



Project-based learning in Media Learning Material Development for Early Childhood Education

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Abstrak

Penelitian ini bertujuan untuk membuat dan mengembangkan bahan ajar mata kuliah media Pendidikan Anak Usia Dini (PAUD), yang dapat memudahkan proses pembelajaran. Bahan ajar yang dikembangkan disusun dengan pendekatan *Project Based Learning* (PBL). Penelitian dilakukan pada mata kuliah media PAUD di Program Studi Pendidikan Islam Anak Usia Dini (PIAUD) UIN Syarif Hidayatullah Jakarta. Penelitian ini termasuk penelitian pengembangan atau *Research and Development* (RnD) model Dick and Carey. Adapun tahapan pengembangan menitikberatkan kepada kegiatan menentukan tujuan instruksional (*instructional goals*), menganalisis bahan pembelajaran, menganalisis kemampuan mahasiswa dalam konteks pembelajaran, menentukan target pembelajaran, mengembangkan instrumen, mengembangkan strategi pembelajaran berbasis *project learning* dan menerapkan pada pembelajaran. Hasil penelitian menunjukkan bahwa bahan ajar dengan pendekatan *PBL* pada mata kuliah media PAUD dapat mempermudah kegiatan belajar mahasiswa. Selain itu, mahasiswa turut berpartisipasi aktif, membangkitkan motivasi, berpikir runtut dan dinilai mampu mengembangkan media yang sesuai dengan kebutuhan belajar dan aspek perkembangan anak.

Kata Kunci: *project based learning; bahan ajar; anak usia dini.*

Abstract

This study aims to create and develop teaching materials for early childhood education (PAUD) media units to facilitate learning processes. The teaching materials developed are compiled with a project-based learning approach. The research was conducted on the PAUD media unit in the Early Childhood Islamic Education (PIAUD) undergraduate program at UIN Syarif Hidayatullah Jakarta. This research is following Dick and Carey's model of Research and Development. The development stage focuses on determining instructional goals, analyzing learning materials, analyzing student abilities in the learning context, determining learning targets, developing instruments, developing project-based learning strategies, and applying them to learning. The results showed that students could develop media in line with learning needs and aspects of children's development using teaching materials.

Keywords: *project-based learning; learning material; early childhood education.*

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Introduction

Creating sustainability in education requires innovation and creation. This is a logical answer to the dynamics of human life, continually moving forward and changing. The developments in society, such as science and technology, are also challenges in line with education sustainability, which demands changing quickly and adapting to circumstances. Based on sources obtained from the Global Competitiveness Report from the World Economic Forum, it shows that graduates from higher education institutions in Indonesia have not answered market needs and demands from the career world in this modern era. As a result, unemployment among Indonesian higher education graduates is increasing significantly (Wibawa, 2017). Meanwhile, graduates and workers from outside the country continue to compete in Indonesia's job market.

In this context, issues of relevance, link, and match, are still ongoing in Indonesia. For example, there is a lack of collaboration between graduate users, the business world, educational institutions, and the lack of innovation and creativity in the learning process (Wibawa, 2017). Targets that lead to a linear and conventional orientation of national education development are one of the triggers. Higher education institutions' learning process should produce innovation in producing quality and competitive graduates with maximum ability, both from an academic and professional perspective in their fields and having a personality according to national education's goals. Besides, the learning orientation has not touched on the 'how' (process), but still on the 'what.' This results in unplanned incidental learning. In the learning process, lecturers still rely on their knowledge, but not on students' needs, followed by methods and strategies that vary according to the context and content of learning.

