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Development of Learning Materials Based on the IDEAL Stage Model in Project-Based Learning (PjBL) to Enhance Students' Problem-Solving Skills

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Abstract

Project-Based Learning significantly enhances students' creative thinking skills through project-based assignments. Teaching materials emphasizing this model empower students to independently develop ideas and concepts. This study aims to develop a valid, practical, and effective Project-Based Learning model based on the Ideal Stage framework to improve problem-solving skills among graduate students in the Islamic Education Study Program at IAIN Curup. The research employed the Research and Development (R&D) method, adapting Borg & Gall's 10-cycle procedural model. Findings show that 94.85% of lecturers and 78.39% of students expressed the need for Ideal Stage-based Project-Based Learning materials in the graduate environment of IAIN Curup. Expert evaluations rated the Islamic Education Philosophy teaching materials with an average score of 88.475, categorized as highly feasible within the 80–100% range. Pre-test results for students' collaboration skills showed a t-value lower than the t-table (0.994 < 2.000), while post-test results for problem-solving skills indicated a t-value higher than the t-table (19.614 > 2.000). These findings demonstrate that the syntax and teaching materials for Islamic Education Philosophy based on the Ideal Stage framework significantly and effectively improve students' problem-solving skills.

Keywords: *Ideal Stage, Problem Based Learning, Project Based Learning*

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INTRODUCTION

Problem-solving skills can be defined as the ability to think deeply, connecting one problem to another to find solutions to the challenges at hand (Riandi, 2016). In this context, it is important to point out that thinking is a cognitive activity involving the understanding of two types of problems: general and specific problems. Therefore, cognitively, learners need to distinguish whether the problem they encounter in learning is general or specific, as their thinking concepts will vary.

The problem-solving process involves the application of the knowledge or experiences that learners possess to address the problems encountered in the learning process (Rizky Ananda Setiyawan & Palupi Sri Wijayanti, 2020). Consequently, problem-solving relies heavily on higher-order cognitive activities, whether performed individually or in groups (Alchihabi et al., 2021), to achieve appropriate solutions to the problems posed by educators. Education aims to shape learners into individuals who are intelligent in various aspects of life (Amrullah, 2022). The success of education is not solely measured by the level of knowledge possessed but also by the morality, personality, and skills of the learners (Mukti & Rosadi, 2021). Thus, education not only develops intellectual intelligence but also moral intelligence, character, and practical skills that benefit both the individual and the surrounding community (Sumarno, 2019). Education seeks to equip learners with a profound understanding of various aspects while shaping them into individuals with critical thinking abilities and strong qualities. In the context of teaching and learning, the delivery of information through media has the potential to stimulate learners' attention and interest.

The use of learning media can have a positive impact, such as creating a consistent perception between students and educators, as well as among students regarding the material being presented (D. G. Saputra et al., 2024). This feature is expected to contribute positively to achieving learning objectives and student outcomes. Beyond merely being a tool for delivering information, learning media is expected to enhance students' interest in learning and stimulate their curiosity throughout the learning process (Rahmayanti & Jaya, 2020, p. 108). Additionally, learning media, including teaching materials, serves as a tool that aids both educators and students in understanding the subject matter (Sari, 2022).

Innovative educators play a crucial role as facilitators in helping students develop their potential, acquire new knowledge, and gain valuable experiences during the teaching and learning process (M. D. A. Saputra et al., 2024). The key to success lies in the educators' ability to design learning experiences that are not only informative but also engaging and effective. An engaging learning design is a key factor in determining the overall quality of the learning process (Amrullah, 2019). Innovative educators need to incorporate elements that motivate and actively engage students. An engaging learning design considers not only visual aspects but also various learning styles and the use of available resources and technologies (Saritepeci, 2020).

