

THE DEVELOPMENT OF LEARNING DOCUMENTS BASED ON *PREDICT, OBSERVE, EXPLAIN* (POE) MODELS IN IMPROVING UNDERSTANDING CONCEPTS AND CRITICAL THINKING SKILLS OF CLASS V STUDENTS OF PRIMARY SCHOOLS

Oleh:

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Abstrak

Penelitian ini dilandasi pentingnya penggunaan model pembelajaran *Predict, Observe, Explain* (POE) untuk melatih kemampuan berpikir kritis dan pemahaman konsep bagi siswa. Tujuan yang ingin dicapai yaitu untuk mengetahui dan menjabarkan validitas, kepraktisan, dan keefektifan perangkat pembelajaran berbasis model *Predict, Observe, Explain* (POE) untuk meningkatkan keterampilan berpikir kritis dan pemahaman konsep siswa. Jenis penelitian ini yaitu penelitian pengembangan dengan mengacu pada model pengembangan 4-D dan penelitian ini menggunakan desain *one group pre-test and post test*, dengan menggunakan subjek penelitian berjumlah 20 siswa kelas V SD Negeri Lidah Kulon IV/467 Surabaya. Berdasarkan hasil analisis data yang telah dilakukan menunjukkan bahwa perangkat pembelajaran yang dikembangkan memiliki kategori rata-rata valid dengan nilai 3,7, selain itu untuk analisis kepraktisan dapat dikatakan positif dengan keterlaksanaan perangkat pembelajaran yang baik, dan keefektifan perangkat pembelajaran dapat dikatakan efektif hal tersebut dibuktikan dari ketuntasan nilai pre-test yang sebelumnya hanya sebesar 50% siswa yang tuntas dan setelah mengikuti pembelajaran terintegrasi model POE menjadi 100% siswa tuntas dengan nilai 75.

Kata Kunci: Model *Predict, Observe, Explain* (POE), Pemahaman Konsep, dan Keterampilan Berpikir Kritis

1. INTRODUCTION

Learning aims to develop students' thinking process, skills and personalities that they can benefit their life. The process of student learning activities can run well if interesting learning model is applied because learning model is the flow of activities carried out by students. According to Amri (2013: 3) learning model is learning steps that have the goal of making learning process more interesting. The use of model is highly necessary in learning as this can create an interesting learning process that students can easily understand the concepts of the material presented. In addition, the use of active learning model can train students' critical thinking skills.

Critical thinking skill is needed by students that it is easy for them to understand the concept of learning. Critical thinking is an activity in advanced thinking to understand an idea or ideas received by how to evaluate them in more depth. Eggen and Kauchak (2012: 115) explained that critical thinking is the process of evaluating everything according to information and sources. The ability to think critically about learning material indirectly makes it easier for students to understand the concepts of the learning material taught, because according to Kuntarto (2018: 99) conceptual understanding is not merely memorization yet the ability to understand the contents of information and ideas received that it becomes a new understanding for student. Therefore, it is important

for students to have good critical thinking skill that it is easier for them to understand the concept of material. An interesting learning model is one way to practice students' critical thinking skills.

One of the learning models that can help students train their critical thinking skill and assist them in understanding concepts is POE (Predict, Observe, Explain) model. This is an active model because it encourages students to be involved in the process of finding information directly that it is easier for them to understand the materials delivered by the teacher. In addition, this model can also train students' critical thinking skills because in its application there are activities to make predictions so that students can make an assessment of a particular phenomenon and prove it by observing. According to Kala, Yemen, and Ayas (2012: 559) the POE learning model is a model that invites students to seek knowledge independently by carrying out prediction, observation, and explaining activities.

The description above explains the importance of critical thinking for students. Next, the researcher developed POE model-based learning tools using problem formulation, they are 1) the validity of POE model based learning document; 2) the Practicality of POE model based learning document; and 3) the effectiveness of POE model-based learning document.

2. RESEARCH METHODS

This developmental research was applied at elementary school level in SD Negeri Lidah Kulon IV / 467 Surabaya in the academic year 2019/2020. Research subjects were 20 fifth grade students. In its application this study used Tiagarajan or 4-D (four-D) development model with the stages of definition, design, development, and dissemination (Hobri, 2010: 1). Data collection instruments using questionnaires, observation sheets, and tests. In addition, the one-group pretest-posttest research design was also used to see the effectiveness of the learning tools made.

Table 1. One-Group Pretest-Posttest Design

Class	Pre-test	Treatment	Post-test
Trial	P ₁	X	P ₂

(Sugiyono, 2015:75)

The learning document that have been developed are then validated by the validator in order to see their validity before they are applied to the learning process. after validation this is analyzed. If the eligibility assessment is valid then the appraisal document is declared feasible.

