

REVIEW ARTICLE



DEVELOPMENT OF PROBLEM BASED LEARNING (PBL) MODEL ON THEMATIC LEARNING TO INCREASE CRITICAL THINKING ABILITY IN CLASS V ELEMENTARY SCHOOL STUDENTS

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Abstract

This development research aims to realize the development of a Problem Based Learning (PBL) model in thematic learning that is theoretically feasible and suitable for use by educators in classroom learning. The research method used is research and development using research steps according to Borg & Gall. The population in this study were the fifth grade educators at SD Al Kautsar, totaling 8 educators. The sample used in this study was a saturated sample, namely 8 educators. This study uses a qualitative descriptive analysis. Data collection techniques in this study were carried out in 3 ways, namely documentation, observation, and questionnaires (needs analysis questionnaire). The instruments in this study consisted of: 1) needs analysis instruments, 2) materials expert validation instruments and learning experts, 3) user validation instruments (educators). The results of prototype product development were validated by material experts and learning experts and validated by users, namely fifth grade educators at SD Al Kautsar, totaling 8 educators to support the formation of knowledge and critical thinking skills of students in the learning process in the classroom.

Key words: Critical Thinking. Problem Based Learning Model

1 | INTRODUCTION

Education has a very important role in realizing Indonesia's golden generation. Quality education can help individuals as a golden generation that is growing and developing dynamically and actively in shaping themselves into Indonesian people who are characterized, intelligent, competitive, and productive. Efforts to realize these expectations require humans who are not only intelligent in thinking from memorizing activities, but also thinking intelligence formed from a learning process based on concrete experience to solve problems and think critically. So, according to Anugraheni (2017: 247) educators have a duty to improve quality, cre-

ativity, and develop the potential that exists in students. Article 1 of the National Education System Law no. 20 of 2003 it is stated that the National Education System is the entire component of education that is interrelated in an integrated manner to achieve the goals of national education. Departing from the sound of this article, it can be seen that education is a system which is a total structure consisting of components that are interrelated and jointly lead to the achievement of goals (Soetarno, 2003: 2). The components in national education include the environment, infrastructure, resources, and society. These components work together, are interrelated and support in achieving educational goals. The purpose of national education as formulated in the National

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Education System Law is to develop the potential of students to become human beings who believe and fear God Almighty, have noble character, are healthy, knowledgeable, capable, creative, independent, and become democratic and responsible citizens. Munira, 2015). Efforts to improve the quality of a nation, there is no other way except through improving the quality of education. Departing from this thought, the United Nations (UN) through the United Nations, Educational, Scientific and Cultural Organization (UNESCO) instituted four pillars of education for both the present and the future, namely: (1) learning to know, (2) learning to do (3) learning to be, and (4) learning to live together. Most modern educational systems regard the development of critical thinking as a vital pedagogical element.

Currently, education is in the knowledge age with an extraordinary acceleration of knowledge increase. The Indonesian education system has integrated creative and critical thinking skills into the education curriculum. This is in accordance with the Regulation of the Minister of Education and Culture No. 64 of 2013 concerning Content Standards, namely to meet future needs and meet the Indonesian Golden Generation in 2045, Graduate Competency Standards have been set based on XXI Century Competencies, namely critical thinking (critical thinking), communication (communication), collaboration (collaboration), creative and innovate thinking (creative and innovative thinking). Thus, the statement requires students to be able to master various skills to face the 21st century so that they can compete in the global era. 21st century skills can strengthen social capital and intellectual capital, if the skill characteristics are characterized by the 4Cs, namely communication, collaboration, critical thinking and problem solving, and creativity and innovation.

Critical thinking skills can be trained through thematic learning. Thematic learning according to Nugraheni (2015: 251) is a type of learning that gives a lot of attention to the development of students by providing concepts based on their level of development. Thematic learning is expected to be a means to develop critical thinking skills to obtain a complete understanding of the concepts of the material that has been studied.

