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Developing Teaching Material Used Project-based Learning to Improve Student's Research Skills

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Abstract

This research is intended to develop teaching materials for learning theories courses and test the feasibility of the learning materials products. This research seeks to uncover problems and challenges in learning theories courses from the perspective of lecturers and students. The subjects of this study are students and lecturers of the master program in Islamic Religious Education, Faculty of Tarbiyah and Teacher Training, Universitas Islam Negeri Walisongo Semarang. This research applies a 4D development model to develop teaching materials, which includes four stages: defining, design, development, and dissemination. Researchers use questionnaires and focus group discussions involving lecturers and students. The result of the development in this study is teaching materials of project-based learning teaching materials for learning theories courses. Based on expert validation tests, material experts, curriculum experts, and media design experts declare that teaching materials for project-based learning theories courses are feasible with a scoring average of 81,79%. After being applied to the learning theories course, out of 60 students, 75.17% strongly agreed, 22.17% agreed, and 2.67% disagreed that the teaching materials using Project-Based Learning improved student research skills and helped students more easily understand the course. From the lecturer's point of view, using Project Based Learning (PjBL) in learning theory courses can allow students to learn actively, collaborate with classmates, and develop better research skills. Therefore, implementing PjBL in learning theory courses can effectively improve the quality of learning and student understanding.

Keywords: *Learning Theories, research skills, and project-based learning.*

Abstrak

Penelitian ini dimaksudkan untuk mengembangkan bahan ajar mata kuliah teori pembelajaran dan menguji kelayakan produk bahan pembelajaran. Untuk menganalisis kebutuhan peneliti, mereka berusaha mengungkap masalah dan tantangan dalam mata kuliah teori pembelajaran dari perspektif dosen dan mahasiswa. Subjek penelitian ini

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adalah mahasiswa dan dosen program magister Pendidikan Agama Islam Fakultas Tarbiyah dan Keguruan Universitas Islam Negeri Walisongo Semarang. Penelitian ini menerapkan model pengembangan 4D untuk mengembangkan bahan ajar, yang meliputi empat tahap: pendefinisian, perancangan, pengembangan, dan diseminasi. Peneliti menggunakan angket dan Focus Group Discussion yang melibatkan dosen dan mahasiswa. Hasil pengembangan dalam penelitian ini adalah bahan ajar teori pembelajaran berbasis proyek. Berdasarkan uji validasi ahli; Pakar materi, pakar kurikulum, dan pakar desain media menyatakan bahan ajar untuk mata kuliah teori pembelajaran berbasis proyek layak. Setelah diterapkan pada mata kuliah teori pembelajaran, dari 60 siswa menjawab 75,17% sangat setuju, 22,17% setuju dan 2,67% tidak setuju bahwa bahan ajar yang menggunakan Project Based Learning efektif dalam meningkatkan kemampuan penelitian siswa dan membantu siswa lebih mudah memahami mata kuliah teori belajar. Dari sudut pandang dosen, penggunaan Project Based Learning (PjBL) dalam mata kuliah teori pembelajaran dapat memungkinkan mahasiswa untuk belajar secara aktif, berkolaborasi dengan teman sekelas, dan mengembangkan keterampilan penelitian yang lebih baik. Oleh karena itu, implementasi PjBL dalam mata kuliah teori belajar dapat menjadi strategi yang efektif dalam meningkatkan kualitas pembelajaran dan pemahaman siswa.

Kata kunci: Teori-teori belajar, kemampuan riset, Project based Learning.

