



Teaching Materials for Thematic Learning Courses to Improve Elementary School Prospective Teachers' Critical Thinking Skills

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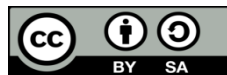
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ABSTRAK

Pembelajaran tematik lebih menekankan pada penerapan konsep belajar dengan melakukan sesuatu (*learning by doing*) di kelas dan pengaplikasian konsep belajar sambil bermain (*learning by playing*). Permasalahan yang terjadi yaitu pelaksanaan pembelajaran masih terpaku pada mata pelajaran yang terpisah-pisah tidak sesuai dengan tema pembelajaran yang digunakan, proses pembelajaran berpusat pada guru, belum tersedianya perangkat pembelajaran sesuai dengan karakteristik tematik. Penelitian ini bertujuan untuk mengembangkan bahan ajar pembelajaran tematik untuk mahasiswa program studi PGSD dan menguji keefektifan produk. Model yang digunakan adalah model penelitian dan pengembangan (R&D) dengan model desain Dick & Carey. Instrumen penelitian yang digunakan adalah kuesioner, tes, wawancara, dan dokumentasi. Hasil penelitian berupa produk bahan ajar mata kuliah pembelajaran tematik. Hasil validasi bahan ajar tersebut memperoleh nilai dari ahli pembelajaran sebesar 75%, ahli materi sebesar 81,66%, dan ahli media sebesar 76%. Bahan ajar yang dikembangkan sangat efektif dan layak digunakan berdasarkan hasil uji paired sample t test dengan hasil $P < 0,000$, $df = 29$, $t = -51,470$.

ABSTRACT

Thematic learning emphasizes the application of the concept of learning by doing in the classroom and the application of the concept of learning by playing. The problems that occur are that the implementation of learning is still fixated on separate subjects that are not in accordance with the learning themes used, the learning process is teacher-centered, the unavailability of learning tools in accordance with thematic characteristics. This study aims to develop thematic learning teaching materials for PGSD study program students and test the effectiveness of their products. The model used is a research and development (R&D) model with a Dick & Carey design model. The research instruments used were questionnaires, tests, interviews, and documentation. The results of the research are in the form of teaching material products. The results of the validation of these teaching materials obtained scores from learning experts of 75%, material experts of 81.66%, and media experts of 76%. The teaching materials developed are very effective and feasible to use based on the results of the paired sample t test with the results of $P < 0.000$, $df = 29$, $t = -51.470$.

1. INTRODUCTION

Thematic learning is defined as a learning model that can touch all aspects of student needs. Thematic learning emphasizes the application of the concept of learning by doing in the classroom and the application of the concept of learning by playing (Erita et al., 2020; Syaifuddin, 2017; Wardani et al., 2020). Thematic learning as a process of interaction between students and students, students and learning resources, students and educators that emphasizes active student involvement (Perdana & Suswandari, 2021; Retnawati et al., 2017). In reality, integrative thematic learning has not been as expected at all stages of learning activities. The problem that arises in thematic learning is that there are still many teachers who do not understand thematic learning. Teachers have difficulty in implementing it, lack of coordination between teachers so that they lack confidence (Desyandri et al., 2019; Mudiono et al., 2016). Other problems that arise from the student side are (1) students have not been able to develop thematic lesson plans in accordance with existing theoretical concepts, (2) have not been able to develop thematic learning models creatively, (3) students have not been able to determine the right theme as an umbrella for various disciplines to be taught, and (4) the theme chosen is still far from the real life and environment of students (Dewantara, 2020; Indrawini et al., 2017). Other problems arise in terms of