According to Christina and Kristin (2016: 222) crit-

ical thinking is a person's ability to find information and solve a problem by asking himself to dig up information about the problem at hand. Critical thinking skills are important for students, but in thematic subjects, especially in solving problems, learning tends to be teacher-centered. The critical thinking ability of each individual is different, depending on the exercises that are often done to develop critical thinking (Fakhriyah, F., 2014: 96).

One way to realize thematic learning to improve critical thinking skills is to develop a learning model. The learning model is a conceptual framework for designing and implementing learning, organizing learning experiences to achieve goals or competencies, and as a guide in the learning process because it contains systematic learning steps. Learning models are generally closely related to learning media. Learning media are everything that can be used as a means to channel messages and information on learning materials so that the learning process occurs (Mawardi, 2018: 29). One of the learning models that provide opportunities for students to have experience finding a concept and developing critical thinking skills is the Problem Based Learning (PBL) model.

The PBL model is a learning based on the problems faced by students related to the basic competencies that are being studied by students. The PBL learning model can be a solution to overcome the low critical thinking skills of fifth grade elementary school students in solving problems on thematic subjects. The application of the PBL model in the learning process can assist students in solving problems, self-study, teamwork, and gaining broad knowledge.

The author's purpose in developing the PBL model is because of the low average thematic scores of students and educators rarely use the PBL model. The PBL model used by educators is not developed so that it does not achieve certain Basic Competencies (KD), and the achievement of student learning outcomes is not optimal. Speaking of achievements/KD/KI/Indicators, in the implementation of KD learning it should be successful, and educators must already have a picture of KD which will be broken down into indicators, learning objectives (approaches/models/strategies) to be achieved, because the estuary of all of that is to achieve KD. That is, regardless of the indicator, the goal remains

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the same, namely to follow up on the completeness of the model, evaluation, learning objectives, and learning resources to achieve the goals. However, currently the model used is maximally done by educators, but again and again the use of the existing PBL model always leaves certain indicators that cause KD not to be achieved. The problem in this development research is on student learning outcomes as evidenced by the results of the analysis of the needs of educators and students at Al Kautsar Elementary School.

Based on the results of observations on February 11, 2020 in class V SD Al Kautsar Bandarlampung, in general the thematic learning process in that class is dominantly centered on educators. Educators always teach thematics with the lecture method. This causes many students to be passive in participating in the learning process. They are more silent, listen to explanations and don't want to ask questions if they don't understand. In addition, students are rarely given problem-solving questions related to everyday life. If there are several problem-solving questions, they still don't understand how to solve these problems. As a result, the problem solving ability of students is also low. From the percentage of 8 educators, only 12.5% of educators have ever used the PBL model. In addition, the core activities in the learning design that have been made by educators have not yet reached critical thinking learning. It is proven from the questionnaire data from the needs analysis, 75% of educators have not directed students to think critically every time they solve problems in learning.

Based on the student needs analysis questionnaire, 90% of the students stated that they were not required to think critically in every learning activity. As many as 66% of students stated that in learning activities, students were unable to solve problems related to problem solving and as many as 91% of students stated that in thematic learning there was no integration between PBL models and thematic learning, even problem solving was not required. students to think critically. Therefore, in the implementation of teaching and learning activities, it is increasingly demanding to develop a PBL model in thematic learning to improve the critical thinking skills of fifth grade elementary school students.

Based on this statement, the researcher concludes that the PBL model is a problem-solving-oriented

learning model that is integrated with real life. In PBL, it is expected that students can form new knowledge or concepts from the information they get, so that students' thinking skills are really trained. So that the realization of the development of the PBL model in thematic learning to improve the critical thinking skills of fifth grade elementary school students.

2 | METHODS

The research method used is research and development using research steps according to Borg and Gall (1983: 775) which consists of 1) research and initial information collection, 2) planning, 3) development of the initial product format, 4) initial trial, 5) product revision, 6) field trial, 7) product revision, 8) field trial, 9) final product revision, and 10) dissemination and implementation. In this study, it is only limited to the fifth stage, namely the user (educator) validation stage, which in the end this development research only produces a feasible prototype product after being validated by material experts and learning experts. So that this development research product deserves to be continued in the next stage of development research, namely the field test stage. This was done because this development research was carried out in the era of the COVID-19 pandemic, which did not allow field trials.