Not surprisingly, if the study results only touch on a theoretical level, wandering is not entirely grounded. This is also because there are still many conventional approaches that only lead to the effort to know and understand/Lower Order Thinking Skills (LOTS), not at the level of students actively discussing to analyze and create/Higher Order Thinking Skills (HOTS). In this context, students should combine various knowledge elements so that it is more holistic and integrative. Therefore, it is necessary to conduct studies and discussions to unravel where the tangled threads occur so that the learning process does not stay in place, but learning must move forward. Many factors are crucial in slowing down transformative and productive learning changes, giving birth to adaptive learning methods and strategies. At least two factors become obstacles in the transformation of learning. First are internal factors such as student intelligence, low learning culture, unstable motivation, or other limitations. Second, external factors include learning media, sources, and learning materials that are still difficult to access.

The Islamic Early Childhood Education Undergraduate program (PIAUD) UIN Syarif Hidayatullah Jakarta also has a not much different problem. More specifically, the curriculum content for youth in general or unit has not been designed to answer students' needs. This is because the PIAUD UIN Jakarta undergraduate program is a new undergraduate program that must adapt to early childhood education and the development of national and global education. Not to mention, there is an adjustment to the Islamic nuances inherent in the identity of UIN itself.

Teaching materials are an additional source and learning media that provides information and insights for unit teachers and students. This is necessary so that learning outcomes in the form of knowledge, skills, and values embedded in attitudes should be presented by every Unit instructor so that the expected results can be maximized and right on target. Project-based learning is expected to be able to provide solutions to problems that often occur in the learning process to explore and foster creative thinking (Mergendoller & Thomas, 2001) and solve problems that often occur in real life so that students have life skills and can innovate (Bilgin, Karakuyu, & Ay, 2015). The project approach is believed to motivate and increase student sensitivity in solving problems (Turgut, 2008) and deciding something interdisciplinary (Vogler et al., 2018).

PBL is an inquiry-based instructional approach that offers a path of reform in the learning process, i.e., learner-centered (Sumarni, 2015), the use of interdisciplinary concepts, involving

experience and the use of technology to answer questions and solve contextual problems (Krajcik & Blumenfeld, 2006; Markham, Larmer, & Ravitz, 2003; Holm, 2011). Project-based learning is constructive. The objectives to be achieved are clearly stated. Through this approach, students can collaborate (Suranti, Gunawan, & Sahidu, 2017), communicate, and do critical reflection in learning practice. This approach has been widely used from primary education to higher education (Kokotsaki, Menzies, & Wiggins, 2016; Guo, Saab, Post, & Admiraal, 2020). There are advantages of this approach, i.e., it emphasizes the manufacture of products (Novak & Krajcik, 2019), students make presentations or performances to help overcome complex challenges, students work independently on project implementation for a specific time, teachers or lecturers function as facilitators (Ismuwardani, Nuryatin, & Doyin, 2019) as well as as a mentor and instructor in the progress of ongoing project implementation (Holm, 2011).

Project-based learning (PBL) in teaching materials for students of the PIAUD undergraduate program is expected to achieve their learning outcomes (competencies). These competencies are determined in the PAUD learning media unit, included in the unit's program characteristics. This unit weighs three Credits (SKS), with the following competencies that must be achieved more specifically: (1) Students can think logically, systematically, creatively, and innovatively in developing and implementing science and technology based on Islamic and human values. (2) Students can plan, implement, and evaluate learning for early childhood education by utilizing learning resources and media based on science and technology and local wisdom with attention to quality. (3) Students can make learning media or Educational Game Tools (APE) based on the needs and stages.

This study develops teaching materials in modules, i.e., the PAUD learning media unit module. Modules are teaching materials or learning resources made with unique systematics to accommodate the credits' demands. In this case, the lecturer provides guidance and explanation in line with the module instructions, and students follow the lecturers' directions and can learn independently. Meanwhile, the stages of organizing learning materials follow predetermined goals according to the level of ability (competence) and learning targets to be achieved. This is done to explain to students the relevance of facts, concepts, procedures, and principles in the learning process. (Indriyanti & Susilowati, 2010).