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lecturers, namely when carrying out learning only giving lectures in the form of delivering material with Power Point media and giving group assignments that pay less attention to the characteristics of their students. The references used are existing books with old publications or editions that are not in accordance with current educational developments so that student understanding is not optimal. So far, the implementation of thematic learning lectures has not improved students' critical thinking skills so that it has an impact on the low critical thinking skills of students (Desyandri et al., 2019; Maguire & Delahunt, 2017). Based on these problems, lecturers must develop books that are tailored to current learning, especially in Thematic Learning courses. Thematic Learning course is one of the courses that is needed by prospective elementary school teachers to help students understand a concept when learning (Nurlaela et al., 2018; Twiningsih et al., 2019). This course contains material that emphasizes teaching skills, designing lesson plans, thematic learning models, creativity in developing skills, and effective assessment in the use of thematic learning (Cintang & Fajriyah, 2018; Harya, 2017; Teo, 2019). The learning tools developed can improve critical thinking skills. Critical thinking is high-level thinking that needs to be developed in learning at the University to achieve effective results (Behar-horenstein, 2011; Ituma, 2011).

Critical thinking is a method used to solve problems based on persuasive, logical, and rational arguments. Critical thinking is based on updating knowledge, analyzing differences, and observing the causes. Critical thinking skills need to be instilled and developed in students in order to solve problems and generate new ideas (Hart et al., 2021; Pramestika et al., 2020). Based on the above problems, it is necessary to develop teaching materials for thematic learning courses that are in accordance with the characteristics of students, interesting, practical and effective to use. Through thematic learning courses, students are directed to become Indonesian citizens who are democratic, responsible, think critically, always follow technological developments, have high creativity. Students play a very important and strategic role in the world of education which later as Human Resources who must be able to face increasingly fierce competition and can improve the ability of students as prospective professional elementary school teachers (Ima Wahyu Putri Utami, 2019; Okolie et al., 2021). The objectives of this study were (1) to develop teaching materials for thematic learning courses for PGSD students consisting of textbooks equipped with RPS, and (2) to test the effectiveness of teaching materials for thematic learning courses in improving students' critical thinking skills. The novelty of the research is to develop teaching materials for thematic learning courses by integrating critical thinking elements in the material description. In addition, there has been no previous research that provides examples of making critical-based lesson plans by referring to the latest Permendikbud which is accompanied by examples of offline and online lesson plans. Therefore, this research will develop products oriented towards critical thinking skills accompanied by examples of online and offline lesson plans.

2. METHODS

The type and approach used is development research with the Dick and Carey development model which consists of 10 steps (W Dick & Carey, 1990; Walter Dick et al., 2015), (1) identifying instructional objectives (2) conducting learning analysis, (3) analyzing learners and context, (4) writing learning objectives / achievements), (5) developing assessment instruments, (6) developing learning strategies, (7) developing and selecting teaching materials, (8) designing and carrying out formative evaluations, (9) making revisions, (10) designing and carrying out summative evaluations. The research was conducted at Bhinneka PGRI University. The development flowchart is depicted in Figure 1.

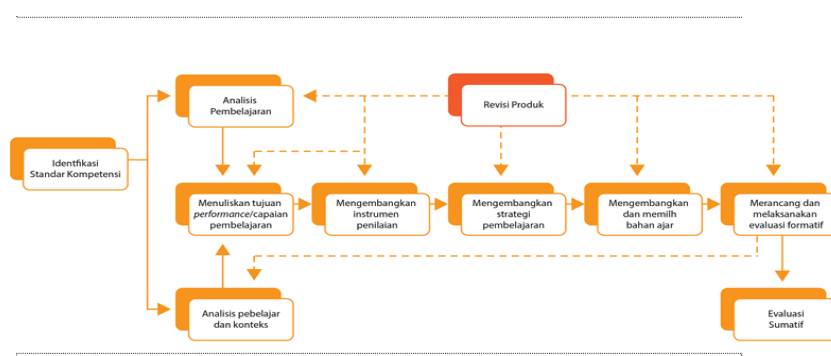


Figure 1. Flow of Dick and Carey Development Model

The subjects of this study were fourth semester students of class A totaling 30 and class B totaling 30 Elementary School Teacher Education Study Program (PGSD) Bhinneka PGRI University. Class IVA was