The initial information collection was carried out using observation techniques and questionnaires (needs analysis questionnaire) to 8 educators and fifth grade students at SD Al Kautsar Bandarlampung to find out an overview of the problems that became obstacles in the learning process. This stage is also a process for conducting needs assessment (needs analysis), identifying problems (needs), and conducting task analysis (task analysis). In this stage a needs analysis is carried out to collect information that it is necessary to develop a PBL model in thematic learning.

Planning in this development research includes; 1) Reviewing the curriculum, determining KI and KD on theme 9 sub-theme 2 learning 2-3 which in the learning process really requires a PBL model to be developed; 2) Formulating indicators and learning objectives and materials to be developed based on

the selected KD; 3) The material chosen is the material for the sub-theme of Objects in Economic Activities. Through this material, the researchers designed learning that aims to improve the critical thinking of fifth grade students at Al Kautsar Elementary School. The population in this study were the fifth grade educators at SD Al Kautsar, totaling 8 educators. The sample used in this study was a saturated sample, namely 8 educators. Data collection techniques in this study were carried out in 3 ways, namely documentation, observation, and questionnaires (needs analysis questionnaire). The results of prototype product development are said to be feasible by learning experts and material experts and can be used by educators to support the formation of knowledge and critical thinking skills of students in the learning process in the classroom.

The instruments in this study consisted of: 1) needs analysis instruments, 2) validation instruments for learning experts and material experts, 3) user validation instruments (educators) for class V SD Al Kautsar Bandarlampung.

Research on the development of PBL models in thematic learning that is theoretically feasible and suitable for use by educators in classroom learning. Theoretically, the product was developed based on the theory of Richard I. Arends (2015: 421), namely problem-based learning which was implemented into the Experience Learning theory by Kolb (1984). The prototype product was validated by learning experts and material experts and validated by users, namely the fifth grade educators of SD Al Kautsar, totaling 8 educators.

3 | RESULTS AND DISCUSSION

3.1 | Product Planning Results

Planning is a form of follow-up after conducting a needs analysis and identifying resources to meet needs. The steps in planning the product to adapt the syntax of the PBL model according to Richard I. Arends (2015: 421) are (1) student orientation to the problem (introduction/invitation stage); (2) Organizing students to learn (concept formation stage); (3) Guiding both individual/group investigations (concept application/exploration stage); (4)

Develop and present the work (concept consolidation stage); (5) Analyzing and evaluating the problem-solving process (assessment/evaluation stage) which is implemented into the Experience Learning theory by Kolb (1984), namely (1) Diverging (Divergent) Combination of elements of concrete experience and reflective observation; (2) Assimilation (Assimilation) The combination of abstract conceptualization and reflective observation; (3) Converging (Convergen) Combination of abstract conceptualization and active experimentation; (4) Accommodating (Accommodating) Combination of concrete experience and active experimentation.

Instructional analysis includes mapping of basic competencies and indicators in the developed sub-themes, as well as containing learning objectives which are descriptions of indicators that have been developed. Mapping of basic competencies and indicators is adjusted to what has been provided by the teacher's book.

As a follow-up to the design that has been carried out in the product development plan stage, in this study the researcher only developed a PBL model in the form of a prototype product that had been validated by learning experts, material experts and users (educators) for class V Elementary School.

The collection of materials in the syntax development of the PBL model in thematic learning is adjusted to the selected material, namely on the theme of Objects Around Us, the sub-theme of Objects in Economic Activities, which is carried out by selecting and sorting the material so that it fits the needs of learning.