Project-Based Learning (PjBL) offers significant opportunities for students to develop creative thinking skills through project-based assignments. In this context, students actively participate in a learning project that allows them to independently develop ideas or concepts (Nurhikmayati, 2020, p. 3). In the context of the Islamic Philosophy of Education (FPI) course at the Graduate Program of IAIN Curup, a major challenge is developing students' problem-solving skills. Based on initial observations and interviews with lecturers, although the Project-Based Learning (PjBL) model has been implemented, it has been limited to writing papers based on mini research and creating teaching materials in the form of PowerPoint presentations and handouts. So, a better and more thoughtful PjBL model is needed to help improve students' problem-solving skills, especially in FPI, which needs critical and analytical thinking to tackle problems in Islamic education.

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Project-Based Learning places students as active participants in the learning process, enabling them not only to acquire conceptual knowledge but also to apply it in real-world situations through projects (Shofiyyah et al., 2024). The study indicates that students are not only tested on their knowledge but also on their ability to think creatively, develop innovative solutions, and overcome challenges that arise during the project. Through this approach, PjBL facilitates knowledge acquisition and builds creative skills that are crucial in addressing the complexities of the real world (González-pérez & Ramírez-montoya, 2022). Students can enhance their creative thinking abilities by actively participating in challenging and relevant projects. Achieving learning objectives in each session is of paramount importance, and thus, innovation and updates in learning models are necessary to improve the quality of teaching (Şahan, 2020). Educators must also demonstrate creativity in developing the use of media and creating innovations that support the success of the learning process. Based on this context, the development of the IDEAL Stage-Based Project-Based Learning model becomes an important effort to improve students' problem-solving skills in the Master's Program in Islamic Religious Education at IAIN Curup.

Previous research has found that the application of PjBL in learning has shown significant improvements in students' problem-solving abilities (Husin et al., 2025). Other findings have identified that students also reported positive perceptions of PjBL, which helped improve critical thinking and collaboration (Ndiung & Menggo, 2024). Another study demonstrated that students taught using the PjBL model exhibited higher levels of creative thinking and problem-solving abilities compared to those taught using conventional methods (Ruslan et al., 2024). However, initial observations at IAIN Curup indicate that, despite implementing PjBL in teaching, students still have a gap between the expected outcomes and their actual achievements.

Based on preliminary observations and interviews with lecturers, the PjBL model applied, particularly in the preparation of papers based on mini research, as well as the development of teaching materials in the form of PowerPoints and handouts, has not significantly addressed the issues of Islamic Education Philosophy, which is the core objective of the course. Therefore, this study aims to examine the implementation of the PjBL model that can improve problem-solving skills and also be applicable in real-life situations, particularly in the era of Society 5.0, which demands students to possess critical and innovative thinking skills. In this study, the development of teaching materials integrating the IDEAL Stage-based PjBL model is being conducted to enhance the problem-solving abilities of students in the Islamic Religious Education Program at IAIN Curup. This approach has not been widely implemented in higher education, particularly in the course of Islamic Education Philosophy. By using a more hands-on and challenging project-based learning model, this study aims to address the lack of information on how to use the IDEAL stage-based PjBL in religious education. The implementation of the IDEAL stage-based PjBL model is expected to have a positive impact not only on improving students' problem-solving skills but also on supporting the development of more relevant and adaptive educational quality in the face of global challenges. This research holds great potential to contribute significantly to the enhancement of higher education quality, particularly in equipping students with the skills essential for the workforce and society.

METHOD

The research method employed in this study is the Research and Development (R&D) method. The Research and Development (R&D) method is a study conducted to determine the effectiveness of a product by designing and creating new products through field testing. Research and Development is an industry-based development model in which research findings are used to design new products and procedures, which are then systematically field-tested, evaluated, and refined until they meet specified criteria such as effectiveness, quality, or relevant standards (Gall et al., 2003). Research and development in education is based on the industrial research and development model, where research results are used to design products and procedures, which are then systematically tested in the field, evaluated, and refined until they meet specific criteria, including effectiveness, quality, and established standards (Oluwatobi et al., 2023).

