Model concepts to support the improvement of students' skills in learning tasks

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ABSTRACT

This article aims to design a concept model that can support learning to improve students' ability in learning tasks to deal with problems that exist in the real world. Based on KKNI (Indonesian National Qualification Framework), there are six tasks in learning, namely routine tasks, critical book reports, critical journal reports, idea engineering (scientific or creative writing), mini research, and projects. Therefore, the learning process must be able to increase student learning motivation. In addition, it must also develop their competencies and skills to think critically, have high creativity, be able to work together in teams, be disciplined, be responsible, and be able to create frameworks and solve problems in life and the environment. Therefore, it is necessary to develop a learning model that is in accordance with these objectives. In this case, it is a learning model designed to encourage students to learn and practice, so that they are skilled in responding to problems based on their experience in learning. The approach in this development research was carried out using the ADDIE model. The design concept of this development model is done by combining a project-based learning model with six tasks based on KKNI (Indonesian National Qualification Framework). The results of the design concept of this development model consist of seven syntax stages, namely: material explanation, material review and formulation of problem formulation, study and review of book and journal literature, idea engineering (scientific or creative writing), mini research, project design and implementation, and presentation and evaluation.

INTRODUCTION

Government Regulation of the Republic of Indonesia Number 65 of 2013 concerning Process Standards states that every educator in an educational unit must prepare a complete and systematic Learning Implementation Plan (RPP) to realize interactive, inspiring, fun, and challenging learning. It motivates students to participate actively and provides sufficient space for initiative, creativity, and independence per students' talents, interests, and physical and psychological development. The learning principles used in the Process Standards include a textual approach to process as a reinforcement of the scientific approach and from learning verbalism to applied skills. Education demands applying and implementing ideas to deal with life problems.

Education should aim to teach students how to apply knowledge and skills to solve real-life problems (Everwijn et al., 1993). General education should focus on developing abilities such as knowledge of facts, understanding of principles, thinking skills, and attitudes necessary for everyday

life (Potthoff, 1946). In higher education, it is important to assess and develop life skills such as teamwork, goal setting, time management, and interpersonal communication (Cronin et al., 2021).

Referring to the vocational level in KKNI (Indonesian National Qualification Framework), a student must be able to master the concept of science both theoretically and practically. Vocational education will be effective if it can enable individuals to utilize their interests, knowledge, and skills at the highest level. Vocational education enables individuals to utilize their interests, knowledge, and skills at the highest level (Febriana et al., 2019). The Indonesian National Qualifications Framework (KKNI) emphasizes mastery of theoretical and practical science concepts at the vocational level (Mon & Anifah, 2018). Efforts are underway to align the vocational education curriculum with the competencies required by industry, ensuring the relevance of vocational education to the world of work (Sulistiyo & Kustono, 2018). Developing vocational education in Indonesia includes introducing an apprenticeship system, internationalization of vocational education and training, and increasing the number of vocational school graduates (Wardhana et al., 2023). By implementing the KKNI-based learning model, SMKs in North Sumatra Province have improved students' soft skills, demonstrating the effectiveness of vocational education in enabling students to utilize their knowledge and skills effectively (Situmorang et al., 2019).

Based on KKNI, there are six learning tasks: routine tasks, critical book reports, critical journal reports, idea engineering, mini research, and projects. These tasks are designed to improve students' learning outcomes and enhance their skills in various subjects (Erlita et al., 2018; Kapile & Nuraedah, 2022; Putri & Putri, 2020). Therefore, the learning process must be able to increase student learning motivation, improve student competencies and skills to be able to think critically, have high creativity, be able to work together in teams, be disciplined, be responsible, and be able to create frameworks and solve problems in life and their environment.

In line with that, quality education will produce one or more of the following characteristics: (1) Students show a high level of mastery of the required learning tasks following the goals and objectives of education, including academic learning outcomes in learning achievement; (2) Educational results are in accordance with the needs of students in their lives so that learning is not just knowing something but can do something meaningful for their lives (learning and earning); and (3) Educational results are appropriate or relevant to environmental demands (Rizka & Arwizet, 2023).

