

Developing a Project-Based Learning Model for Slow Learners In Higher Education

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Abstract: This study aimed to develop a learning model for slow learner students in Higher Education. Slow learners were students who have low learning achievements under the average, either in one area or in all academic areas. This type of research was researched and developed using the ADDIE approach (Analysis, Design, Development, Implementation, Evaluation). The developed learning model was project-based learning. Data collection was conducted through interviews, observations, questionnaires, and tests. Data analysis used two approaches, namely qualitative and quantitative. The results of the study showed that project-based learning due to the activity level had increased compared to before using the PBL model. The result of the coefficient of determination revealed that the value of R square (R^2) was 0.064 or 6.4%. This shows that the student activity was able to influence the variation of learning outcomes by 6.4% and the remaining 93.6% was influenced by other variables outside this research model. Thus, it is necessary to have a variety of strategies used by lecturers in delivering lectures, especially in a class where slow learners exist. In addition, attention and assignments also need to be given to slow learners so that they can attend lectures and understand the material presented properly and correctly like other students. For researchers, it was necessary to conduct further studies and research for the development of various learning models that were suitable for the needs of slow learner students.

Keywords: learning; model; project based learning; slow learner; higher education

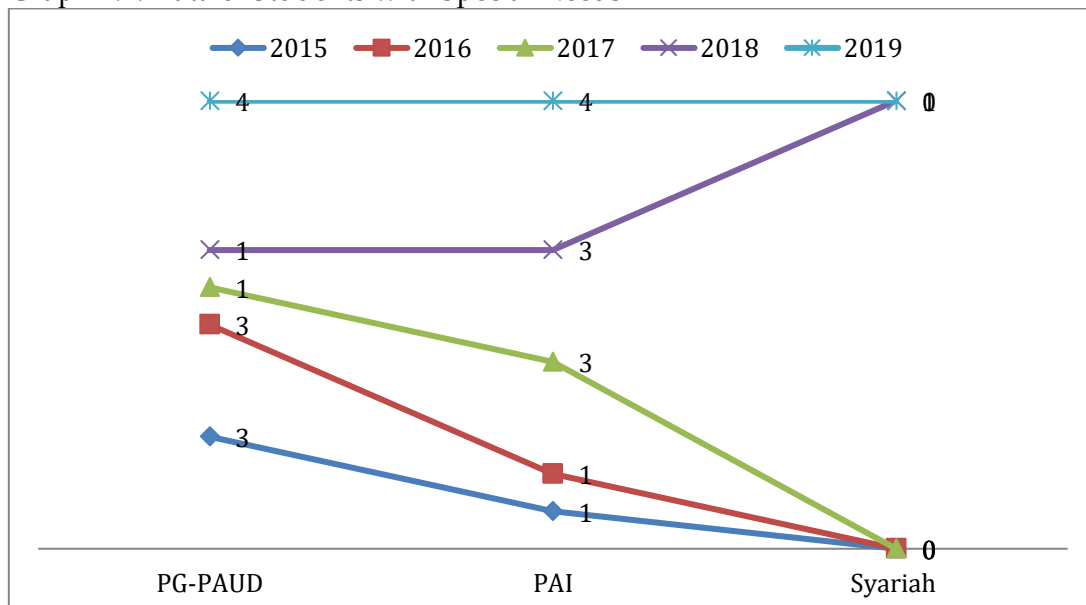
Introduction

UNESCO 1994 held a conference related to the implementation of special needs education. This conference aims to broaden the goals of Education for All taking into account the fundamental policy shifts necessary to promote inclusive education, so that schools can serve all children, especially those with special needs (UNESCO, 2004; UNESCO & P.-I., 2006). In the Indonesian context, this has also been regulated in Law Number 8 of 2016 Article 10, which states that Persons with Disabilities have the right to receive a quality education in educational units in all types, pathways, and levels of education inclusive and special. In addition, the mandate of Law no. 12 of 2012 article 32 paragraph (1) states that educational services for persons with disabilities in higher education can be carried out in the form of special education and special service education. According to Permenristekdikti

No. 46 of 2017 concerning Special Education and Special Service Education in Higher Education in Article 8 paragraph (1) states that Higher Education facilitates learning and assessment according to the needs of Students with Special Needs without reducing the quality of learning outcomes, and in paragraph (2) states that learning as referred to in paragraph (1) may be made in the form of adjustments: a. theory; b. tools/media; c. learning process; and/or d. assessment (Kurniawan, 2020; Rosdiana, 2017).

The development of learning tools that are designed systematically has minimized the gap between normal students and students with special needs. Data for the last five years shows that the participation rate of students with special needs who enrol at Universitas Islam Bandung (UNISBA) every year is shown in graph 1.1.