Modules can help students to master learning, evaluate the implementation process (Daryanto, 2013). Modules are done systematically and measurably so that the developed modules can be evaluated. Besides, the Indonesian National Qualifications Framework/KKNI-based curriculum is also a benchmark in its preparation, packaged in a form that allows students to learn on their own (individually) within a specified time. Therefore, it can help lecturers and students in learning in lectures. A module includes several required aspects, i.e., objectives to be achieved, subjects in line with learning outcomes, exercises, and evaluation (Fatikhah, 2015).

Based on the chronology above, the researchers researched with the title, "Development of Project-based learning Teaching Materials for the Early Childhood Learning Media Unit in the Islamic Early Childhood Education Undergraduate Program, FITK UIN Syarif Hidayatullah Jakarta."

Methods

The research was performed at the PAUD learning media Unit in the PIAUD undergraduate program, Faculty of Tarbiyah and Teacher Training, UIN Syarif Hidayatullah Jakarta. The method used is the Research and Development (RnD) method. (Gall, n.d.). The steps consist of an assessment of the research findings of teaching material development products. A product test is then carried out on the background of where this product is used and a revision process for field trials (Setyosari, 2016).

Developing teaching materials used the Dick and Carey instructional design model (Dick, Carey, & Carey, 2005). The stages of developing learning materials for media unit consist of the following eight processes: (1) Establishing and defining general and specific learning objectives of the unit; (2) Conducting instructional analysis of PAUD learning media unit; (3) Assessing and analyzing in-depth the abilities of PIAUD undergraduate program students related to social status, cognitive abilities, student learning styles, and analyzing their needs in learning; (4) Writing the target achievement of abilities or competencies that must be possessed by students collectively; (5) Developing assessment tools (assessment instruments) to measure the achievement of learning competencies; (6) Completing learning strategies based on available resources; (7) Choosing study materials for learning; and (8) Designing and conducting evaluations. The implementation of the Dick and Carey Model design development can be summarized in the following figure:

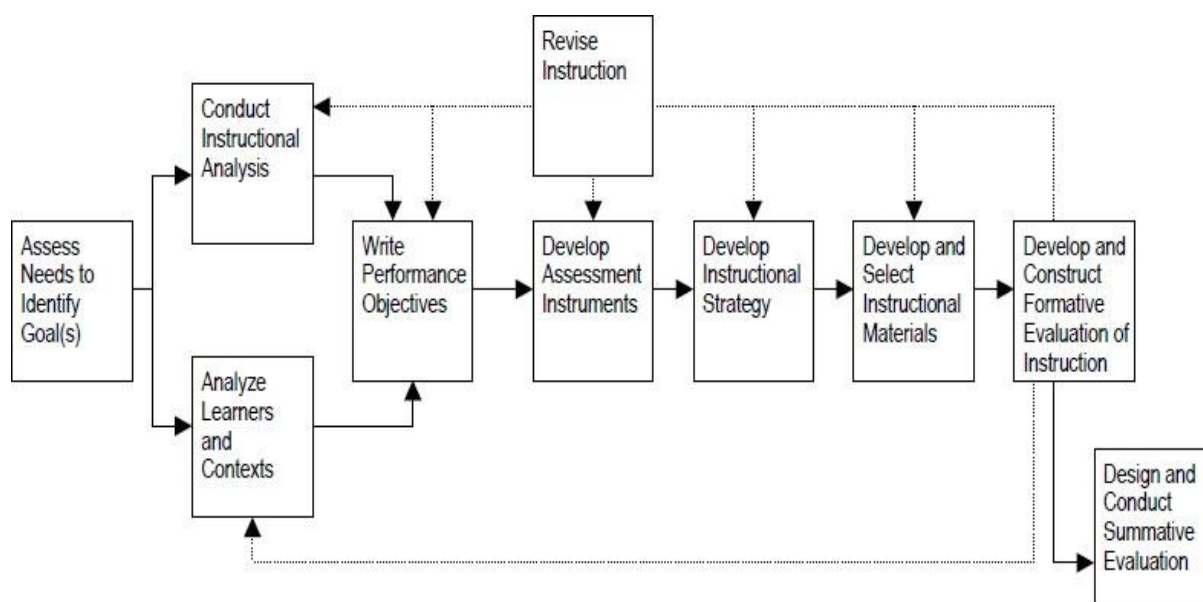


Figure 1. Dick and Carey Development Model

The time required to carry out this research and development corresponds to the learning media unit's lecture schedule for the 2018/2019 academic year. The subjects involved in this study were (1) Researchers, planners, implementers, and developers of learning material products for the learning media unit; (2) PAUD lecturers as collaborators in this study; (3) Students of the PIAUD undergraduate program who attended PAUD learning media lectures.

Results

Based on the research objectives, research on the development of project-based learning teaching materials (modules) for PAUD learning media has been analyzed to analyze student needs for learning modules. The analyzed components include student needs, student characteristics analysis, analysis of objectives, structures, and procedures at the analysis stage.

Need Analysis Results

In the analysis of student needs and a curriculum that is in line with the learning material for the PAUD media unit, it was found that there were no learning materials available for any PAUD unit and the learning media unit itself. So far, learning in undergraduate programs has been carried out based on project learning. However, the performed Project-Based Learning (PBL) is only limited to making media instructions, not systematic steps that project learning should carry out. This is a crucial problem in this research. Besides, curriculum guidance must refer to the Indonesian National Qualifications Framework (KKNI). Therefore, it is essential for learning materials that support the implementation of the curriculum.

Based on the development subject's analysis, i.e., the students, the following points were found: PIAUD undergraduate program students' characteristics who take learning media lectures. It was also found that students' characteristics and differences in student learning styles were not optimally accommodated in the learning process. The results of the third analysis show that the learning material has not been structured systematically.

Expert Validation Results

The pre-validation stage is carried out by asking for initial input from experts regarding the product being developed. Furthermore, the module development design validation is carried out to assess its effectiveness in the learning process compared to using modules. This is done by asking for assessments and input from experts experienced in assessing learning products, in this case, modules related to the assessment of conformity with early childhood education, learning technology, and language accuracy. At the design validation stage, experts were asked to assess the design and planning made for the product to see the product's effectiveness. Therefore, differences can be seen before using the product and after. Researchers asked experts who have experience in design or learning technology, early childhood education, and language fields.

An expert assesses assessment or validation of the product or module being developed. This assessment results in evaluations and suggestions that are useful for improvements in product development. After validating, the next step is to conduct a readability test. A readability test is carried out on students as product users. The product was used in the learning process to make an assessment and provide input to the module. Besides, a readability test was also carried out on fellow lecturers to get suggestions and input to improve the developed products. The final stage will produce a product in the form of a module that has been revised and improved by considering previous inputs and suggestions.

The material experts' validation results were shown by achieving a score of 86 with a percentage of 93.4% (mean score of 3.73). This shows that the material is of good quality (good category), while the media expert assesses 69 with a percentage of 86.25% (mean score of 3.45), indicating that the display module used is in a suitable category. Finally, the linguist's assessment provides an assessment of 40 with a percentage of 90.9% (mean score of 40), explaining if the language used in the module's preparation is in line with proper and correct grammar. In general, the three experts explain if the module is suitable for use in learning activities from the assessment.

Procedural Model

This study's design model is a physical model in the form of a module for students in the PAUD learning media unit. This module is structured using a project-based learning approach. The developed modules consist of: (1) concept maps in each learning activity; (2) The title that consists of the title of teaching material with sub-discussion; (3) Introduction which consists of elaboration on Unit Learning Outcomes (CP-MK) and Subject Sub-Learning Outcomes (Sub CP-MK) of PAUD Media; (4) Presentation of learning discussion is equipped with pictures, photographs, and illustrations, as well as a development model with project learning in PAUD media learning; (5) the Closing section consists of a summary and exercises as material for students to reflect on the discussion that has been presented. It can be seen more clearly in the module flow table below:

Table 1. Module Flow

	Development	Module Contents	Learning Activities I	Learning Activities II	Closing
Module Flow	Contains the title of the module, the name of the author, the base colors	Contains a table of contents and a map of competencies	Contains the title, learning objectives, material descriptions and project-	As in the previous learning one activity	List of References

Development	Module Contents	Learning Activities I	Learning Activities II	Closing
are white and orange, picture of media learning		based learning activities, and a summary		

Physical Model of Teaching Materials

The development of teaching materials for the media unit produces a physical model in the form of modules that can be used for learning activities. The physical form is shown in the picture below.



Figure 2. Cover of PAUD Learning Media Module

The module above consists of nine following topics: (1) The nature of early childhood learning media and resources; (2) Characteristics of media and learning resources in Early childhood education; (3) Procedure for selecting and planning to make media for PAUD; (4) Media for developing early childhood cognitive aspects; (5) Media for the development of physical-motoric aspects of early childhood; (6) Learning media for the development of aspects of the early childhood language; (7) Learning media for the development of the social and emotional aspects of early childhood; (8) Media for the development of the moral early childhood aspects of religion; (9) Concept, principles, and procedures for evaluating instructional media in early childhood education.

All subjects in the learning are arranged systematically to understand the subject matter of learning and make media according to the aspects of child development and their development stages systematically and effectively. The concept map is needed to measure the achievement of Learning Outcomes (CP) correctly. Therefore, learning indicators are developed for each learning outcome by emphasizing students' abilities and skills in designing appropriate learning media for PAUD.

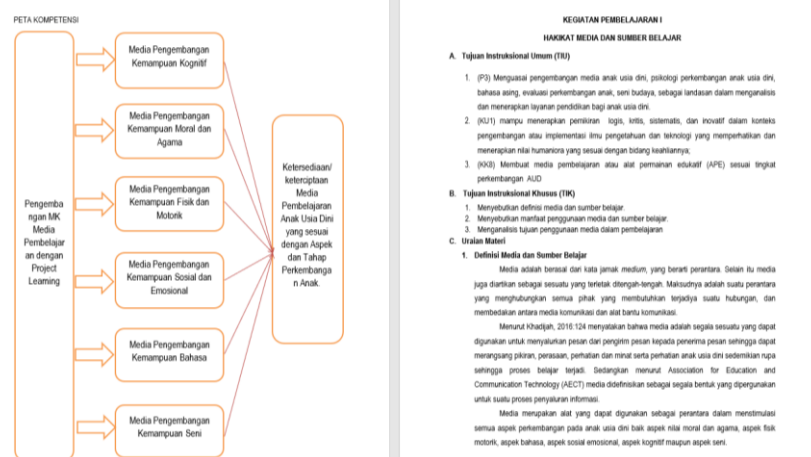


Figure 3. Example of Module Contents

Koki sebagai sumber belajar
Sumber: olx.com

guru
Sumber: edunesia.id

c. Bahan. Bahan sebagai sumber belajar adalah sesuatu yang sering disebut media/software yang mengandung pesan untuk diujikan melalui penggunaan alat atau tanpa penggunaan alat. Seperti buku-buku, program video, program slide, film dan lain sebagainya. Sumber belajar adalah sesuatu yang digunakan untuk menyampaikan pesan pembelajaran.

Bahan Buku

d. Alat. Alat yang dimaksud disini adalah sesuatu benda atau alat yang disebut media/ hardware yang digunakan untuk menyampaikan pesan yang tersemat dalam bahan tersebut. Seperti Tape Recorder yang digunakan untuk memutar lagu-lagu yang disukai anak-anak, slide, LCD, Film, dan sebagainya.