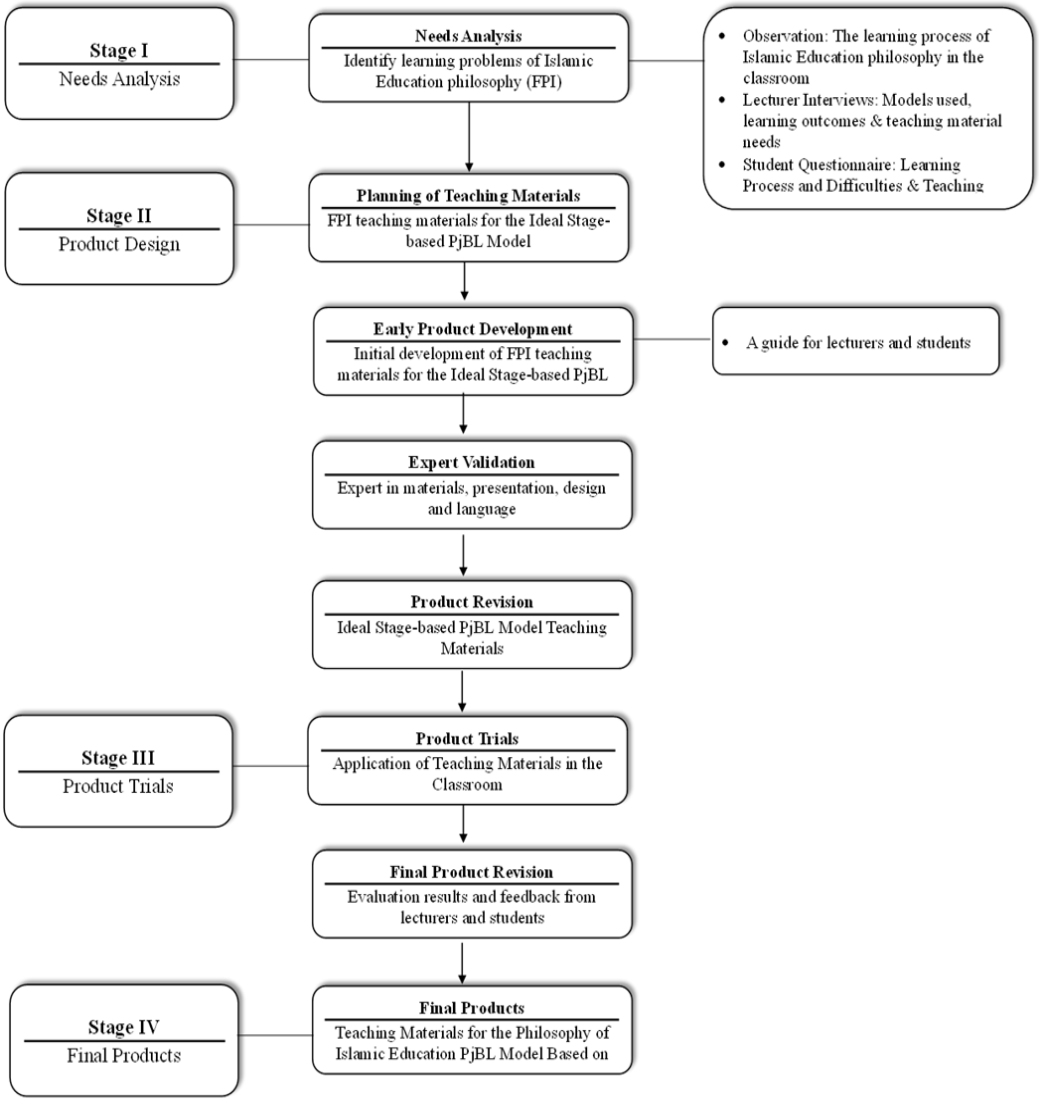

Figure 1. Borg and Gall Product Research and Development Model

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This research and development is classified as level 4, with the objective of creating a new product in the form of an IDEAL Stage-Based Project-Based Learning (PBL) model, teaching materials, and syntax that are intended to improve students' problem-solving abilities. The instructional materials are accessible in both print format and Flip PDF Professional. After the production of the teaching materials and syntax, the next stage is to conduct an efficacy test on the generated product.