Graph 1.1: Data of Students with Special Needs



The data above shows that there are always applicants for students with special needs at UNISBA almost every academic year. Students with special needs consist of

visually impaired and slow learners. This data is the basis for the development of a learning innovation model for children with special needs. This reason is strengthened by

the research conducted by Desiningrum (Kurniawan, 2020) which found the fact that the main factors that cause slow learning in children can be caused by wrong or inappropriate learning strategies, processing learning activities that do not arouse learning motivation, and giving inappropriate reinforcement (Rosdiana, 2017).

Based on the results of Amelia's research (2016), it was found that differences in motor, cognitive, and emotional abilities between men and women caused more psychological disorders to be suffered by boys than girls, such as learning difficulties that were more experienced by boys. For example, reading difficulties (dyslexia), counting difficulties (dyscalculia) and writing difficulties (dysgraphia). This problem occurs in almost all educational environments, including at UNISBA. Within the scope of the early childhood teacher study program (PG-PAUD), Faculty of Tarbiyah, and Teacher Training, there are several students with special needs. In this condition, they are slow learners. Slow learners in children are those who have low cognitive abilities so they experience low processing of information. Slow learners with an IQ of 80-90 are slower in capturing material in the form of symbols, abstracts, or conceptual material. Most children experience problems with reading or arithmetic (Reddt, 1997).

They find it difficult to absorb information as a whole because of limited cognitive abilities. The next problem arises when they are among other students with average or above-average cognitive abilities. Conditions like this are certainly not easy for lecturers in case of delivering more lecture material. Students who are slow learners have weaknesses in thinking, finding relationships, reasoning, developing number and language concepts, and memory. Slow learners in children have cognitive abilities

below average, but cannot be called a disability (Rekha et al., 2013). However, children who are slow learners need more time to acquire their abilities. It will be more useful if learning activities are carried out in a directed manner.

Based on the experience of several lecturers who had taught these students, the difficulties experienced were slow capturing information and difficulty digesting conceptual material. Some lectures have not been completed properly because of different misperceptions between the students and the lecturers. In addition, when interacting personally, the students concerned also need time to digest information and arrange words. These are some of the problems faced in the learning process related to children with special needs in the PG-PAUD Study Program at UNISBA. Based on these various problems, it is necessary to develop an innovative learning model to facilitate the needs of slow learner students, so that they receive the same education as other students.

Method

This research was included in the type of research and development. While the research product was a learning model, in which its implementation was applied to the physical, motor, and cognitive development method of the PG-PAUD Study Program, Faculty of Tarbiyah and Teacher Training at UNISBA, which consisted of several students with special needs in the categories of slow learning and specific learning difficulties. This media development process used the ADDIE model developed by Dick and Carey. This model could be used for various forms of product development such as models, learning strategies, learning methods, media, and teaching materials. The selection of this model was based on the

consideration that this model was developed systematically and based on the theoretical foundation of learning design. This model is structured programmatically with systematic sequences of activities to solve learning problems related to learning resources according to the needs and characteristics of students. This model consists of five steps, namely: (1) Analysis, (2) Design (3) Development, (4) Implementation, and (5) Evaluation. Data collection techniques were carried out through interviews, observations, questionnaires, and tests. The data analysis was carried out with qualitative and quantitative approaches.

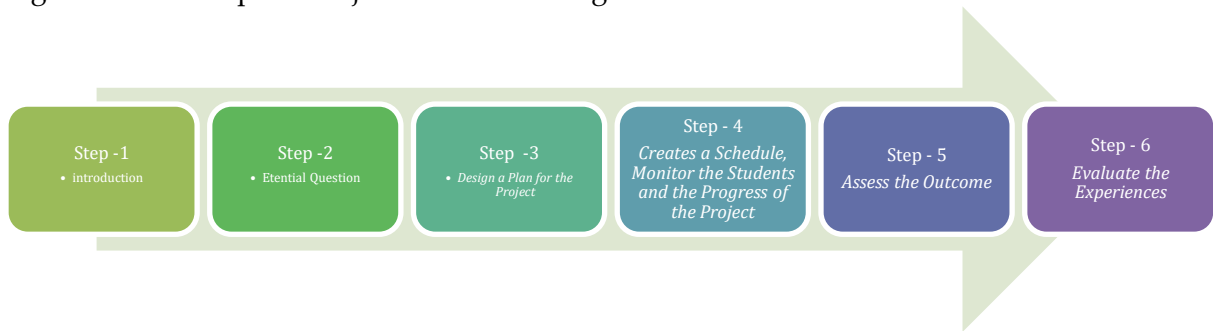
Result and Discussion

The preparation of the initial draft of the learning model begins with a discussion. This discussion aims to equalize perceptions about the direction of learning and efforts to improve the quality of the learning process for slow learners. The discussion also discussed the nature of the "PBL" learning model as an alternative model that emphasizes high active involvement for students in learning. After discussing together with the lecturers, as well as conducting a study of the initial draft design of the PBL learning model that had been prepared previously. The results of the analysis of the PBL learning model design will then be developed in a limited trial. The components in the design of the learning