Gambar LCD Projector
Sumber: kaskus.com

e. Teknik. Teknik dalam sumber belajar adalah prosedur yang disiapkan dalam menggunakan bahan pelajaran, peralatan, situasi, dan orang menyampaikan pesan. Atau dengan kata lain teknik adalah cara yang digunakan guru dalam membuat pembelajaran guna untuk tercapainya tujuan pembelajaran. Contoh guru menggunakan metode demonstrasi untuk member contoh cara membuat gambar dengan jari tangan.

Guru Menggunakan Teknik Menggambar

Figure 4. Example of Module Contents

D. Langkah-langkah Pembelajaran

No	Langkah Project Based Learning (PBL)	Uraian Kegiatan
1.	Driving Questions to Motivate Learning (Pertanyaan pada Awal Pembelajaran)	Dosen memotivasi mahasiswa terkait materi pembelajaran karakteristik media pembelajaran PAUD. Apakah karakteristik media pembelajaran PAUD? Kenapa media pembelajaran PAUD harus berbeda dengan media lainnya??? Seperti apa karakteristik media yang bisa digunakan untuk kegiatan pembelajaran???
2.	Target Significant Learning Goals (Menentukan Tujuan dan Perencanaan Proyek)	1. Mahasiswa mampu mengategorisasi macam-macam media pembelajaran PAUD 2. Mahasiswa mampu menentukan media yang sesuai untuk PAUD. 3. Mahasiswa mampu menganalisis karakteristik penggunaan media pembelajaran PAUD
3.	Use Projects to Promote Learning (Menentukan Project)	Projeknya adalah mahasiswa diminta untuk mengerjakan sebuah proyek berjudul. 'Andai aku lembaga penyiaran publik' mahasiswa diminta untuk menganalisis film-film yang beredar di layar TV, untuk ditelisis atau dianalisis apakah sudah layak untuk ditonton atau diperuntukan bagi anak usia dini, sesuai dengan karakteristik yang telah dipelajari.
4.	Dedicate Sufficient Time to PBL (Penjadwalan Tahapan Proyek)	Mahasiswa diberikan waktu 1 Minggu untuk melaksanakan proyek ini dibimbing oleh dosen jika ada hal-hal yang belum dipahami.
5.	Present Products to Authentic Public	Mahasiswa persentasi di depan kelas

Figure 5. Example of a section in the module containing PBL steps

Observation Result

Observations were made to obtain information about student experiences using PAUD media teaching materials (modules) with learning projects. The data resulting from the observations are explained as follows: (1) PAUD media teaching materials with a project learning approach can help students be more structured in the following learning. This can be seen from the directed learning. (2) PAUD media project-based learning teaching materials help students be directly involved in learning activities. The involvement can see students designing, describing, and creating learning media projects for early childhood. (3) PAUD media project-based learning materials can arouse student motivation in learning activities because they are directly involved in determining, designing, and making media. (4) PAUD media learning materials with a project learning approach encourage and motivate students to think systematically and sequentially. This can be seen from the media designed and developed by students with a straightforward and referential theoretical and procedural basis. (5) Students understand the learning flow delivered using a project approach. This can be seen from students' ability to develop media in line with children's learning needs, according to their developmental aspects and stages. (6) Students can use PAUD media project-based learning teaching materials easily. This can be seen from the absence of obstacles when students use teaching materials in learning activities or presentation activities. (7) The learning media module relieves lecturers' task in presenting learning because it serves as a reference in carrying out teaching activities.

Discussion

Teaching materials contain written content, which the lecturer gives, which students will use to achieve learning objectives. According to Suparman (2012), learning materials or instructional materials are prepared for a unit or subject in the curriculum based on general and specific learning objectives, student characteristics, and learning strategies for each objective. Teaching material is a component that is closely related to each unit's content and must be relevant to the objectives, student characteristics, and learning strategies. Teaching materials for all units must be well designed by each unit lecturer, so discussing the material for one-semester learning objectives and learning outcomes can be determined (Hidasari, Natalia, & Pramana, 2018).