A requirements analysis phase commences the research, with an emphasis on the identification of challenges in the teaching of Islamic Education Philosophy at IAIN Curup. Through observations, interviews with lecturers, and questionnaires sent to Postgraduate Islamic Religious Education (PAI) students, many difficulties in the utilization of teaching materials and the implementation of less effective teaching approaches were found. Data were acquired from professors and students directly involved in the lectures, utilizing total sampling to guarantee that the results genuinely reflect the actual needs on the ground. The outcomes of this investigation serve as a critical foundation for building relevant and contextual learning solutions.

The sampling strategy in this study employed total sampling, where the number of lecturers teaching the Islamic Education Philosophy course in the Postgraduate Program at IAIN Curup was 2, and the sample of students consisted of those from classes 2A and 2B, with a total of 23 postgraduate students. The following is the breakdown of the sample involved:

No.	Respondent	Sampel
1.	Lecturer	2 People
2.	Class 2A Students	11 People
3.	Class 2B Students	12 People
	Total sample	**34 People**

Table 1. Total Research Sample

The next phase is product design, which involves the development of teaching materials based on Project-Based Learning (PjBL) with the IDEAL Stage approach, including the steps of Identify, Define, Explore, Act, and Look Back. The developed module is accompanied by a faculty guide and learning projects that encourage students to think critically about issues in Islamic education. Once the product is designed, the next step is validation by education and learning methodology experts. These experts will review the academic and pedagogical quality of the teaching materials and assess their alignment with the curriculum and classroom practices. This validation is crucial to ensure that the product is truly suitable for use in higher education contexts.

Total Validator	Member Criteria	Evaluation Criteria
1	Subject Matter Expert	Assess the suitability of the material with the Islamic Education Philosophy curriculum, depth of content, and relevance to learning objectives.
1	Presentation Expert	Assess the clarity, structure, and flow of presentation of material that facilitates student

Total Validator	Member Criteria	Evaluation Criteria
		understanding. Also includes an assessment of practicality in teaching.
1	Design Expert	Assess the design of teaching materials, including aesthetics, layout, and visual elements that support the learning process.
1	Linguist	Assess the appropriateness of the language used, the fluency of delivery, and the accuracy and clarity in expressing ideas and concepts.

Table 2. Validators and Assessment Criteria

The trial phase is conducted to assess the effectiveness of the teaching materials in the learning process. The results of the trial are analyzed statistically to evaluate the improvement in students' problem-solving abilities. The evaluation also includes feedback from both lecturers and students to identify the strengths and weaknesses of the product. Based on these results, revisions are made to refine the teaching materials. The final stage involves a broader implementation across various classes, with a larger sample of students selected randomly, to ensure the sustainability and long-term effectiveness of the developed teaching materials.

RESULTS AND DISCUSSION

Based on the research results regarding the perceptions of lecturers and students toward the teaching materials for Islamic Education Philosophy in the Postgraduate Program of Islamic Religious Education (PAI) at IAIN Curup, 56.16% of lecturers rated the teaching materials as inadequate, while 36.72% found them to be highly inadequate. This indicates that more than 90% of lecturers feel that the teaching materials currently used are insufficient to support the learning process effectively.

Scale	Respondents	Percentage	Conclusion
5	0	0%	Very suitable
4	6	6,48%	Suitable
3	14	15,12%	Not suitable
2	52	56,16%	Not Appropriate
1	34	36,72%	Very Inappropriate

Table 3. Recapitulation of lecturers' views on Islamic Education Philosophy learning and teaching resources.

Furthermore, from the students' perspectives, the majority, 76.00%, considered the teaching materials to be highly unsuitable for their needs, while 16.66% found them inadequate. Only a small fraction of students, 5.55%, felt that the materials were appropriate, and 6.42% rated them as somewhat unsuitable. This finding indicates that almost all students face difficulties in following the existing teaching materials, which could directly affect their learning outcomes.