Several articles are relevant to the concept of models to support students' skill enhancement in learning tasks. One article by Graham et al. (1992) discusses combining computer simulation models with case studies to create a learning environment for management education, aiming to improve strategic thinking skills and integrate modeling with policy and strategy formation. Engmann et al. (2017) explored various skills development models, highlighting key themes that can effectively improve the quality and relevance of education and skills provided to secondary-level students. Finally, Politsinsky et al. (2015) discuss the training of students at technical universities and the development of analytical skills through physics and chemistry problem-solving.

Based on these needs, it is necessary to develop actions in the learning process to improve students' ability to think, reason, and create as a talent by choosing a more appropriate learning model. The learning model must be following the characteristics of the learning material. Thus, learning materials can be more easily mastered quickly, make students think more critically, creatively, and innovatively, be responsible, have high reasoning power, and be able to analyze, conclude, and apply them. Therefore, developing a learning model that follows the learning objectives is necessary.

RESEARCH METHOD

The learning model development approach uses the Research and Development (R&D) method adapted from ADDIE by carrying out the Analysis, Design, Development, Implementation, and Evaluation processes. However, in this paper, only the design process of the learning model development is presented. The steps in designing the learning model follow the framework, as shown in Figure 1.
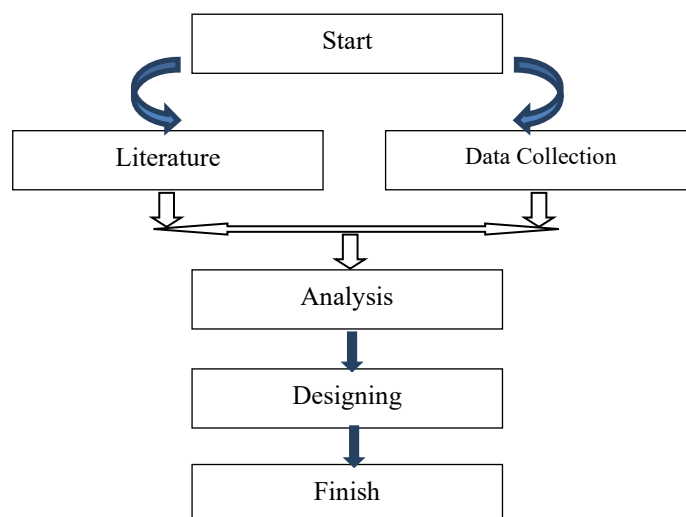
Figure 1. Research Framework

The research begins with a literature review and the required data collection. In this research, a literature review was carried out in the form of references and theoretical foundations relevant to the case of learning development, the project-based learning model with six Tasks based on the KKNI (Indonesian Qualifications Framework). References were obtained from books, journals, research report articles, and online sites. Data was obtained from focus group discussions and questionnaires.

The next stage is the analysis stage. The data analysis used was qualitative, namely analyzing the needs for developing learning models and the feasibility and requirements for model development at the design stage, namely designing teaching and learning activities. This activity also carried out the design of learning models suitable for teaching and learning activities. This learning model is the development of a project-based learning model (PjBL). This model is still conceptual and will underlie the development process later.

FINDINGS AND DISCUSSION

According to the Regulation of the Minister of Research, Technology and Higher Education of the Republic of Indonesia No. 44 of 2015, article 14, paragraphs 3, 4, and 5, learning methods can be selected to implement teaching and learning. Furthermore, Joyce et al. (2011) said that by using a learning model, we take steps to avoid two mistakes. The first is the assumption that a learning model is feasible, and then the model must be applied. Second, the assumption is that each subject has a learning style, so it is impossible to change and improve. The learning model is very dynamic, following the needs and learning objectives. Modify, especially to some learning methods and models, and do as necessary to develop or adapt to needs. If necessary, professional teachers must adjust learning models and methods to achieve learning objectives (Khoerunnisa & Aqwal, 2020).

Based on this description, a learning model must be developed following the environment and learning outcomes. An appropriate learning model is significant to help students have skills in learning as well as doing the six tasks according to the implementation of the KKNI. From the existing learning models based on the criteria and syntax, the PBL model is the most suitable model to be developed to accommodate the intended learning following the implementation of the six tasks in the KKNI.