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INTRODUCTION

Scientific publications are significant for the reputation of universities and become key performance indicators (Quaidy et al., 2019). As a result, scientific publications are mandatory for every student as part of proof of graduate quality. The Number of Indonesian publications circulated by universities has increased significantly compared to other countries, especially in Asia. On the other hand, the quality of these publications still needs to be improved because many do not meet the standards. Students are not used to researching, so they experience problems writing final assignments. This is evidenced by the lack of the maximum number of students who publish the results of student final project research at UIN Walisongo Semarang (Interview with Secretary of Islamic Education program at UIN Walisongo). In addition, one of the obstacles is the lack of in-depth mastery of students related to the theories used in research. The study program curriculum has facilitated compulsory courses on learning theories designed to equip students with a theoretical basis for learning from various schools of thought. Therefore, a breakthrough that integrates research with lecture activities needs to be. Through this step, students will get used to scientific thinking and be able to apply theories. Students also apply concepts learned in class and contextualize them in real life. Concrete steps are needed in designing learning, such as developing teaching materials for learning theory courses.

One alternative that can integrate research and lectures into teaching materials is the *Project Based Learning* (PjBL) learning model. PjBL is a pedagogical practice that offers student-centred learning design based on collaborative projects while teachers facilitate learning activities and project development (Hira &; Anderson, 2021). PjBL has been explored in various contexts and levels of education (Hussein, 2021). The prevalence of *Project-based Learning* (PjBL) has increased significantly, contributing to severe discussions about its emergence. A significant relationship was found between the PjBL model and collaborative learning, which, in turn, suggests that the PjBL model increases learners' engagement in knowledge and information sharing and discussion (Bulu

& Tanggur, 2021; Kurniahtunnisa et al., 2023). Thus, the PJBL model is highly recommended for university learning (Almulla, 2020).

The *Project Based Learning* (PjBL) learning model has been adopted in various research. Based on the literature review, there are four research trends regarding *Project Based Learning* (PjBL). *First*, an experimental study on implementing PjBL to improve student learning outcomes (Lawe, 2019; Moningka et al., 2021; Refualu & Suriani, 2021; Tumuyu et al., 2021). *Second*, the application of PjBL to improve various competencies of students, such as *Self-Efficacy* (Mahasneh &; Alwan, 2018), *Self-Regulated Learning* (Zarouk et al., 2020); learners' collaboration ability (Hussein, 2021), learners' confidence (Desi Fitria et al., 2020); motivation (Hira & Anderson, 2021); and learner creativity (Ningsih et al., 2020; Ummah et al., 2019). *Third*, applying PjBL as a basis for developing teaching materials (Budhi &; Fawaida, 2021; Nazaruddin &; Rahmawati, 2020; Oksa &; Soenarto, 2020; Winatha, 2018). *Fourth*, the use of PjBL combined with various other learning models, such as *Hybrid Learning and Flipped Classroom* (Chua &; Islam, 2021; Zarouk et al., 2020); Problem-*based Learning* (Anazifa &; Djukri, 2017); and *Design Thinking* (Burns &; Herring, 2020).

The literature review that has been carried out shows that PjBL is considered appropriate as the basis for developing teaching materials for learning theories. Thus, this research aims to develop teaching materials for project-based learning theories *for students of the Islamic Education master's program at UIN Walisongo Semarang*. Using the PjBL learning model, students can apply understanding related to learning theories through research articles as learning projects. Learning theories are compulsory subjects that must be mastered by PAI postgraduate students and contribute to building a theoretical framework in the preparation of student final projects. Therefore, the development of teaching materials for learning theories is very crucial. The results of developing this teaching material can positively and practically contribute to the learning theories course. As a concrete example, developing teaching materials for learning theory courses can include creating modules that combine learning theories with relevant and applicable case

studies. Such modules can be designed to facilitate students' understanding of the concepts of learning theory more concretely and allow them to relate the theory to real situations in the field. Thus, the results of developing this teaching material can positively contribute to increasing students' understanding and application of learning theory.

In addition, the findings obtained are expected to be a consideration for higher education institutions to hold *training* for lecturers to conduct research project-based learning. Furthermore, the results of this research can be the first step and prototype of research integration in learning in the Master Program in Islamic Education (S2 PAI). In this study, researchers designed two main questions: How are teaching materials for project-based learning theory courses developed? Furthermore, how is the feasibility and effectiveness of teaching materials for project-based learning theories courses in improving the research ability of S2 PAI study program students?