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Scale	Respondents	Percentage	Conclusion
5	0	0%	Very suitable
4	64	5,55%	Suitable
3	74	6,42%	Not suitable
2	192	16,66%	Not approriate
1	878	76,00%	Very inappropriate

Table 4. Student opinions on Islamic Education Philosophy study and teaching materials

The results of the study, which summarize the perceptions of lecturers and students regarding the teaching and teaching materials of Islamic Education Philosophy that have been used so far, provide the following overview:

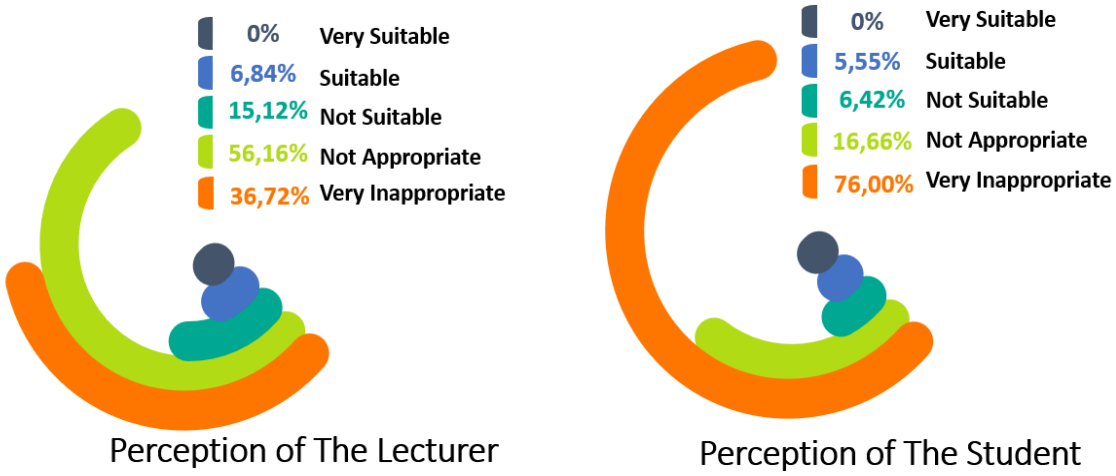

Figure 2. Lecturer-student questionnaire about Islamic educational philosophy learning

The results of the study, in the form of an analysis of lecturers' and students' needs for IDEAL stage-based teaching materials in Islamic Education Philosophy, show that the majority of lecturers, 47.70%, believe that this model is necessary, indicating awareness that the implementation of this model can help improve the quality of learning. Additionally, 47.15% of lecturers stated that the model is highly needed, reflecting strong support for its adoption in teaching Islamic education philosophy. Combined, 94.85% of lecturers feel that this model is needed or highly needed, indicating broad and positive acceptance of IDEAL Stage-Based Project-Based Learning within the Postgraduate Program at IAIN Curup.

Scale	Respondents	Percentage	Conclusion
1	0	0%	Not Required
2	0	0%	Not needed
3	19	5,15%	Less needed
4	176	47,70%	Needed
5	174	47,15%	Really needed

Table 5. Islamic educational philosophy lecturers needs questionnaire

Similarly, based on the analysis of students' needs, the majority of students, 48.03%, stated that this model is needed. Additionally, 30.36% of students expressed that they highly require this model in their learning process.

Scale	Respondents	Percentage	Conclusion
1	0	0%	Not Required
2	0	0%	Not needed
3	851	21,62%	Less needed
4	1891	48,03%	Needed
5	1195	30,36%	Really needed

Table 6. Islamic education philosophy student needs questionnaire

The results of the study on the needs of lecturers and students regarding the teaching materials for Islamic Education Philosophy using the IDEAL Stage-based PjBL model provide the following overview:

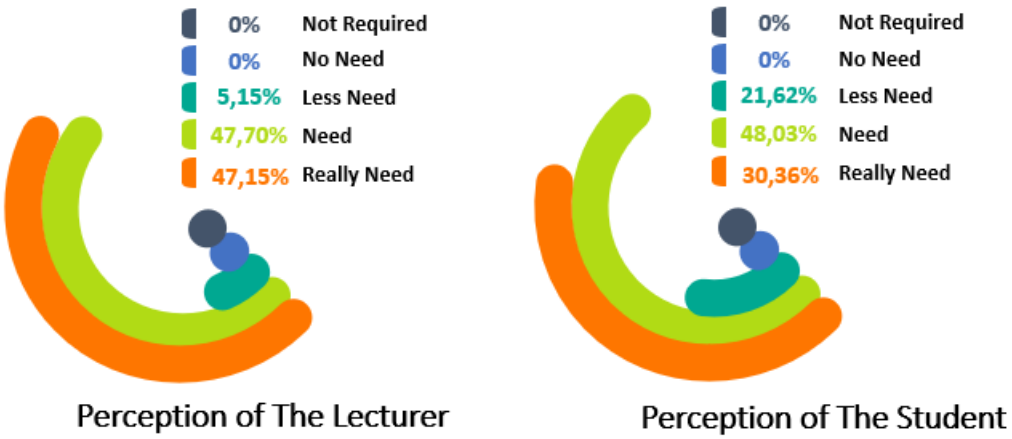

Figure 3. Analysis of Lecturer and Student Needs for Islamic Education Philosophy Teaching Materials Project Based Learning Model Based on Ideal Stage to Improve Students' Problem Solving Skills

The development phase in this study includes assessment and validation by experts and practitioners. The first step involved validating the RPS using the assessment rubric that had been prepared. Based on the results of the RPS validation for Islamic Education Philosophy by the expert team, the following evaluations were obtained:

Assessment Category	Percentage	Conclusion
According to the RPS component load	44,4%	RPS Philosophy of Islamic Education according to

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Perfectly suited to the RPS component load	55,6%	RPS Islamic Education Philosophy is very appropriate

Table 7. The results of the validation analysis of the Islamic Education Philosophy RPS by the expert team

The expert team concluded that the developed RPS for Islamic Education Philosophy, using the Project-Based Learning model based on the IDEAL Stage, is suitable for use in the learning process as it is comprehensive and highly appropriate. Furthermore, the final results of the feasibility test for the teaching materials for Islamic Education Philosophy using the Project-Based Learning model based on the IDEAL Stage showed an average score of 88.475. The graphic feasibility scored 82.2, and the linguistic feasibility received a score of 90. Based on these feasibility test results, it can be concluded that the teaching materials for Islamic Education Philosophy with the Project-Based Learning model based on the IDEAL Stage are highly suitable and effective for use in the learning process, particularly for students in the Postgraduate Program of Islamic Religious Education (PAI) at IAIN Curup.

Assessment Aspects	Score	Category	Conclusion
Content/Material Suitability	100	Very good	The content meets the criteria, the material is precise, complete, and supports learning objectives.
Presentation Eligibility	81,7	Good	The presentation structure is good, but needs improvement to make it easier to understand.
Graphics Qualification	82,2	Good	The visuals are adequate, but there is room to make the teaching materials more engaging.
Language Eligibility	90	Very good	The language is very good, easy to understand, and in accordance with linguistic rules.
Rate Total rate	**88,475**	**Very Good/Decent**	The teaching materials are very suitable for use in learning Islamic Education Philosophy.

Table 8. The results of the validation analysis of the Islamic Education Philosophy teaching materials using the Ideal Stage-Based PjBL model by a team of experts

The results indicate that these teaching materials meet the criteria for use in the learning process, especially as the content/materials received a perfect score. While the presentation and graphic design still have room for improvement, the teaching materials, as a whole, are considered very good and relevant for supporting interactive and project-based learning. Graphically, this can be observed from the image below:

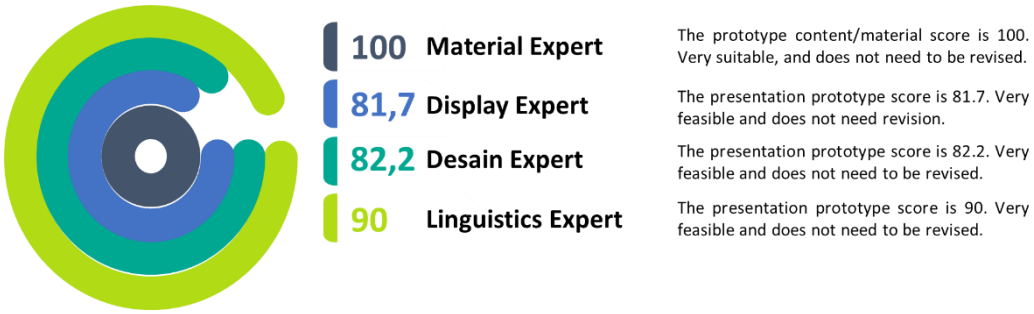

Figure 4. Expert Assessment of Islamic Education Philosophy Teaching and Learning Materials Using the Ideal Stage-Based Project Based Learning Model