Project-Based Learning Model

One learning model that uses a scientific approach is project-based, namely a learning model that uses projects (activities) as the core of learning (Sumantri, 2015). Students use exploration, assessment, interpretation, synthesis, and information to produce various learning outcomes. Vocational schools developed the project-based learning model, which is easy to implement and

highly effective in improving the quality of graduates, as seen from student work readiness (Sudarsono et al., 2022).

Project-based learning is the application of active learning methods in student-centered classes (Zancul et al., 2017). The project-based learning model is designed for students to investigate and understand complex problems. This model begins the process of critical thinking and analysis to find answers (Chiang & Lee, 2016; Darmadi, 2017). Implementing project-based learning models can increase students' problem-solving abilities (Jalinus & Nabawi, 2018). The application of this learning is in the form of project assignments to produce real products that can encourage student creativity to be able to think critically in analyzing material in the concept of problems to improve students' understanding of learning (Habók & Nagy, 2016; Harmer & Stokes, 2014; Ismuwardani et al., 2018; Winatha & Abubakar, 2018). The application of the project-based learning model is more effective in assessing student project assignments than the conventional learning model using the tutorial method (Lesmana & Jaedun, 2015).

The learning steps in project-based learning, as developed by edutopia (2007) and used in this study, can be seen in Table 1.

Table 1. Project-Based Learning Syntax

No.	Phase	Description
1	Start With the Essential Question	- Learning begins with essential questions - Taking the topic according to reality and starting with an in-depth investigation
2	Design a Plan for the Project	- Planning the project collaboratively between teachers and students - Know the tools and materials that are accessible to help complete the project
3	Create a Schedule	- Teachers and students collaboratively arrange activity schedules
4	Monitor the Students and the Progress of the Project	- The teacher is responsible for monitoring the activities of the participants - The teacher does the monitoring by facilitating each process (becoming a mentor for students)
5	Assess the Outcome	- Assessment is carried out to assist teachers in measuring achievement standards - The teacher evaluates the progress of students
6	Monitor the Students and the Progress of the Project	- Teachers and students reflect both individually and in groups on project activities and results

Based on the description of the PjBL stages, Project-based learning is assumed to be suitable to support the learning model that will be developed. Therefore, the learning implementation with six tasks based on the KKNI can be optimally achieved.

The Concept of Learning Model Development Results

A learning model is needed to achieve the learning objectives based on the six tasks of the KKNI. From the existing models, the model that meets the learning objectives is the Project Based Learning Model, but this model only focuses on project implementation. Therefore, it is necessary to develop the PjBL model. Several researchers have developed the project-based learning model. Some researchers develop models to increase interest by collaborating investigations in project-based learning (Chu et al., 2011). In addition, some utilize the research results developed as a module in a learning activity (Parmin & Peniati, 2012). However, many teachers still need to develop models supporting learning with six KKNI tasks.

This learning model needs to be developed from a project-based learning model due to several assumptions, including: Through learning, students will build their skills in answering problems (Shepperson, 2017); Learners learn in small groups by working on real-world problems (Ram et al., 2007); Furthermore, project-based learning does not close the gap between cognitive and behavioral patterns (Kılınç, 2010); In project-based research findings suggest that learners with learning difficulties benefit in several ways from experiential learning (Filippatou & Kaldi, 2010)

The results of project-based research also show that learning activity has significant advantages in content knowledge and thinking skills of learners (Hernández-Ramos & De La Paz, 2009).

Following the philosophy of the project-based learning model in its development, this learning model is also based on the philosophy of constructivism and progressivism. Having the three main theories in learning, this development model is also based on the three theories: behaviorism, cognitivism, and constructivism. Therefore, by using this learning model, there will also be a change in a person's behavior, which is strongly influenced by the internal thinking processes that occur during the learning process, to achieve a balance and form a new scheme in students' minds.