METHODS

The development of teaching materials for the researchers' learning theories course refers to the steps used by *Four-D* (4D) which consists of the stages of Defining (*Define*), Design (*Design), Development (Develop*), and Dissemination (*disseminating)* (Gorbi Irawan et al., 2018). At the Define stage, the research team analyzed the need for teaching materials for learning theories courses in S2 Islamic Religious Education. With these considerations, researchers hope to analyze the needs of teaching materials for diverse and more comprehensive project-based learning-based theories so that the research results are more representative and can be reflected in various contexts. Then, to set the target respondents, researchers used *purposive sampling* techniques. Two lecturers who teach learning theory courses and five PAI S2 students who take learning theories courses will participate in focus group discussions and in-depth interviews. This preliminary study was then processed through qualitative analysis by applying data triangulation techniques,

using several data collection methods to obtain more comprehensive findings (Miles et al., 2014).

There are two types of data collected: 1) primary data obtained through focus group discussions and in-depth interviews; 2) as well as secondary data obtained from the documentation of RPS (*Rencana Pembelajaran Semester*/Semester Learning Plan) of teachers and observations of teaching and learning activities in class. Focus group discussions are used to gain general information about teachers' practices and challenges in integrating technology. The data will then be used as supporting material in conducting in-depth interview sessions with respondents to obtain more specific and detailed data. At the same time, researchers also collect secondary data through observation and documentation. Data collection is carried out synergistically to obtain a more complete data analysis of teaching material needs for learning theories. Researchers use descriptive analysis to analyze the results of preliminary studies and the validation results of material experts, curriculum experts, and media design experts. Furthermore, the data obtained with data collection instruments are analyzed using analysis techniques and percentages according to a predetermined formula:

Calculating the average score of each aspect can use the equation

$$\bar{x} = \frac{\sum x}{N}$$

Information:
$\bar{x}$ = Average score of expert ratings
x = Number of scores obtained by the expert
N = Number of questions

Converts the average score obtained into a value with criteria. This is done to determine the quality of teaching materials from the development which initially in the form of scores are converted into qualitative data. The percentage formula is as follows:

$$\text{Percentage Feasibility} = \frac{\text{Average–average sum Aspects}}{\text{scale highest valuation}} \text{ x } 100\ \%$$

So, the category of assessment of teaching materials based on *Project Based Learning* (PBL) is obtained as in the following table:

Table 1.
Categories of assessment of teaching materials based on Project Based Learning

No	Value	Criterion	Decision
1.	$81.25 < x \leq 100$	Very Good/ Very Valid	If all items on the assessed elements are very suitable and there are no shortcomings with teaching materials, they can be used as teaching materials for students.
2.	$62.50 < x \leq 81.25$	Good/Valid	Suppose all items are considered appropriate, although there are slight shortcomings, and there is a need for justification with teaching material products. In that case, they can still be used as teaching materials for participants to educate.
3.	$43.75 < x \leq 62.50$	Poor/Less Valid	If all items in the elements are judged inappropriate, there are a few shortcomings, and many are with this product, so it needs justification to be used as an ingredient.
4.	$25.00 < x \leq 43.75$	Very Poor/Invalid	Suppose each item on the element is considered inappropriate and there are shortcomings with this product. In that case, justification is needed to be used as teaching material.

The validation criteria in Table 1 are modifications of (Asmianto et al., 2022) assessment criteria.

FINDINGS AND DISCUSSION

The findings of this paper are divided into three parts. The first part deals with the findings of the needs analysis. The second part provides development products in modules on project-based learning theories. The third part involves experts' assessment to evaluate product development findings.