The findings of this study on the development of Islamic Education Philosophy teaching materials using the IDEAL Stage-based Project-Based Learning model reveal a significant gap between students' expectations and the reality they face in the learning process. The differing perceptions between lecturers and students are also noteworthy. Theoretically, students who engage in PjBL show significant improvements in problem-solving abilities (González-pérez & Ramírez-montoya, 2022). This is because PjBL focuses on student involvement in real-world projects that are relevant to their lives, allowing them to learn through exploration and problem-solving (Winarno & Maulana, 2020). Furthermore, problem-solving skills developed through PjBL can assist students in their professional and daily lives (Amrullah et al., 2022).

From the perceptions of lecturers and students regarding the teaching materials for Islamic Education Philosophy at the Postgraduate Program in Islamic Religious Education (PAI) at IAIN Curup, significant dissatisfaction was found from both sides. Over 90% of lecturers believe the current teaching materials are inadequate for optimal learning support. The majority of lecturers feel that the materials used do not meet the expectations and needs of the learning process, while approximately 92.66% of students share the same view, with 76% of them considering the materials highly unsuitable. This dissatisfaction indicates that the teaching materials fail to effectively link the content being taught with the academic needs of students. According to constructivist theory, effective teaching materials should help students build new understanding through experience and the relevance of content to their daily lives (Jumaat et al., 2017; Mohammed et al., 2020a). However, the findings highlight a significant gap between students' expectations and the realities they face, hindering learning effectiveness.

Furthermore, the development of the IDEAL Stage-based Project-Based Learning model shows a strong awareness and need from both lecturers and students for its implementation. The majority of lecturers, 47.70%, believe that this model is needed, while 47.15% think it is highly necessary. The combined total of 94.85% of lecturers supports the adoption of the Project-Based Learning model based on the IDEAL Stage, signaling widespread acceptance of this innovation. From the students' perspective, about 48.03% feel the model is needed, while 30.36% consider it highly necessary for their learning. This significant proportion suggests that students see the potential of this model to enhance the quality of learning, particularly in courses that demand critical analysis skills, such as philosophy. The results of this study reinforce previous

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research indicating the need for PjBL in the learning process, such as studies linking the need for STEM education for teachers and students to enhance problem-solving skills compared to traditional PjBL (Parno et al., 2020; Purwaningsih et al., 2020). It also supports findings stating that the development of teaching materials should identify the needs, problems, and challenges faced by both lecturers and students to ensure better targeting (Kaptiningrum, 2024).

There is a noticeable gap between the conventional teaching methods currently in use and the expectations and needs of modern education, which emphasize 21st-century skills. Conventional approaches are often considered inadequate in developing problem-solving skills, which are essential in modern education (Anggraini et al., 2023). Contemporary educational theory emphasizes that critical thinking, collaboration, and problem-solving skills are crucial components that must be developed in students, especially in facing the complex and dynamic challenges of the workforce (Phan et al., 2023). In this context, project-based learning models such as IDEAL Stage-based PjBL offer a more relevant solution to meet these demands, focusing on learning through real-world projects that actively engage students in critical thinking and analysis. Critical thinking encompasses causal reasoning, logic, synthesis, and comparative thinking (Asha, 2022).

The IDEAL Stage-Based Project-Based Learning (PjBL) model supports the development of problem-solving skills by integrating key elements such as relevant projects, collaboration, the use of technology, and performance-based assessment. The constructivist theory underlying this approach states that effective learning occurs when students build new understanding through direct involvement in real-life situations (Taber, 2011). Therefore, relevant projects in PjBL allow students to experience a direct connection between theory and practice, enhancing their motivation and engagement in the learning process (Mohammed et al., 2020). The application of projects that depict realistic situations also provides students with opportunities to engage emotionally and intellectually, making the learning process more meaningful (Mayombe, 2020).