Based on this description, a thinking framework is formed for developing the learning models concept. The concept is still a part of project-based learning models following behavioristic, cognitive, and constructivist based on the six tasks of the KKNI. The concept of developing the Learning Model developed in this study can be seen in Figure 2.
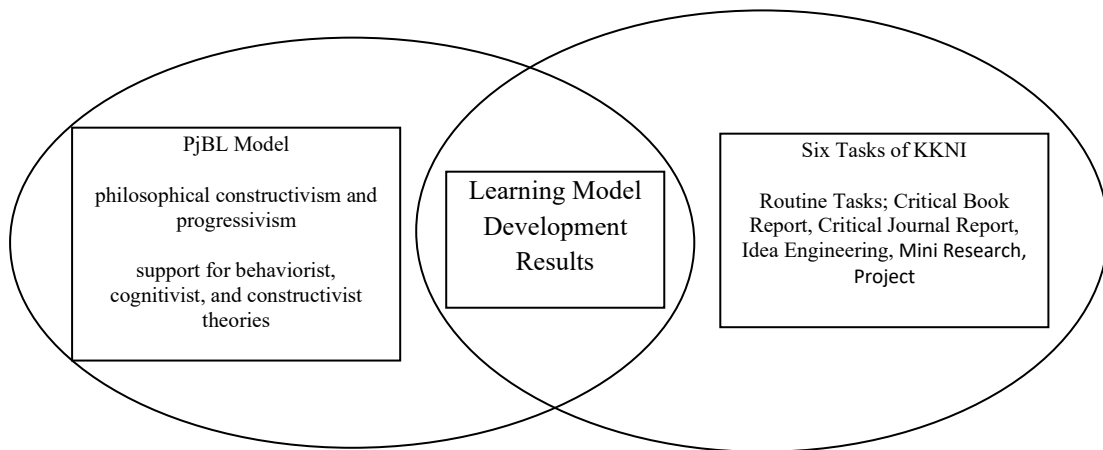

Figure 2. Development Model Concept Chart

Syntax Design of Development Outcome Learning Model

In developing this learning model process, it is necessary to synthesize the syntax of the project-based learning model by adding or developing several syntaxes. Therefore, the learning objectives using this development model can be achieved. The syntax in this development model begins with explaining knowledge and material related to learning. Then, proceed with identifying and formulating problems. This step is necessary because, in this learning, the students must first be able to read phenomena and formulate existing problems before students can do the next step. Thus, they can understand the purpose of solving existing project problems.

Following the tasks in the KKNI, the development is contained in the syntax stages 3, 4, and 5. The developed learning model can be seen in Table 2, which consists of seven steps.

Table 2. Syntax of Learning Model Development Results

No.	Steps	Description
1	Material explanation	- The teacher gives an explanation related to the knowledge in the learning material - Learners follow the lesson and ask questions
2	Review the material and formulate the problem (Routine Tasks)	- Students review the required knowledge related to the material - The teacher directs students to identify problems according to the facts that exist in the real world - The teacher directs students to formulate problems according to the real world
3	Literature review and review of books and journals (CBR and CJR)	- Students study literature and conduct studies and reviews of books and journals related to materials and problems that have been prepared - The teacher directs students to conduct studies and reviews that are in accordance with the material and problems
4	Idea Engineering (RI)	- The teacher attracts attention and opens the minds of students to be able to come up with ideas in answering problems - Based on the results of the literature review, students generate ideas to answer problems
5	Mini Research (MR)	- The teacher directs students to do small research to find answers to problems in accordance with the engineering ideas that have been made - Students do a small research to answer the problem
6	Project design and implementation	- The teacher directs students to make a schedule for project implementation - The teacher directs students to prepare equipment and materials for the project - Students make a schedule and prepare the necessary equipment and materials - Students carry out project implementation as solutions to problems
7	Presentation and Evaluation	- Students do the presentation of the work that has been done - Assessment is carried out to assist teachers in measuring achievement standards - The teacher evaluates the abilities and experiences of students after doing the project

CONCLUSION

Based on the development from the results of the project-based learning model slices with learning tasks according to the KKNI, a syntax design concept for this development model consists of seven stages. The syntax stages 1, 2, 6, and 7 adopt the PjBL model, while the syntax stages 3, 4, and 5 adopt learning tasks in the KKNI.

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