low motivation to learn, it is considered unsuccessful. Moreover, this 21st-century learning must certainly have a great learning stimulus to get maximum learning results. Therefore, an approach is needed that can support PBL to be more interesting and interactive.

One of them is Gamification which has been widely used in modern education. Gamification is a learning method that integrates elements of play into learning. Gamification also includes collaboration and interaction that can be realized by students during learning (Putra et al., 2024). Gamification is one of the approaches to pedagogical innovation, which can show its effectiveness in increasing student motivation. With elements such as points, badges, leaderboards, levels, badges become a challenge in completing learning. Of course, here the learning process of students will be more interesting and of course make students will be actively involved in the learning process (Oliveira et al., 2023).

In the context of PAK, the use of technology is currently the focus of research. The integration of technology into PAK teaching will certainly increase the effectiveness of the learning and teaching process. Such as the use of gamification sourced from technology, it allows for the delivery of varied and interactive learning. So that learning will be more meaningful and deep, because students will participate in learning happily and allow them to also live Christian values (Sihombing et al., 2025a). However, the use of gamification in PAK learning is still limited and has not been widely found. Moreover, the combination of gamification and PBL models is very minimal implemented simultaneously in the context of PAK, compared to other subjects, but both are still carried out separately and have not been widely found.

This condition shows a significant gap because there is no mapping that can be seen from various sides in a comprehensive manner related to learning design in the context of PAK. Therefore, this is a gap in conducting research and is the main basis for systematically reviewing studies related to the implementation of PBL integrated with gamification. This research is also minimal in the literature study related to PBL and gamification is very limited in the context of PAK. Given the various gaps that occur, this research is important to examine the effectiveness of PBL and gamification models in PAK teaching with opportunities to increase opportunities in the future.

The purpose of this study is to map studies related to the application of PBL in the context of PAK learning and the application of gamification in PAK learning to improve learning outcomes and student motivation. In addition, it identifies research gaps that have not been answered in the literature found and provides theoretical and practical recommendations in the development of learning designs, especially in Christian religious education (PAK).

Method

This study uses the Systematic Literature Review (SLR) method introduced by Kitchenham (2010). This method has 5 stages that must be done according to the following figure 1.

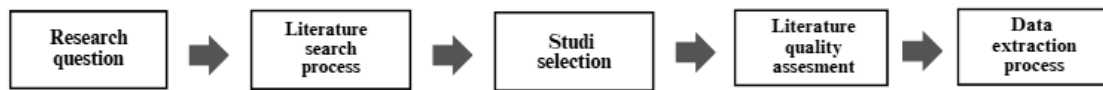


Figure 1. Literature Review Process

The above systematic literature review starts from formulating research questions, identifying and finding relevant articles, categorizing and assessing the collected articles, synthesizing articles and interpreting findings (Khan et al., 2003). This is in line with the perspective that a systematic literature review includes evaluating publications relevant to the research issue and subsequently conducting a comprehensive analysis of the article under review (Vienna et al., 2021).

Once the search is complete, the categorization is carried out based on the following criteria: Literature that is relevant to the research topic and consists of journals published between 2020-2025. The databases used come from Google Scholar, DOAJ, Garuda Ministry of Education and Culture, OJS and Crossref indexed by SINTA, due to limitations on international sources related to PBL and gamification in the context of PAK. The literature search process was carried out by entering the keywords "PBL", "Gamification", "learning outcomes", "motivation" and "religious education", which were entered into the online article database search engine as primary and secondary data. The languages used are English and Indonesian.

The next stage is study selection. This stage is carried out to determine whether or not the literature found is suitable for use in the study based on inclusion and exclusion criteria. Literature that is included in the inclusion criteria means that the literature is included in the category of articles that are suitable for use in conducting a review and will be used as primary data. The inclusion criteria used include (1) empirical data or using the SLR method, (2) articles published in the last 5 years, (3) discussing (PBL) in the context of religious studies, (4) discussing gamification in the context of religious learning, (5) variables of learning outcomes and motivation and (6) open access articles. Uses English and Indonesian. As for exclusion, it is outside of what has been mentioned in the inclusion criteria.

After the above process is completed, a really relevant study quality assessment is carried out to answer the research question by reading keywords, abstracts, introductions, and results in the article. After that, the data findings were analyzed qualitatively descriptively with reference to the research objectives. This section reviews the results and analyzes the findings to answer the problems formulated in the research questions.

Based on the criteria determined above, the questions used in this study are (1) Can the application of PBL with a gamification approach improve students' learning outcomes in religious lessons? (2) Can the application of PBL with gamification increase students' motivation in religious learning? (3) What are the challenges faced when integrating the PBL model with gamification approaches in the context of religious teaching?

After the article to be selected is collected, the author conducts an analysis, with data analysis techniques to combine the results of several findings to draw conclusions.