The Need for Analysis

At this stage, it aims to determine the subject matter of the learning process to find out the existing teaching materials that need to be developed (Kholiq et al., 2023). The analysis was carried out during the pre-research stage through

interviews with S2 PAI educators. Based on interviews with educators, it is known that educators have not used project-based learning teaching materials in learning activities. At this stage, information is obtained that students' teaching materials are still unattractive. The initial analysis of lecturers in this research is the development of teaching materials needed in lectures as additional references. Researchers explore information by conducting interviews with educators to identify the main concepts taught and see in detail the concepts that must be taught. In this stage, the main parts that have been designed and arranged in order and accordance with Graduate Learning Outcomes (CPL) and Course Learning Outcomes (CPMK) **are** in Table 2 below:

Table 2.
Graduate Learning Outcomes (CPL) and Course Learning Outcomes (CPMK)

Graduate Learning Outcomes	Course Learning Outcomes
1. Students have knowledge and understanding of various learning theories. 2. Students have analytical skills in various learning theories. 3. Students can apply various learning theories and conduct educational research based on learning theories.	1. Students can understand the direction and subject matter of learning theories. 2. Students can understand the meaning, scope, and usefulness of learning theories. 3. Students can understand the Development of Learning Theory. 4. Students can understand Behavioristic Learning Theory: Thorndike, Pavlov, Skinner. 5. Students can understand cognitive learning theory from Gagne, Piaget, Ausubel, and Brunner. 6. Students can understand Humanistic Learning Theory: Bloom, Krathwohl, Kolb, Honey, and Mumford. 7. Students can understand Social-Cognitive Learning Theory: Bandura, Vygotsky. 8. Students can understand the Theory of Learning Constructivism. 9. Students can understand Cybernetic Theory: Landa, Pask, and Scott.

The development of teaching materials for PjBL-based learning theories modules uses the *Four D* model, which consists of four stages: *Define*, *Design*, *Develop*, and *Disseminate*. However, in the development of teaching materials, the development stage is only carried out until the validity test of the feasibility and effectiveness of the learning theory module, time constraints, and the dissemination stage is still in the implementation process. In the Define stage process, researchers identified the need for PjBL-based teaching materials in the lecture process. Thus,

in the lecture process, the existing teaching materials for learning theory courses are inadequate and incomplete, and have not been integrated with research projects.

At the *Design* stage, researchers design the concept of teaching materials, choosing the learning approach used in teaching materials. After designing the concept, researchers prepare supporting references for making teaching materials. References consist of books and journal articles on learning theories. Then, the researchers will determine the instructional goals of CPL and CPMK according to the 2020 S2 PAI curriculum. The Development stage begins with preparing a draft of teaching materials for learning theories course modules that will be a reference in developing PjBL-based teaching materials. The components in the teaching materials consist of the PjBL-based Learning Theory Module Cover, PjBL-based Learning Theory Module Foreword, Table of Contents PjBL-based Learning Theory Module, PjBL-based Learning Theory Module Usage Guide, Concept Framework of PjBL-based Learning Theory Module, PjBL-based Learning Theory Module Concept Map, Instructional Objectives, Introduction, Behavioristic Theory Material, Summary, Creative Writing, Research Project-based Learning Activities, Bibliography, and Research-based Learning Guide Supplement. At the development stage, feasibility tests are carried out by material experts, curriculum experts, and media design experts.