3.2 | Product Development Results

The researcher adapts the steps of the PBL model according to Richard I. Arends (2015: 421) which in the third stage Guiding individual and group investigations, the researcher will develop and implement it into Experience Learning theory by Kolb's theory (1984). The steps of the PBL model according to Richards I. Arends and the development of the PBL model in Thematic Learning are presented in table 1 as follows:

Stage PBL Richard I. Arends Model Results of Development of PBL Models in Thematic Learning Stage 1 Student orientation towards problems

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(introduction/invitation stage) The teacher explains the learning objectives, explains the necessary logistical needs, and motivates students to be involved in problem solving activities. At this stage, learning begins by explaining the learning objectives and activities to be carried out. This is very important to provide motivation so that students can know the learning that will be carried out. The possible learning activities are as follows: 1. Educators convey learning objectives based on the selected basic competencies, learning objectives, as follows: a. Students are able to see concrete situations from various perspectives. b. Learners have the advantage of learning from direct experience. c. students prefer to work with other people to complete assignments, set goals, do fieldwork, and test various problem solving d. Students have very broad cultural interests and enjoy gathering information. e. Students have high social interest, tend to be imaginative, and have sensitive feelings. f. Students are able to work in groups and receive personal feed-

back, so that students are able to listen with an open mind. g. Students have high curiosity. h. Students show an attitude of responsibility, cooperation, and do not give up easily in solving problems. 2. Educators propose phenomena or stories to bring up concrete problems, motivate students by conveying the practical uses of students' understanding of experimental activities to be carried out to guess or make generalizations or conclusions, so that students are skilled in processing a lot of information and putting it into form. definite and logical. 3. Educators provide problems related to how to distinguish homogeneous and heterogeneous mixtures, namely students are asked to prepare materials to carry out the experiment in accordance with learning materials that are associated with concrete problems that occur in the environment where students live. 4. The teacher then explains the stages of learning that will be carried out next through research, group work, and presentation of results.

3.3 | Material and Learning Expert Test Results

The expert test is carried out with the aim that the resulting product in the form of PBL Model Syntax in Thematic Learning, Themes of Objects Around Us, Subthemes of Objects in Economic Activities is appropriate and can be used by users (educators) of class V Elementary School. Validation was carried out by two experts, namely the validation of material experts and learning experts. Validation was carried out using a questionnaire, using a Likert scale, besides that there was a suggestion column containing suggestions for improvements to the syntax of the PBL model developed.

In the material expert test, the validator guides and directs the preparation of the PBL model in terms of material. The material expert test on the development of the model was carried out twice. In the first material expert test, the score given by the validator

was 85.10. After making improvements, the score given by the validator is 87.11. The suggestions that the validator gave were 1) The material should be able to encourage students to find new ideas; 2) The material must be able to encourage students to conduct investigations; 3) The material must be able to encourage students to ask questions; and 4) The material allows students to study in groups.

Based on the suggestions given by the material expert above, the researcher made improvements to the syntax of the PBL model in thematic learning which was developed by juxtaposing the PBL model according to Richard I. Arends (2015: 421). Improvements made are by 1) correcting the form of stimulus questions that refer to improving critical thinking skills; 2) integrating the material coverage of the PBL model; 3) check the basic competencies, indicators, materials and evaluations to match.

Table 1. Comparison of PBL models according to Richards I. Arends with the development of PBL models in thematic learning