Results and Discussions

Based on the results of the systematic study selection, there are 8 findings based on research issues, especially the application of the PBL model and gamification in the context of religious studies. The articles studied are articles from the last 5 years. In the collection of literature, there are limitations in the search database for sources derived from Scopus, Springer or other internationally reputable journals. The journals found came from the Sinta-indexed national journal database, because discussions related to PBL and gamification in the context of PAK are also limited and rarely researched. The following table below, shows the number of papers examined for research needs according to the search keywords. The results of the comprehensive analysis of the 8 articles are described in Table 1 below.

Learning using gamification is currently developing in various domains of education, with the aim of integrating technology-based learning designs. Learning using gamification will certainly attract the attention of students, because of the fun learning atmosphere. Especially with the PBL learning model approach, in the context of religious education, it will create deeper learning. Of course, this offers a more interactive learning experience. Based on the table from the comparative literature studies above, various findings are described that describe the

use of gamification with the PBL model approach, in the context of religious education in schools. Some of the articles reviewed above show positive results related to the use of gamification with the PBL learning model approach in the context of religious education, with the main goal of improving learning outcomes and student motivation.

Table 1. Article Analysis Results

Key Findings	QA	Critical notes	Writer
PAK, Gamification, Motivation, Learning experience	7	R&D research. This research does not involve PBL, but is relevant in the context of PAK because it applies gamification to increase learning motivation. The results of the study are valid because they conducted field tests and the findings have implications for improving learning, specifically in increasing motivation, engagement and learning outcomes.	(Sihombing et al., 2025b)
PAK, PBL, Motivation	8	Descriptive quantitative research. This research did not involve gamification. The sample used is quite low. But it is considered relevant because discussing PBL in the context of PAK with a focus only on increasing learning motivation. The findings of this study have a positive influence from the implementation of the PBL model into learning.	(Manullang et al., 2025).
PAI, Gamification, Motivation, Engagement	7	Classroom action research (PTK). The shortcomings are not discussed directly in the context of PAK. The scale used does not use motivation theory. The research is considered relevant because it presents empirical data and discusses religious learning applied with gamification, with a focus on increasing learning motivation. The findings also show a significant increase in motivation and engagement that affects religious learning outcomes.	(Ati et al., 2025).
PBL, Gamification, Learning Outcomes, Motivation, 21st Century Skills	8	SLR research. It does not directly discuss learning that focuses on PAK subjects. It cannot provide strong evidence in the application of PBL and gamification applied, because it uses the literature review method. But it is relevant to the theme because it discusses PBL and gamification with a focus on learning outcomes and motivation. Some of the findings also showed positive results related to the implementation of PBL with a gamification approach.	(Handikaningtyas et al., 2024).
SIR, Gamification, Learning Outcomes	7	Descriptive qualitative research. The data analysis technique used the Milles & Huberman model. The study did not involve the PBL model and there was no critical discussion related to the use of Quizzes. However, this research is relevant to the theme because the learning used in the context of PAK and applying gamification and focusing on learning outcomes. The findings in this study show that there is a fun learning engagement and atmosphere, so that student learning outcomes participate.	(Pontoon & Kamagi, 2023).
PAK, PBL, Learning outcomes	9	This study presents empirical data. It does not involve gamification in the research. No control groups were measured. However, this study is considered relevant because it discusses the implementation of PBL in the context of PAK with a focus on seeing increased learning outcomes. The results of the research are also in the very good category and the application of the learning model is very influential in improving learning outcomes.	(Roy Kolibu & Stepanus, 2025b).
PAI, Gamification, Motivation	7	This study did not use quantitative data. It does not discuss direct learning in the context of PAK. It does not involve PBL, but is considered relevant in a religious context by using gamification with a focus on increasing motivation. The findings of this study stated that PAI applied with gamification significantly increased motivation.	(Safroni & Hidayah, 2024).
PAK, Gamification, Motivation	8	SLR research. The study did not involve PBL. But it is relevant because it discusses the application of gamification in the context of PAK and focuses on increasing motivation. The various findings studied in this study also obtained significant results, such as motivation, engagement, learning experience and improved learning outcomes.	(Prilly et al., 2025).

The use of gamification in learning based on the findings shows that there is satisfaction related to increasing students' learning motivation, which in the process affects their learning outcomes. As the results of research

conducted by Sihombing, 2025 that, in the implementation of gamification into learning, it shows positive results because it can significantly increase learning motivation with a very good category. The field test assessment carried out was 92.05%. Then based on the results of the N-Gain calculation of the findings, there is 0.79, so it can be concluded that the results of the research conducted are effective in learning Christianity. In addition, research from Pontoan & Kamagi (2023), which stated in their findings that the use of gamification (Quizziz) in learning indirectly increases student involvement. The choice to use Quizzes as a learning medium in the context of PAK creates a pleasant learning atmosphere and students certainly pay attention to the lessons and become material for reviewing the material learned. Of course, this is in line with other research that says that gamification has the potential to affect students' academic achievement, commitment, and motivation (Manzano-León et al., 2021).