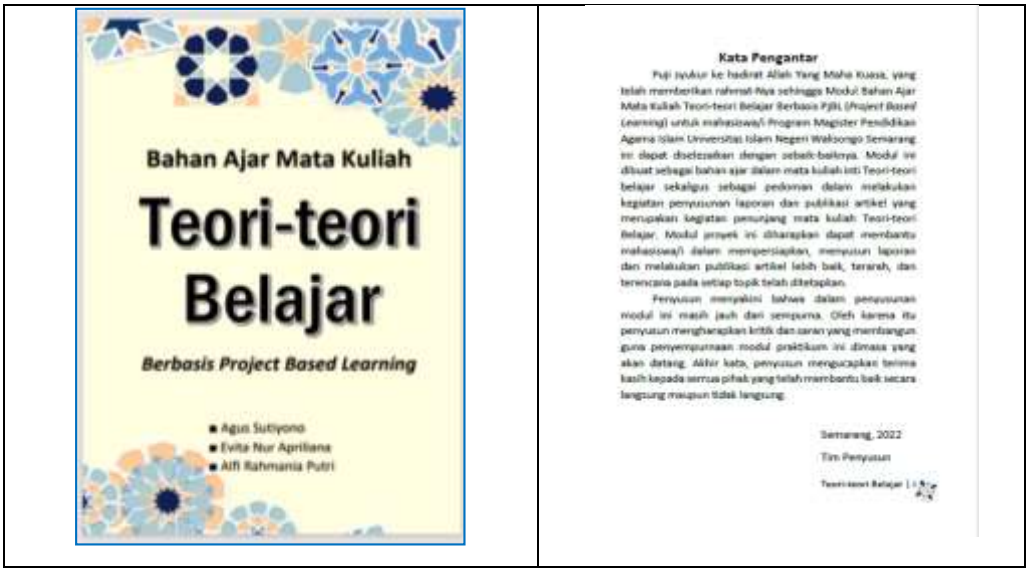

Figure 1.
PjBL-based Learning Theory Module Cover & PjBL-based Learning Theory

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Module Foreword

dalam belajar yang penting adalah input yang berupa stimulus dan output yang berupa respon.

H. *Creative Writing*

Setelah mempelajari teori belajar behaviorisme refleksikanlah materi Pendidikan Agama Islam apakah yang sesuai diajarkan menggunakan teori ini? Desainlah sebuah Rencana Pelaksanaan Pembelajaran Mata Pelajaran PAI yang dalam kegiatan pembelajarannya mencerminkan penerapan teori belajar behaviorisme.

I. Aktivitas Pembelajaran *Project Based Learning*

No	Sintak/Fase	Kegiatan Dosen	Kegiatan Mahasiswa
1.	Pertanyaan Mendasar		
2.	Mendesain Perencanaan Produk		
3.	Menyusun Jadwal Pembuatan		
4.	Memonitor Keaktifan dan Perkembangan Proyek		
5.	Menguji Hasil		
6.	Evaluasi Pengalaman Belajar		

Teori-teori Belajar | 54

J. Daftar Pustaka

Andriyani, Fera. 2015. "Teori Belajar Behavioristik Dan Pandangan Islam Tentang Behavioristik." *Syaikhuna* 10 (2): 165–80.

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Baharuddin, and Esa Nur Wahyuni. 2010. *Teori Belajar Dan Pembelajaran*. Yogyakarta: Ar-Ruzz Media Group.

Teori-teori Belajar | 55

Figure 2.
Creative Writing, Research Project-based Learning Activities, and Bibliography

The teaching materials used for one semester are compiled from various sources by referring to the PjBL model and paying attention to research-based learning principles. The subject matter developed in the learning theories course includes Behavioristic Learning Theory, Cognitive Learning Theory, Humanistic Learning Theory, Constructivist Learning Theory, Psychoanalysis Learning Theory, and Cybernetic Learning Theory. These primary materials were developed using the four dimensions of knowledge in Bloom's Taxonomy. The following step researchers will take is to develop products by conducting product validity and effectiveness field tests. At the product validity test stage, five experts carry out product validation in three aspects: material experts, curriculum experts, and media design experts. Criticism and suggestions from the three validators became material for product revision until the product was declared worthy of field testing.

Expert's Judge Evaluation

The feasibility validation test is carried out by validating the product with five experts: two material experts, two curriculum experts, and one media design

expert. This product validation is carried out to obtain feasibility assessments, suggestions, and input from competent experts so that the teaching materials developed have suitable qualifications.