Stage	PBL Richard I. Arends Model	Results of Development of PBL Models in Thematic Learning
Stage 1 Student orientation towards problems (introduction/invitation stage)	The teacher explains the learning objectives, explains the necessary logistical needs, and motivates students to be involved in problem solving activities.	<p>At this stage, learning begins by explaining the learning objectives and activities to be carried out. This is very important to provide motivation so that students can know the learning that will be carried out. The possible learning activities are as follows:</p> <ol style="list-style-type: none"> 1. Educators convey learning objectives based on the selected basic competencies, learning objectives, as follows: <ol style="list-style-type: none"> a. Students are able to see concrete situations from various perspectives. b. Learners have the advantage of learning from direct experience. c. students prefer to work with other people to complete assignments, set goals, do fieldwork, and test various problem solving d. Students have very broad cultural interests and enjoy gathering information. e. Students have high social interest, tend to be imaginative, and have sensitive feelings. f. Students are able to work in groups and receive personal feedback, so that students are able to listen with an open mind. g. Students have high curiosity. h. Students show an attitude of responsibility, cooperation, and do not give up easily in solving problems. 2. Educators propose phenomena or stories to bring up concrete problems, motivate students by conveying the practical uses of students' understanding of experimental activities to be carried out to guess or make generalizations or conclusions, so that students are skilled in processing a lot of information and putting it into form. definite and logical. 3. Educators provide problems related to how to distinguish homogeneous and heterogeneous mixtures, namely students are asked to prepare materials to carry out the experiment in accordance with learning materials that are associated with concrete problems that occur in the environment where students live. 4. The teacher then explains the stages of learning that will be carried out next through research, group work, and presentation of results.
Stage 2 Organizing students to learn (Concept formation stage)	PBL Richard I. Arends Model Educators help students define and arrange learning tasks related to the problem	<p>At this stage the main activity of the teacher is to help students learn (organize students to learn related to the given problem). Possible learning activities are:</p> <ol style="list-style-type: none"> a. Educators group students into small groups consisting of 4-5 students. b. Educators give group assignments to solve the problems given through group assignments. c. Educators provide opportunities for groups to solve problems given through group discussions. d. Educators provide opportunities for groups to read student books or other sources or conduct investigations to obtain information related to the problems given.

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<p>Stage Stage 3</p>	<p>PBL Richard I. Arends Model Educators encourage students to gather appropriate information, conduct experiments, and seek explanations and solutions.</p>	<p>Results of Development of PBL Models in Thematic Learning At this stage, educators guide students in solving problems through individual and group investigations. Possible learning activities are as follows: 1. Stage 1 Diverging (Divergent) Combination of elements of concrete experience and reflective observation. a. Students are asked to look at concrete situations (regarding the sub-subject "Mixed Substances") from various perspectives.</p>
<p>Guiding research individ- ual or group (Concept applica- tion stage/ explo- ration)</p>		<p>a. Educators ask students to conduct investigations by collecting information regarding what materials are needed to carry out experimental activities related to how to distinguish homogeneous and heterogeneous mixtures. 1. Stage 2 Assimilation (Assimilation) Combination of abstract conceptualization and reflective observation. a. Students are asked to be more skilled in processing the information they have obtained in concrete situations and placing it in a definite and logical form. b. Educators guide students by providing a stimulus in the form of critical questions in search of answers related to the problems that have been given (how do students know how to distinguish homogeneous and heterogeneous mixtures through experimental activities). 2. Stage 3 Converging(Convergent) Combination of abstract conceptualization and active experimentation. a. Educators guide students to relate the practical use of ideas and theories through experimental activities. b. Educators guide students to be able to solve problems to make decisions effectively. c. Educators direct students to tend to experiment with new ideas, simulations, and practical applications. 3. Stage 4 Accommodating (Accommodation) Combination of concrete experience and active experimentation. a. Educators direct students to have the advantage of learning from direct experience associated with the theory of mixed substances. b. Educators direct students to be able to take action by involving themselves in new, more challenging situations based on the theory that has been studied. c. Educators guide students to be more responsible in completing assignments, setting goals, doing fieldwork, and testing various problem solving.</p>

<p>Stage Stage 4</p> <p>Develop and</p> <p>presenting the work (concept consolida- tion stage)</p>	<p>PBL Richard I. Arends Model Educators assist students in planning and preparing work according to reports, videos, and models, and help share their work with friends.</p>	<p>Results of Development of PBL Models in Thematic Learning At this stage the teacher guides students to develop results his investigation and asked the participants students present their findings.</p> <p>Possible learning activities as follows. a) Educators ask students to develop the results of the investigation into experimental activities (conducting experimental activities using materials that have been prepared to get results, that is, until students get conclusions about homogeneous and heterogeneous mixtures) b) The teacher asks the group representatives (who have been selected in the previous stage) to present their findings (answers to the problems given) and provide opportunities for other groups to respond and give opinions on the group presentation.</p>
<p>Stage Stage 5</p> <p>Analyze and evaluate the problem solving process (assessment/evalua- tion stage)</p>	<p>PBL Richard I. Arends Model Educators help students to reflect or evaluate the processes they use.</p>	<p>Results of Development of PBL Models in Thematic Learning At this stage the educator guides/facilitates students to analyze and evaluate problem solving process.</p> <p>Learning activities are as follows:</p> <p>a. Educators guide students to analyze problem solving related to how to distinguish homogeneous and heterogeneous mixtures that they have found. b. Educators help students to reflect or evaluate their investigations and the processes they use. c. Educators evaluate learning outcomes regarding the material that has been studied by students.</p>