Table 2. Criteria of Learning Document Assessment

Score Interval	Category
1,0 P 1,5	Invalid
1,6 P 2,5	Valid Threshold
2,6 P 3,5	Valid
3,6 P 4,0	Highly Valid

Learning document that had been assessed by the validator and declared feasible were then applied to the learning process by observing 2 class teachers who act as observers of the implementation of learning and the practicality of the learning document developed. The effectiveness of the learning document can be seen from the results of the pre-test and post-test conducted. If the post-test score is higher than the pre-test, the learning document is effective. Effectiveness is analyzed using the N-Gain calculation.

$$N - Gain = \frac{(S_{post} - S_{pre})}{(S_{max} - S_{pre})}$$

(Sundayana, 2014: 151)

Note:

N-gain : Ability Improvement
S_{post} : Score after learning
S_{pre} : Score before learning
S_{max} : Maximum score

3. RESULTS AND DISCUSSIONS

This research was conducted to look into the validity, practicality, and effectiveness of the learning document that have been developed. Learning document were developed using socio-cultural diversity material in the fifth grade. Components of learning document that have been completed were then assessed by the validator for their eligibility. Below is the results of the assessment of learning document that have been carried out.

Table 3. Learning Documents Validation Results

NO	Components of Learning Document	Score	Category
1	Syllabus	3,8	Highly Valid
2	Lesson Plan	3,75	Highly Valid
3	Teaching materials	3,5	Valid
4	Worksheet	3,57	Valid
5	Concept Understanding Test	3,6	Highly Valid
6	Critical Thinking Skills Test	3,7	Highly Valid

Based on these assessments, learning document were feasible to apply and can be used to help train students' critical thinking skills and conceptual understanding.

The practicability of learning tool is seen from the implementation of learning document, learning activities and students' responses to learning. The application of learning document is done during 2 meetings. At the first meeting students learned about socio-cultural diversity and at the second meeting students learned about tolerance. The percentage of implementation shows that the learning document are implemented in the good category because at the first meeting the average value was 79% and increased to 85% at the second meeting. This shows that learning tool can be implemented well. Student activities are seen based on student activities during the learning process. During the learning process students showed high interest. Below is the percentage of student activity assessment results.

Table 4. Percentage of Student Activity

No	Aspects of Student Activities	Percentage
1	Students pay attention to the teacher's explanation	73%
2	Students conduct question and answer with the teacher and friends	79%
3	Students work on Worksheets according to the instructions	70%
4	Students prepare document and materials for making predictions and observations	60%
5	Students present the results of observations made	71%
6	Students actively respond to the results of the observation of their friends	58%
7	Students conclude learning and new knowledge received	70%

The data shows that students actively participated in learning with an average percentage of accomplishment above 50% with the highest percentage of 79%. In sum, learning makes students more active while participating in learning. Bruner (Dahar, 2011: 79) argues that learning is good if students find the information they need for themselves so that their understanding is the result of an active process of knowledge discovery. Student responses indicate that students are interested in participating in POE model based learning. This is evidenced by the percentage value (90%). In conclusion, the application of learning document based on the POE model has a positive response.

Assessment of the effectiveness of learning document can be seen from the results of the pre-test and post-test. Improved test results show that learning document is effective. This study uses a concept comprehension test with 10 questions and critical thinking skills test with 5 questions. The

minimum completeness that must be achieved by students is 75. Following are the data obtained on the concept understanding test.

Table 5. Completeness Analysis of Understanding Concepts

Test	Individual completeness	Classical completeness	Value Analysis N-gain	Category N-gain
Pre Test	8 Students	8 Students / 40%	0,57	Sedang
Post-Test	20 Students	20 Students / 100%		

The table above shows that after students take part in integrated learning in the POE model, individual and classical completeness improved. Previously, only 9 students had complete completeness with a grade of 75. After participating in the learning, all students got a value of 75 with a classical completeness of 100% and an N-gain calculation is classified as moderate-g with a value of 0.56. So, students' understanding has improved after doing POE model integrated learning. Costu, Ayas, and Niaz (2011: 50) show that the POE learning model is a learning model that has predictive, observing, and explaining activities, so that by carrying out these activities can help students to understand the concept of learning because students are invited independently to find their own understanding needed. Effectiveness is not only seen from the concept understanding test but also from the test of critical thinking skills as follows.

Test	Individual completeness	Classical completeness	Value Analysis N-gain	Category N-gain
Pre Test	10 Students	10 Students / 50%	0,58	Moderate
Post-Test	20 Students	20 Students / 100%		

The table shows that there are differences in the scores of critical thinking skills during pre-test and post-test. After participating in the POE model based learning there was an increase of 50% where previously there were only 50% of students who had a score of 75 but after taking the students' completeness learning test to 100% with a score of 75. Based on the data, POE model based learning can improve critical thinking skills. This is in accordance with what is explained by Fathiar et al (2019: 94) that learning document based on the POE model can help students practice critical thinking skills because in the learning process there are predict steps, observation, and explain so that students will learn independently and will get used to thinking critically about everything.

4. CONCLUSION

The learning document developed have good validity with an average category of "highly valid" and can be applied to the learning process. In terms of practicality, the implementation of the learning document was positive with an average percentage of 2 meetings of 79.5%. Student activities were good, and the students showed an interest in the

learning process based on POE model. In conclusion, the response shown was positive.

The learning document was effective. This is evidenced by the increase in the results of tests of understanding concepts and critical thinking skills experienced by students. After following the learning process an increase where previously only 40% of students got a score of 75 increased to 100% obtaining score of 75.

4. SUGGESTION

Suggestion based on this research is that there are still shortcomings of which are only done in one class and one school with a limited number of research subjects. Future research can be reviewed in terms of gender and different grade levels or be developed with metacognitive research on different skills to improve students' critical thinking ability.

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