planning model consist of: learning objectives, learning materials, learning activities, media, learning resources, and learning evaluation. Learning activities are formulated using two stages, namely the first stage "learning in teams" and the second stage "learning among teams". The learning stage in the team includes investigative activities or investigating a problem in the learning material that has been distributed in the team. Meanwhile, inter-team learning includes online team presentations, reflections, and conclusions. In the first and second stages of learning activities, the researcher saw how active students were in learning.

The PBL model is a model that provides opportunities for students to work in groups to solve problems that are authentic, curriculum-based, and often interdisciplinary. Students decide how to approach a problem and what activities to do. Students collect information from various sources and synthesize, analyze, and acquire knowledge from it. Learning for students with the PBL model is inherently valuable because it connects to something real and involves collaboration and reflection skills. In the end, students present their newly acquired knowledge and are judged on how much they have learned and how well they communicated it. Throughout this process, the role of the lecturer is to guide and advise, not direct and manage student work.

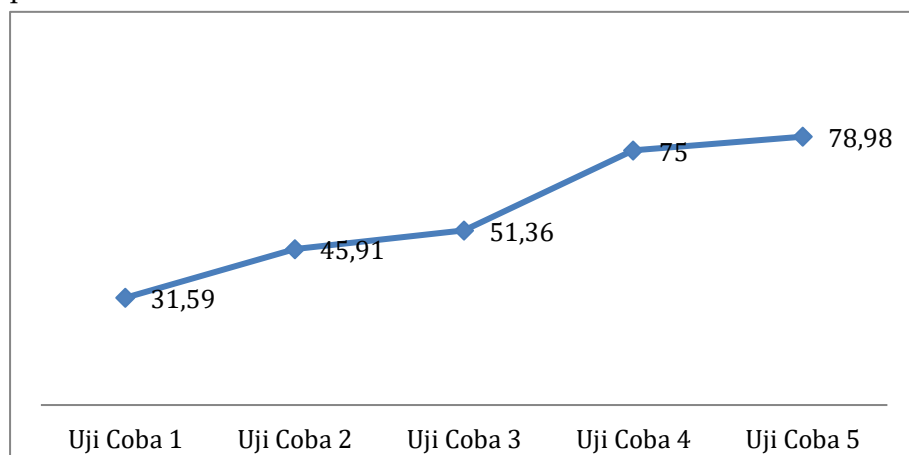
Figure 1.1 The Steps in Project-Based Learning



The development stage includes the collection of materials/materials, interactive multimedia-based learning media, making illustrative images, typing, and others. Then proceed with the activity of preparing the “PBL” learning model. The selection of the model is based on academic studies related to the advantages and disadvantages of this model, one of which is for students who are slow or low learners. PBL is a learning method that uses projects as a medium. Students do exploration, assessment, interpretation, synthesis, and information to produce various forms of learning outcomes. PBL is a student-centred learning model that carries out an in-depth investigation of a topic and theme being carried out. Students constructively carry out deepening learning with a research-based approach to problems and questions that are weighty, real, and

relevant. The purpose of PBL for each learning model must have a purpose in its application. The objectives of PBL are, among others: (1) Improving students' ability in solving project problems; (2) Acquiring new knowledge and skills in learning; (3) Making students more active in solving complex project problems with real product results; (4) Develop and improve student skills in managing materials or tools to complete assignments or projects; (5) Improving student collaboration, especially in group PBL. Based on the results of the trials carried out, it is illustrated that there was an increase and interest in slow learner students in understanding the material taught by the lecturer. The description of the data from the results of the trials in this study is as follows.

Graph 1.2. Graphic of Trial Test Value



Uji Coba 1 = First Trial, Uji Coba 2 = Second Trial, Uji Coba 3 = Third Trial, Uji Coba 4 = Fourth Trial, Uji Coba 5 = Fifth Trial.