Table 3.
Findings of Module Validation by Experts

No	Validators	Average Percentage	Criterion
1	Material Expert	80,07%	Good/Valid
2	Curriculum Expert	82,29%	Very Good/Very Valid
3	Media Design Expert	83,00%	Very Good/Very Valid
Average		**81,79%**	**Very Good/Very Valid**

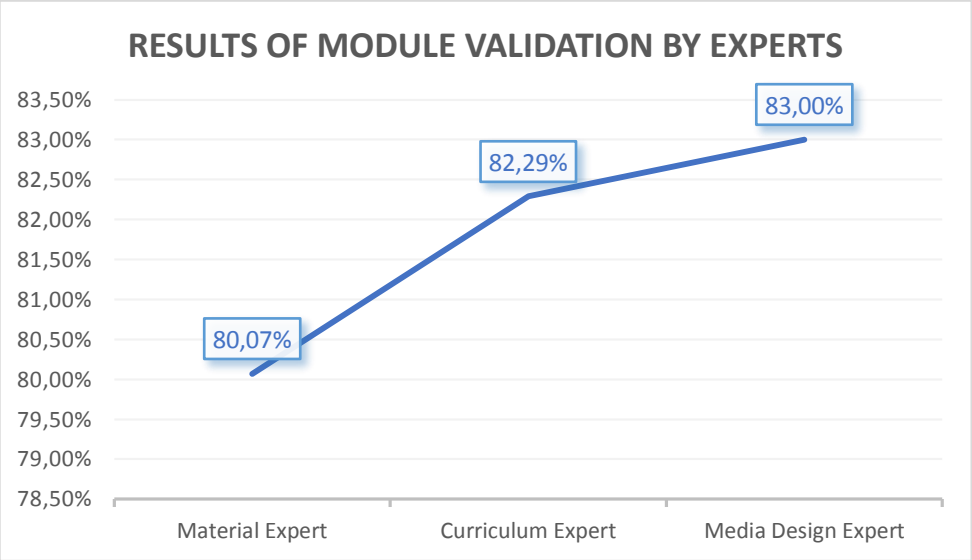

Figure 3.
Results of Module Validation by Experts

Material Expert Assessment

The expert assessment of material substance aims to determine the feasibility of material in teaching materials for PjBL-based learning theories that have been developed. The development of teaching materials for PjBL-based learning theories is aimed at students on behavioristic theory material, so the author validates teaching materials for lecturers who teach learning theory courses. The expert assessment of the substance of the material includes two aspects: the feasibility aspect of the content and the linguistic aspect. Based on the data from

the development of teaching materials, the learning theories module on behavioristic theory material is considered feasible (80.07%). Based on expert responses, teaching materials enhance student understanding significantly when enriched with visual aids. They offer structured advantages but may lack contextual relevance and comprehensive illustrations.

Curriculum Expert Assessment

The assessment by media design experts aims to determine the feasibility of PjBL-based teaching materials seen from graphic design. Curriculum experts assess according to the curriculum expert grid. In preparing teaching materials, expertise is needed to design learning designs so that they can be conveyed well to students by the syntax of project-based learning and graduate learning outcomes (CPL) can be achieved. The aspects that need to be considered are the feasibility of presenting teaching materials for learning theories modules and aspects of application of project-based learning syntax in learning theory modules. The results of the feasibility assessment of curriculum aspects can be observed in Table 3: The results of module validation by curriculum experts.

The results of curriculum experts' assessment of teaching materials get the very feasible criteria (82.29%) so that teaching materials can be used as student teaching materials in the lecture process. Based on supporting questions filled in by curriculum experts, development suggestions or expectations about teaching materials, PjBL-based learning theory modules, namely Project-based learning steps, need to be improved to be more operational so that students can use PjBL-based learning theories modules optimally both in lecturer guidance and when studying independently. Based on input from curriculum experts, suggestions for improving the operational aspects of Project-based Learning (PjBL) modules are needed. This would enable students to utilize PjBL theories effectively, both under instructor guidance and during independent study.