Based on the final results of the feasibility test of the Islamic Education Philosophy teaching materials using the IDEAL Stage-Based Project-Based Learning model, the materials received an average score of 88.475, which categorizes them as very good/highly feasible. PjBL has characteristics that make it effective in enhancing students' problem-solving abilities, as it focuses on student involvement in projects designed to solve real-world problems. Students are not only required to master academic material but also to apply critical and creative thinking skills in solving problems (Papadakis, 2020).

The average score obtained from this study indicates that the teaching materials meet most of the expected quality standards in the learning process, including content, presentation, and design. This high score reflects the quality of the materials presented and demonstrates the success of applying the IDEAL Stage-based Project-Based Learning model in enhancing students' understanding and skills in learning Islamic Education Philosophy. Overall, the results indicate that the materials successfully meet academic needs, support learning objectives, and have great potential to improve educational quality. This reinforces previous studies showing that PjBL significantly improves students' problem-solving abilities, such as research on Archimedes' principles, which showed significant improvement in problem-solving skills after PjBL

intervention, although the improvement in idea generation and solutions was less evident (Wati et al., 2024).

The study has proven that PjBL is highly effective in enhancing students' problem-solving skills. Students involved in the PjBL learning process show significant improvements in critical thinking and problem-solving skills (Graesser et al., 2017). In this study, PjBL encourages students to be more independent in their learning process and take the initiative to overcome challenges they face.

Based on the feasibility test results of the Islamic Education Philosophy teaching materials using the IDEAL Stage-based Project-Based Learning model, the average score of 88.475 indicates that these materials are highly suitable for use in the learning process. This high score not only reflects the feasibility of the materials in terms of quality but also demonstrates the success of applying the IDEAL Stage-based PjBL model in enhancing learning effectiveness. Further analysis shows that the perfect score of 100 in the content feasibility aspect indicates that the teaching content is highly aligned with the curriculum and learning objectives, and provides comprehensive and relevant information. This indicates that the materials meet academic needs and support the development of students' critical skills in understanding Islamic Education Philosophy. Overall, the scores obtained demonstrate that the materials successfully integrate theory with practice, making them an effective tool for achieving the expected educational goals.

While the results of this study show excellent quality, it is important to acknowledge some limitations that may affect the final outcomes. One of the main challenges faced during the study was the limited sample size, which only included a small number of lecturers and students at IAIN Curup. This may affect the generalization of the findings to a broader population. Additionally, the limited time for product testing may have been a constraint in fully assessing the effectiveness of the teaching materials. Therefore, while the results are highly positive, further studies with larger samples and longer trial periods will provide a more comprehensive and realistic picture of the implementation of these materials in a broader context. Discussions of these limitations are expected to serve as references for future improvements, both in the development of teaching materials and in the design of similar research.

CONCLUSION

The problem-solving abilities of postgraduate students in the Islamic Religious Education (PAI) program at IAIN Curup are substantially improved by the application of the IDEAL Stage-Based Project-Based Learning (PjBL) model, as inferred from the findings of this study. The Learning Syntax design and teaching materials for Islamic Education Philosophy were developed by analyzing the learning outcomes in the Semester Learning Plan. These materials were subsequently developed to support pertinent learning content. The development was based on the IDEAL Stage. The Semester Learning Plan, assessed by instructional design specialists, indicates alignment with the learning objectives to be achieved.

The observation results during the one-to-one and small group evaluations showed that the collaboration skills of students in the experimental group were rated very high, indicating a considerable improvement in teamwork and problem-solving ability. Furthermore, the effectiveness test done in both the experimental and control groups demonstrated that the IDEAL stage-based teaching materials had a substantial

positive impact on boosting the problem-solving abilities of students in the experimental group. The majority of the professors and students participated in this study also provided good comments, with many supporting the introduction of this paradigm and recognizing possibilities for better learning quality. The application of the IDEAL stage-based PjBL model is both successful and favorable to fostering a learning environment that enhances students' critical thinking skills.

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