Graph 1.2 shows a movement in the average value of the test results which has increased significantly in each trial, meaning that the learning method can increase student scores. The results of the development were applied in learning to determine the effect on the quality of learning which included effectiveness, attractiveness, and learning efficiency. In the PBL approach, the lecturer acts as a facilitator for students to obtain answers to the guiding questions. While in the "conventional" class, the lecturer is considered the person who has the most knowledge of the material, and therefore all information is given directly to students. In PBL classes, students are accustomed to working collaboratively, assessments are carried out authentically, and learning resources can be highly developed. This is different from the "conventional" class which is accustomed to individual class situations where the assessment is more dominant in the outcome aspect than the process and learning resources tend to stagnate.

PBL measures as developed by The George Lucas Educational Foundation (2005). **Instructional Module Project Based Learning** consists of:

Start With the Essential Question Learning begins with essential questions, namely questions that can give students assignments in carrying out an activity. Taking topics that are in line with real-world realities and starting with an in-depth investigation. Lecturers try to make the topics relevant to students (Reeder, 2005)

Design a Plan for the Project Planning is done collaboratively between lecturers and students. Thus, students are expected to feel their "own" to the project. Planning contains the rules of the game, the selection of activities that can support answering essential questions, by integrating

various possible subjects and knowing the tools and materials that can be accessed to assist project completion (Reeder, 2005).

Create a Schedule Lecturers and students collaboratively arrange activity schedules in completing projects. Activities at this stage include: (1) making a timeline for completing the project, (2) making project completion deadlines, (3) bringing students to plan new ways, (4) guiding students when they make ways that are not related to the project and (5) asking students to make an explanation (reason) about choosing a method (Reeder, 2005).

Monitor the Students and the Progress of the Project Lecturers are responsible for monitoring student activities during project completion. Monitoring is done by facilitating students in each process. In other words, the lecturer acts as a mentor for student activities. To simplify the monitoring process, a rubric is created that can record all important activities (Reeder, 2005).

Assess the Outcome The assessment is carried out to assist lecturers in measuring the achievement of standards, play a role in evaluating the progress of each student, provide feedback on the level of understanding that has been achieved by students, and assist lecturers in preparing the next learning strategy.

Evaluate the Experience At the end of the learning process, lecturers and students reflect on the activities and project results that have been carried out. The reflection process is carried out individually or in groups. At this stage, students are asked to express their feelings and experiences while completing the project. Lecturers and students develop discussions to improve performance during the learning process so that in the end a new inquiry is found to answer the problems posed in the first stage of learning (Reeder, 2005).

The evaluation phase includes formative evaluation and summative evaluation. Formative evaluation is carried out to collect data at each stage that is used to refine and summative evaluation is carried out at the end of the program to determine its effect on student learning outcomes and the quality of learning in general (Reeder, 2005). In this study, only formative evaluation was carried out, because this type of evaluation was related to the stages of development research to improve the resulting product development. This evaluation stage also assesses the

achievement of the expected learning objectives, namely student activity and learning outcomes. While the assessment of learning outcomes is seen from the post-test value of the validation test results of the model to be developed. To find out the impact of the learning model on student activity, it is done by doing high, medium, and low activity categories based on class activity with the Mean (Mi) and Standard Deviation (SDi) formulas above, which results in the following categories of student activity:

Table 1.1. Student Activity

Student Activity	Frequency	Percentage (%)
High	27	61,4
Moderate	15	34,1
Low	2	4,5
Total	44	100

Based on table 1.1, after applying the learning method, shows that most of them, namely 27 students (61.4%), had high activity. Almost half of them, namely 15 students (34.1%), had moderate activity, and a small part, namely 2 respondents (4.5%),

had low activity. To determine the impact of the activity on learning outcomes, simple linear regression analysis was used in the study, with the following empirical equation: $Y_i = a_i + b_iX_1 + e$.

Table 1.2. Simple Linear Regression Analysis

		Coefficients				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	41.828	17.930		2.333	.025
	Student Activity	.407	.239	.254	1.699	.097

a. Dependent Variable: Study Result

From the table 1.2, the regression equation can be arranged as follows: $Y_i = a_i + b_iX_1 + e$ to $Y = 41.828 + 0.407X_1 + e$. Based on the simple regression equation, learning

outcomes (Y) would increase by 0.407 units. This means that there was a positive effect of activity on learning outcomes. Thus, the better the student's activity, the higher the value of learning outcomes (Y).