In the second validation test, after the development of the PBL Model syntax in Thematic Learning was improved, the validator gave an assessment with a total score of 87.41. The validator concludes that the PBL Model in Thematic Learning developed is suitable for use by users (educators) of class V Elementary School with revisions/improvements.

In the learning expert test, the validator guides, directs and gives advice on; 1) The suitability of the material formulation with the learning objectives; 2)

The effectiveness of learning methods with learning activities (introduction, content, closing). 3) The suitability of the method with the learning objectives and learning activities (introduction, core, closing); 4) The suitability of the method with the characteristics of students; 5) The suitability of learning objectives at the stage of learning activities (introduction, core, closing); 6) The suitability of the media with learning objectives, learning activities, learning methods and characteristics of students. Based on the guidance and advice of the validator, the

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researcher then improved the product development of the PBL model so that the product was theoretically feasible and could be used by fifth grade elementary school educators.

Based on the results of the preliminary study at SD Al Kautsar, the researchers found several problems in learning, namely 1) The low learning outcomes of students indicated by 43.75% of the KKM not achieving; 2) From the percentage of 8 educators, only 12.5% of educators have ever used the PBL model; 3) 75% of educators have not directed students to think critically every time they solve problems in learning; 4) As many as 66% of students stated that in learning activities, students were not able to solve problems related to problem solving; 5) 91% of students stated that thematic learning is not integrated between the PBL model and thematic learning, even in problem solving students are not required to think critically.

Based on the results of observations and questionnaire analysis of the need for a learning model, it is increasingly demanding to develop a PBL model in thematic learning. Therefore, the researcher developed a hypothetical product in the form of a PBL model in thematic learning, the theme of Objects Around Us, the sub-theme of Objects in Economic Activities to improve the critical thinking skills of fifth grade elementary school students.

4 | CONCLUSION

Based on the results of the research on the development of the PBL Model in Thematic Learning with the theme of Objects Around Us and Sub-theme of Objects in Economic Activities in class V SD Al Kautsar Bandar Lampung City for the 2020/2021 academic year, it can be concluded as follows; 1) The product produced in this study is a prototype product for the development of the PBL Model in Thematic Learning using the R&D model from Borg and Gall in accordance with the needs analysis and development research stages. The development of the PBL Model in Thematic Learning is adjusted to the steps of the PBL model according to Richard I. Arends (2015: 421) including (1) student orientation to the problem (introduction/invitation stage);

(2) Organizing students to learn (concept formation stage); (3) Guiding both individual/group investigations (concept application/exploration stage); (4) Develop and present the work (concept consolidation stage); (5) Analyzing and evaluating the problem-solving process (assessment/evaluation stage) which is implemented into the Experience Learning theory by Kolb (1984), namely (1) Diverging (Divergent) Combination of elements of concrete experience and reflective observation; (2) Assimilation (Assimilation) The combination of abstract conceptualization and reflective observation; (3) Converging (Convergen) Combination of abstract conceptualization and active experimentation; (4) Accommodating (Accommodating) Combination of concrete experience and active experimentation. Based on the results of the questionnaire validation test of material experts and learning experts as well as the responses of expert practitioners, it was concluded that the research prototype product for the development of the PBL model in thematic learning was theoretically feasible and suitable for use by users so that it could be applied to classroom learning.

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