used as the experimental class and class IVB as the control class. The instruments used in this study were validation sheets, questionnaires, and critical thinking skills tests. The validation sheet was given to learning experts, subject content experts, and learning media experts. The validation sheet was developed as a validity guideline in assessing the quality of the teaching materials developed. Questionnaires were given to students during the implementation of group tests and field tests. This questionnaire is to find out student responses from teaching materials developed consisting of indicators of clarity, accuracy, and product attractiveness. The test was given to students to determine critical thinking skills. The critical thinking skills test was developed by referring to Alec Fisher's critical thinking skills indicators which consist of classifying, assuming, predicting, analyzing, concluding, and evaluating. Teaching material products are considered attractive if students feel excited and enthusiastic about attending lectures using these products. Data on product attractiveness is obtained from student response questionnaires in the implementation of group tests and field tests. The instruments used in this research are material expert validation questionnaire, media expert validation questionnaire, response questionnaire, and critical thinking skills test. The material expert validation questionnaire uses a statement of 15 items using a Likert scale with 4 scales, while the media expert validation is 14 statement items. The lattice of the material expert validation questionnaire of the developed teaching materials can be seen in [Table 1](#).

Table 1. Material Expert Validation Questionnaire

Aspect	Question number
material accuracy	1,2,3,4
material difficulty	5,6,7,8
suitability of questions	9,10,11,12
language accuracy	13,14,15

After validation from material experts then validation from media experts with a grid that can be seen in [Table 2](#).

Table 2. Grid of Media Expert Validation Questionnaires

Aspect	Question number
cover design	1,2,3,4,5
teaching material content design	6,7,8,9,10
attractiveness	11,12,13,14

After that, data was collected through student responses to the developed teaching materials. The student response questionnaire to teaching materials uses a Likert scale. The student response questionnaire grids can be seen in [Table 3](#).

Table 3. Grid of Student Response Questionnaires

Aspect	Question number
accuracy	1,2,3,4,5,6,7
clarity	8,9,10,11,12,13,14,15,16,17
attractiveness	18,19,20,21,22,23,24,25

Then students' critical thinking skills are measured by giving critical thinking skills test questions with a total of 10 questions which can be seen in [Table 4](#).

Table 4. Grid of Student Skill Test Questions

indicator	Question number
classification	1
assumption	2,3
prediction	4,5
hypothesis	6,7
analysis	8
conclusion	9
evaluation	10

Likert scale categorization to see the categories of expert validation and student response (Lukitasari et al., 2019), can be seen in Table 5.

Table 5. Product Attractiveness Criteria

range	category
0 – 19%	Very unfeasible
20 – 39%	Not feasible
40 – 59%	Less feasible
60 – 79%	Feasible
80 – 100%	Very feasible

The next stage tested the effectiveness using quantitative research. Testing was carried out in the form of a quasi-experiment or pseudo-experiment with the Nonequivalent Control Group Design model. Researchers followed this design because the two groups, namely the experimental and control classes, were not randomly selected. In implementation, both groups were given a pretest then the experimental group was taught using the developed teaching material product. The control group was taught with the old product. After all the material was taught, both groups were given a post-test.

Analysis of control and experimental group test data was collected using the initial test (Pretest) and the final test (Posttest) before and after using the product. Data collection through Pretest and Posttest was carried out in the experimental group and control group which was then analyzed using (1) descriptive percentage to determine the percentage of achievement of pretest and posttest results, (2) t-test to determine the significant difference between pretest and posttest results after treatment, (3) N-gain test to determine the effectiveness of using teaching materials for thematic learning courses in improving critical thinking skills, (4) N-gain score t-test to determine differences in the effectiveness of using teaching materials for thematic learning courses in improving critical thinking skills. N-gain score is show in Table 6.