This module was developed using the PBL approach. The selection of project learning is based on thinking about learning by doing. The idea of learning is to put it into practice to build students' knowledge and experience directly (Tasci, 2015). They must be motivated and made a center in learning so that learning is not only focused on what is conveyed by the lecturer (Lenz, Wells, & Kingston, 2015). PBL is a constructivist approach that integrates theory and practice (Bender, 2012), where lecturers and students work together to find and build knowledge through active learning and hands-on activities (Zajkov & Mitrevski, 2012).

Project learning is a student-oriented learning process to encourage active exploration (Nagarajan & Overton, 2019) by utilizing projects and assignments resulting from the joint discussion between students (Mergendoller & Thomas, 2001). In its implementation, the project method is carried out systematically by involving students in acquiring knowledge and skills through research assignments, authentic questions, and well-designed products. Projects in PBL are based on questions and challenging projects. Students play a central role in designing, solving problems, and making decisions to allow students to work independently (Sumarni, 2015).

In designing the project, the following essential parts need to be considered: (1) Description of activities or projects that will be implemented in general, (2) Target learning outcomes for the subjects to be achieved, (3) List of facilities and infrastructure needed for activities, (4) Determining the rating and rubric (Roessingh & Chambers, 2011). This contrasts with other approaches, focusing more on the target speed of achievement by producing a short learning process (Chambers, Cheung, & Slavin, 2016). Project-based learning seeks to provide a

detailed learning process and is more challenging for students at a predetermined time unit to produce a useful product or work (Mergendoller & Thomas, 2001).

The PBL learning steps, according to Pondiscio (2010), are, first, asking questions at the beginning of each lesson. Learning begins by arousing the thinking power of students with challenging questions to challenge students. These questions will lead students to the context of project-based learning and assign tasks to students to carry out controlled activities. The questions posed are questions related to the real world and begin with an in-depth investigation (Solomon, 2003).

Second, students are guided by lecturers in planning assignments or projects that will be carried out from the beginning to the end of the activity. These activities include determining what projects the student will make or work on, agreeing on a framework, selecting the most appropriate steps in implementing the project, determining the implementer and person in charge of each activity, and determining the infrastructure and infrastructure resources needed in the project implementation.

Third, determine the project implementation time. At this stage, students, with the lecturer's guidance, make a road map (schedule) for the implementation of activities that are adjusted to a predetermined plan. The aim is to explain to students that implementing a quality project requires a reasonable work schedule to be carried out according to the agreed work plan. This activity is carried out without burdening students, lecturers can show examples of existing scheduling, and students are asked to adjust their activities schedule. After getting an explanation from the lecturer, students can perform the activity outside of lecture time. It is intended that students can work on or determine the timing of activities comfortably and do not feel rushed to generate student creativity to explore and get inspiration. Students were asked to present the results of preparing a schedule to implement activities in the classroom as a form of responsibility.

Fourth, lecturers supervise projects that are being worked on by students. This stage is not only work supervision for students but also as a guidance process. Supervision and guidance are carried out to provide opportunities for students to carry out their activities properly and correctly.

The fifth is conducting an assessment. The assessment is carried out on the work results and student performance during the project work process. Assessment is carried out to measure the achievement of subject learning outcomes. In this case, the lecturer must carry out an authentic and objective assessment.

Sixth, evaluate the activities that have been carried out. The final stage of this approach is to conduct project evaluation. Lecturers and students evaluate the advantages and disadvantages of what has been implemented while implementing activities. On this occasion, students can explain what they have understood from the activity, their experiences, their feelings during the activity, and the difficulties they have felt during the activity's implementation.