Media Design Expert Assessment

The assessment by media design experts aims to determine the feasibility of PjBL-based teaching materials seen from the media design side. Media design

experts assess according to the grid of media design experts. In the preparation of teaching materials, compilers must master design skills so that the physical appearance of teaching materials will be able to arouse students' motivation to read and learn them. Aspects to note are (1) Color, mainly if the colour contains meaning; (2) Placement of illustrations, placed as close as possible to the concept described with the illustration; (3) Maps, tables, and graphs must match the text, must be accurate, and simple, and (4) Paper and book size.

The results of the assessment of teaching materials by media design experts as a whole get very feasible criteria (8.3%) so that teaching materials can be used as student teaching materials in the lecture process. Based on supporting questions filled in by media design experts, development suggestions or expectations about teaching materials, and PjBL-based learning theory modules, they need to be added with exciting illustrations, images, and colour variations to make them more attractive and can be used with revisions.

Student Feedback

This student response was taken from 60 PAI S2 Study Program students using questionnaires provided by researchers. Based on the questionnaire responses related to the effectiveness of teaching materials for *Project-Based* Learning-based learning theories courses in improving the research ability of S2 PAI study program students, student statements and responses are described in the following table:

Table 4.
Student Feedback Related to Teaching Materials for PjBL based learning theories course

Statement Item	Totally agree	Agree	Disagree	Strongly disagree
I find it easier to understand learning theories after using *Project Based Learning* based teaching materials	86,67	13,33	0	0
I find it easier to prepare an Islamic Religious Education Learning Implementation Plan (RPP) after understanding the learning theories in *Project Based Learning* teaching materials	76,67	23,33	0	0

Statement Item	Totally agree	Agree	Disagree	Strongly disagree
I find it easier to apply learning theories in learning after using project-based learning teaching materials	73,33	26,67	0	0
I find it easier to reflect on the suitability of learning theories with the practice of Islamic Religious Education learning in schools after studying *Project Based Learning* teaching materials	65	26,67	8,33	0
I find it easier to determine research topics about learning theories after using *Project Based Learning* teaching materials	80	20	0	0
I find it easier to determine research questions about learning theories after using *Project Based Learning* teaching materials	75	25	0	0
I find it easier to determine research methods for learning theories after using *Project Based Learning* teaching materials	76,67	23,33	0	0
I find it easier to compile research on learning theories after using *Project Based Learning* teaching materials	66,67	20	13,33	0
I find it easier to apply learning theories in analyzing research results after using *Project Based Learning* teaching materials	66,67	28,33	5	0
I feel motivated to research using *Project Based Learning* teaching materials	85	15	0	0
Average	**75,17**	**22,17**	**2,67**	**0**

Based on Table 4, it can be seen that the responses of 60 students on average, answered strongly agree (75.17%), agree (22.17%), disagree (2.67%), and strongly disagree (0%). from these results, it can be seen that the teaching materials for *Project-Based* Learning-based learning theories courses are considered effective in improving the research skills of PAI S2 study program students and are proven to help students more easily understand learning theories.

The study of project-based Learning (PjBL) application as a basis for developing learning theories and modules has proven feasible regarding material,

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curriculum, and media design. The modules effectively improve the research ability of S2 PAI study program students. Based on the results of interviews with several lecturers of the S2 Islamic Education Study Program, they agreed that this module effectively improves students' research abilities. The lecturers highlighted that the modules provide clear guidance in structuring research, from problem formulation to data analysis. They also note that students who use modules tend to have more structured and methodological research than those who do not. In addition, lecturers also feel that this module helps students to be more independent in researching because the module provides adequate examples and guidance. The results of the development in this study can be a means to improve the ability of master program students in line with the research of Guo et al (Guo et al., 2020), which revealed that project-based learning (PjBL) is a promising learning model to be applied in universities and can maximize learning outcomes both in the affective, cognitive, and psychomotor domains.