Furthermore, the PBL model implemented into learning has been proven to improve student learning outcomes. Findings conducted by Manullang et al., 2025 that there is a positive and significant influence between the application of the PBL model and student learning motivation. This can be proven by the correlation coefficient of 0.59 so that it shows that Problem-Based Learning (PBL) has an effect with a determination coefficient of 34.81% on students' learning motivation in PAK learning. While the findings from Roy Kolibu & Stepanus, 2025 that the PBL model provides students with the opportunity to solve real-world problems through a collaborative, creative, and reflective approach. In addition, the average evaluation score was in the "good" to "excellent" category, indicating that problem-based learning effectively bridges the gap between theory and practice in PAK teaching. Therefore, the PBL model is very advantageous when implemented into PAK learning, because the learning cycle involves (1) defining problems and identifying knowledge gaps through discussion, then (2) information collection and independent learning and (3) reporting (Wijnia et al., 2024).

The integration of PBL and gamification currently has a very large opportunity for learning success. In the implementation carried out, of course, it adds a deep learning experience, not just memorizing concepts from the material. However, learning like this will be the center of attention of students in learning. In addition, integrating PBL and gamification models will enrich the experience and create interactive and fun learning. The findings from Handikaningtyas, 2024 strengthen the application of PBL and gamification in education, that PBL with a gamification approach has been proven to show a significant improvement in students' critical, creative, and collaborative skills. However, in this context, educators' skills in designing learning by integrating gamification elements are an important factor in determining the success of gamification. However, in teaching PAK for the integration of the two, it is still very limited and requires further research.

There are several gaps obtained from the findings from Prilly, (2025) that the implementation of gamification also takes a long time and process. Because teachers must think carefully about the steps and process of implementing gamification, prepare rewards and test the method. In addition, limited access to technology in schools or learning environments. Some schools do not have adequate infrastructure such as a stable internet connection, adequate hardware such as computers or tablets, or the necessary software to support interactive learning (Rapa et al., 2024). This can limit the ability of PAK teachers to effectively apply technology in their learning. Not all teachers have adequate training or skills in using gamification tools. This lack of skills can be a barrier to designing and managing effective learning (Samosir, 2024). Thus, it requires a learning design that can help PAK teaching with the main goal without shifting learning in accordance with the learning context.

Furthermore, some of the contexts of the findings above also discuss the use of gamification in the context of PAI related to learning motivation. Of course, this is different from the research conducted because it discusses the teaching of PAK. This difference is certainly associated with religious values that are contained according to the teachings adhered to. However, it does not take into account the context of religious lessons that are centered on increasing students' learning motivation through the use of gamification. As found by Ati et al., (2025); Safroni & Hidayah (2024), revealed that students tend to be more active and enthusiastic when learning using gamification media and the application of gamification has also been proven to significantly increase student learning motivation engagement. This can be shown in the first cycle starting from 54% to 91% of the students' activities and in the second cycle 62% to 86% of their learning motivation.

Based on the findings discussed above, it has explicitly answered the application of gamification with the PBL model approach, which directly has the potential to improve student learning outcomes in PAK teaching. However, further research is needed to strengthen these findings using experimental research to make them more robust. It is none other than to find out the direct influence of these two approaches. In addition, the learning motivation found in the studies previously studied, shows a significant increase in religious teaching with the approach used, as well as the challenges and gaps that occur in the field, support from the government is needed to build infrastructure and provide technology-related training such as the use of gamification, in order to bridge learning, especially in the context of PAK. Nonetheless, the inherent shortcomings in gamification implementation can be effectively addressed without diminishing the benefits of using such media in learning.

This is in line with the theory of Self-Determination (Decy & Ryan 2000), that individuals will engage in activities based on preferred preferences and interests. These individual choices form the basis of an awareness of their needs and an interpretation of the educational environment. If it is associated with gamification, of course, technology like this will increase students' motivation to learn. Moreover, the media used is interactive by using elements such as leaderboards, scores or point systems to create a fun and more in-depth learning atmosphere. Of course, this is the right choice where, Gamification and PBL are very suitable because they support the purpose of teaching Christian values and encourage transformation in the formation of attitudes and morals of students. In addition, learning will no longer be monotonous but will be more effective and efficient, making students excited about learning using gamification.

Conclusions

The researcher identified 8 articles related to the application of PBL models and gamification in PAK learning. Based on the results of the discussion above, the application of the PBL model with a gamification approach can effectively improve learning outcomes. In addition, it has a positive impact on increasing motivation for religious learning. Various research findings show positive results due to the existence of empirical data, although there is minimal in finding the application of PBL and gamification carried out simultaneously directly into learning, especially in the context of PAK. Furthermore, there are several factors of gap that occur in the implementation of PBL in the context of PAK, such as the lack of sufficient time in preparing learning and uneven student involvement. In addition, there is a lack of teachers' readiness to adopt technology, limited internet access and no training for teachers in rural schools. Therefore, practically, it is important for religious teachers to further explore in developing learning designs using the PBL model combined with gamification to improve the quality of learning. As well as for the next researcher to conduct research related to the application of PBL with a gamification approach in the context of PAK.

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