The results of this study are reinforced by research conducted by Johann, Koch, Chlosta, and Klandt (2006), that 90% of students who carry out the learning and teaching process with the stages of project learning are confident and optimistic about being able to achieve success in the career world and can improve student academic achievement (Syakur, Musyarofah, Sulistyaningsih, & Wike, 2020) positively (Mahasneh & Alwan, 2018). Besides, the results of a survey conducted by Lasonen and Vesterinen (2000) illustrated that 78% of students stated learning or a curriculum designed using a project learning approach can help students have sufficient provisions as preparation for entering the career world because, with this approach, students are not only learning concept theoretically but also learn practically how to apply it in life.

Teaching materials with a project learning approach supports learning to be more effective, creative, and innovative (Kaldi, Filippatou, & Govaris, 2011). This approach emphasizes implementing a process, results, and products (output and outcome) so that learning is more applicable and can improve students' abilities and skills. This approach is also

considered to be more effective and superior in efforts to instill and foster critical thinking skills, the ability to collaborate (Sumarni, 2015), and problem-solving in learning (Berends, Boersma, & Weggeman, 2003; Holm, 2011). It can also produce high-level thinking ability (Fajarwati, Susilo, & Indriwati, 2017). In a research review that compared the project approach with the conventional approach, the project approach was proven to improve students' cognitive abilities and skills (Holm, 2011). PBL also has advantages in improving process capabilities, developing information literacy skills, and improving problem-solving skills (Mettas & Constantinou, 2008). It can positively influence students' views about the teaching profession (Lavy & Shriki, 2008). This is because the project approach focuses more on the social interaction process, such as: working on projects in groups that encourage collaborative learning (Helle, Tynjälä, & Olkinuora, 2006). This is in line with Vygotsky's theory of social learning, which shows that learning is mostly a social process that takes place with guidance and interaction with friends

The project learning approach is practical for motivating students. Student activeness can contribute to issuing opinions and ideas on topics or discussions of their interest and preference by asking questions (Beier et al., 2019). Other ways are by estimating, developing theory, using different tools, using skills acquired in a meaningful and real-life context, and allowing students to search for answers to questions creatively in class and outside so that learning becomes more meaningful (Baran, Maskan, & Yasar, 2018). The learning steps in project learning are created in a structured manner by considering clear plans, procedural implementation, and measurable results. Therefore, the role of the lecturer is needed.

The lecturer's role is to introduce a problem (Roessingh & Chambers, 2011), then ask questions and facilitate students to conduct research and communicate. PBL will not occur without the skills of lecturers to develop a learning environment that allows for the exchange of ideas and communicating openly between lecturers and students, presenting factual and contextual problems so that students can be motivated to learn and think critically (Kaldi et al., 2011; Lee, Blackwell, Drake, & Moran, 2014), and support the development of technical skills and the acquisition of in-depth knowledge. Students are encouraged to be more actively involved in the subject matter so that students are accustomed to making findings (inquiry). These studies have provided clear information that project-based learning is needed to improve students' competence; in this case, students' competence, abilities, and skills.

The learning development is organized into a module. A module is a form of teaching material that can be used as a learning and teaching guide for lecturers and students. The research results found that modules can improve the quality of student learning for the better. Especially in the development process, the contents and procedures are designed in such a way as to be compiled in steps. Steps are systematic and organized into a meaningful sequence and according to student needs. In preparing the learning material, it is also necessary to pay attention to its presence with its depth and difficulty (Kabba, 2009). Therefore, it is necessary to make a synthesis effort, i.e., the process of linking sub-discussions in one discussion with the entire content or learning material of the unit. Thus, the material presented feels more useful for students because it is arranged in a constructive approach with the project learning method. In general, the module contains material and a series of activities covering the realm of knowledge (cognitive), attitudes, and skills according to the PAUD media unit's learning outcomes.

Conclusion

This research concludes that project-based learning PAUD teaching materials facilitate students in a media unit's learning process. Students can also be directly involved and structured in participating in learning, generate motivation, think systematically and sequentially, and develop media suitable for learning needs and aspects of child development. Some of these points are added value for these developed teaching materials. It is hoped that the compiled teaching materials can be useful for lecturers in the PAUD media unit.

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