Research-Project based learning can develop students' research skills. Many research results say that research-based learning can develop students' research skills. A. N. Rangkuti (2016) explained that research-based learning developed at the Bandung Institute of Technology can foster learning independence, critical skills, creative abilities, and good communication (Rangkuti, 2016). In addition, Sariada mentioned that problem-based learning departs from problems, extracts knowledge and skills, problem-solving and applications, and ends with reflection (Sariada, 2019). Research-based learning has been tested to have a carrying capacity for research skills based on learning in higher education (Yanti et al., 2019).

Furthermore, by applying PjBL-based learning theory course modules, students can develop their creativity. Research by Ummah et al, (2019) also reviews that applying *Project Based Learning* (PjBL) can develop student creativity. This is evidenced by measuring the creativity of projects produced by students by reviewing them through three aspects: originality, novelty, and flexibility (Ummah et al., 2019). Chua & Islam (2021) integrates PjBL into a Hybrid Learning design.

The integration is realized in the form of learning modules. Some in-class and out-of-class activities are designed to enhance students' learning experiences in a curriculum linked to an engineering project so that students have a better perspective on the actual application of the theory. The main findings in this study show a positive impact on fundamental formative knowledge, improved problem-solving skills, and products produced by students who participate in project-based learning. The survey results further highlight that *Project-Based Learning-Flipped Classroom* students are optimistic about achieving better project results and can think critically to develop creative products. As a result, students who learn using PjBL are more active in their learning process (Chua & Islam, 2021). Challenges in student collaboration can be successfully overcome by applying a structured project management approach to planning, communication, and follow-up in the learning process (Hussein, 2021).

From various existing studies, it is proven that PjBL can potentially develop students' research skills. Project-based learning, another term for problem-based learning, emphasizes the project aspect, where students and their groups are given a set of tasks (projects) that must be solved scientifically by the characteristics of problems that are authentic, curriculum-based, and often multi-disciplinary problems. Students must also determine the approach to be used, collect information and reconstruct it to become new knowledge. At the end of the lecture, students convey the knowledge gained so that they are given input by other groups as material for reflection. The role of lecturers in project-based learning is limited, for example, in providing guidance or input on what students are doing.

As an educational institution factory of scientists, the campus is vital in developing academic products that can compete and benefit society. However, this will be done if the policy and academic bureaucracy are friendly so that academic culture in critical thinking, creativity, innovation, and initiative can emerge from the entire academic community in the campus environment. In addition, ideally, lecturers are not too limited by many administrative rules, so the time for lecturers to conduct research is broader and more profound. The lack of a research culture

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on campus can occur due to internal factors of the academic community, which sometimes assumes that lecturers are only teaching. If this continues to happen, the identity of a campus will disappear as a scientific institution that upholds the tri-dharma of higher education. A research culture will be built if the campus continuously facilitates the academic community. Furthermore, the campus is expected to be able to develop cross-campus networks both at home and abroad so that joint research is improved.

CONCLUSION

Developing teaching materials for Project-Based Learning-based learning theories courses, guided by the Four-D stages, has resulted in comprehensive products. These materials are designed to enhance student learning experiences by aligning with the PAI S2 curriculum for 2020 and integrating research-based learning principles. Including Behavioristic, Cognitive, Humanistic, Constructivist, Psychoanalysis, and Cybernetic Learning Theories reflects a thorough approach to covering fundamental concepts in learning theory.

Opinions from lecturers and students who have used these materials suggest a positive impact on research abilities and independent learning. Lecturers noted that students using the materials showed improved structuring of research projects and a deeper understanding of the subject matter. On the other hand, students expressed appreciation for the clarity and guidance provided by the materials, which facilitated their learning process. Future research could focus on assessing the long-term impact of these teaching materials on students' research skills and academic performance. Additionally, further development could explore integrating technology and digital resources to enhance the effectiveness of teaching materials in the context of Project-Based Learning-based learning theories courses.

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