Table 1.3 Determination Coefficient (R^2)

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.254 ^a	.064	.042	11.944

a. Predictors: (Constant), Activity Level

Based on the results of the coefficient of determination in table 1.3, the value of R square (R^2) obtained was 0.064 or 6.4%. This shows that student activity was able to influence the variation of learning outcomes by 6.4% and the remaining 93.6%, which was influenced by other variables outside this research model. Based on the results of trials conducted on the developed learning model, it can be concluded that PBL had the effect of increasing the activity of slow learner students in the learning process. These results are in line with research (Goldstein, 2016; Hartini et al., 2017; Martinez, 2022) which shows that this model will carry out social interactions that require slow learners to be actively involved during learning, so active participation from friends is necessary. By inviting them to participate, slow students will have good social skills as well (Alhamuddin & Bukhori, 2016). In addition, the strategies used by teachers also greatly affect student activity (Alhamuddin, 2017, 2019). Learning in a group also will enhance students' learning outcomes, especially in the affective domain (Ainiyah et al., 2022; Rohman, 2022).

This is influenced by the advantages of the PBL learning model, including increasing student learning motivation, making students more active and succeeding in solving complex problems, increasing student collaboration (Maisyaroh et al., 2021), and providing learning experiences for students and practice in organizing projects (Ismailov, 2021). However, in addition to these advantages, the PBL

learning model also has several disadvantages. The disadvantages of the PBL learning model include: requiring a lot of time to be provided to solve complex problems, requiring greater costs compared to other learning models, triggering less active students in group work, and worried that students do not understand the topic as a whole if the topics are given to each group different (Alhamuddin, 2018). However, from some of these shortcomings, a solution can certainly be found, namely by limiting the time of students in completing projects, minimizing costs by using simple equipment found in the surrounding environment, and choosing research locations that are easily accessible by students (Alhamuddin, 2017; Kurniawan, 2020).

The advantages of implementing the PBL model are: (1) increasing students' motivation to learn to encourage their ability to do important work, and they need to be rewarded; (2) improving problem-solving ability; (3) making students more active and successful in solving complex problems; (4) enhancing collaboration: (5) encouraging students to develop and practice communication skills; (6) improving students' skills in managing resources; (7) providing students with learning and practical experience in organizing projects and making allocations of time and other resources such as equipment to complete assignments; (8) providing a learning experience that involves students in a complex manner and is designed to develop according to the real world; (9) involving

students to learn to take information and demonstrate their knowledge, then implement it in the real world; (10) making the learning atmosphere fun, so that students and educators enjoy the learning process (Nurfitriyanti, 2016).

Based on this opinion, there are several advantages of developing the “PBL” learning model for students with special needs using the “ADDIE” development approach model, namely: First, it can increase students' knowledge and independence in learning (Goldstein, 2016). Second, it allows students to research, question, and then apply what they learn to suggest feasible solutions to the problem under study. Third, the atmosphere of the learning process becomes more interactive and meaningful, because students are allowed to explore, communicate, negotiate, and collaborate on learning materials (Martinez, 2022).

Fourth, it has an impact on the wider use of learning resources. Fifth, it can develop students' thinking skills, because they are faced with broader and more in-depth ideas or thoughts when examining the problems under study. Therefore, all learning activities are more meaningful for students and learning outcomes can last longer. In addition, it motivates students to recognize, accept, absorb and understand the relationship between concepts, knowledge, and values or actions contained in several subjects or fields of study (Adewumi & Mosito, 2019; Goldstein, 2016; Taheri et al., 2019). Sixth, it emphasizes student activity and independence in learning, so that they can develop student social skills, such as cooperation, tolerance, communication, and respect for other people's ideas (Taheri et al., 2019).

Allah created humans in the best of forms and each has weaknesses and shortcomings. This difference in nature needs to be understood by all educators. All

children are intelligent and achievers. The development of human nature can be done with various fun learning activities and respect for differences in existing competencies (Mualimin, 2017). Thus, education humanizing humans will be formed and there will be an acknowledgement of the diversity of human nature that has potential as the best creatures created by God.

Conclusion

Based on the explanation of the research results and the discussion in the previous chapter, it can be concluded that the PBL learning model can be an alternative for lecturers in teaching students in the slow learner category. Based on the results of the trials conducted, the aspect of student activity has increased compared to the student activity before using the PBL model. The result of the determination coefficient showed the value of R square (R^2) of 0.064 or 6.4%. This reveals that student activity was able to influence the variation of learning outcomes by 6.4% and the remaining 93.6% was influenced by other variables outside this research model. It can be concluded that PBL had the effect of increasing the activity of slow learner students in the learning process.

For universities, it is necessary to design policies related to learning for students with disabilities so that these students get the same services and rights as other students. One of them is by facilitating lecturers to develop learning models that support students with disabilities. In addition, conducting early detection by collaborating with psychologists to find out the symptoms that exist in students. Thus, with this assessment, lecturers who teach in the classroom can find out the characteristics and potential of the students being taught.

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