Table 6. N-Gain Score

N-Gain Score	Category
$G > 0,7$	High
$0,3 \leq g \leq 0,7$	Medium
$g < 0,3$	Low

3. RESULT AND DISCUSSION

Results

The resulting product results are in the form of Semester Learning Plans (RPS) and teaching materials for thematic Learning courses through assessment analysis from learning experts, content experts in the field of study, learning media experts, individual tests, group tests, and field tests.

Learning Expert Test

Learning experts give a good assessment of all statements in the teaching materials and lesson plans. The results of the assessment are described in Table 7.

Table 7. Validation Result of Learning Expert Test

Product	Score	Percentage	Qualification
Teaching materials	45	75%	feasible
RPS	29	82.85%	very feasible

Based on Table 7 these qualifications, teaching materials and study lesson plans are good and suitable for use by students. Suggestions from learning experts need to sharpen the importance of inculcating creativity and critical thinking in students to educate the values of critical thinking to students if they become teachers in the future.

Content Expert in the Field of Study

Product development is assessed by content experts in the field of study by interviewing, discussing and giving questionnaires. The results of the assessment of content experts in the field of study on teaching materials and lesson plans are described in Table 8.

Table 8. Validation Result of the Fields of Study Content Test

Product	Score	Percentage	Qualification
Teaching materials	49	81.66%	very feasible
RPS	28	80%	very feasible

Based on Table 8 qualifications, the teaching materials are suitable for use by students. Suggestions from content experts in the field of study for chapter 7 what strategies will be used in the application of learning and relevance to chapter 8 and added reference sources with relevant and latest foreign books.

Learning Media Expert

The product development carried out by learning media experts to get assessments and responses is teaching materials and lesson plans through discussion, interview, and filling out questionnaires. The results of the assessment are described in Table 9.

Table 9. Validation Result of Learning Media Expert

Product	Score	Percentage	Qualification
Teaching materials	38	76%	feasible
RPS	29	82.86%	very feasible

Based on Table 9, assessment from learning media experts is appropriate for students to use. Comments and suggestions given prior to revision include cover design, image layout placed on top/pulled slightly upwards. The next page in the teaching material is difficult to read, the chapter title is in capital letters, the cover is even more interesting.

Individual Test

Individual tests were carried out on six students of the Elementary School Teacher Education study program. The product development draft II which has received reviews from learning experts, content experts in the field of study, and learning media experts is given to 6 students to get revisions and comments. The results of the revision of the individual test are typos, punctuation errors, letters that should be large, and letters that should be small.

Group Test

The revised teaching materials and lesson plans based on assessments, comments, suggestions from the three experts and individual tests are the product of the development of draft III. The product of this development is then tested in groups. The group test was carried out by the developer together with 10 students. Table 10 shows the results of the group test are presented.

Table 10. Group Test Result

Rating indicators	Number of statements	Number of respondents	ofScore	Percentage	Qualification
accuracy	7	10	568	81.14%	appropriate
clarity	10	10	840	84%	good
attractiveness	8	10	590	73.75%	interesting

Based on Table 10, assessment item on the accuracy aspect got a score of 568 with a percentage of 81.14% of the right qualification. In the clarity indicator the score obtained is 840 with a percentage of 84% included in the clear qualification. The score on the attractiveness indicator is 590 with a percentage of 73.75% attractive qualifications. The overall product development components, both teaching materials and lesson plans are in good category.

Field Test

The revised teaching materials based on the assessments/comments from the three experts, individual tests, and group tests are the product of the development of draft IV. This development product was then tested on 30 students of the PGSD Study Program at the University of Bhinneka PGRI. The results of the assessment are obtained as show in [Table 11](#).

Table 11. Field Test Result

Rating Indicators	Number of Statements	Number of Respondents	Score	Percentage	Qualification
accuracy	7	30	567	81%	appropriate
clarity	10	30	840	84%	good
attractiveness	8	30	640	80%	interesting

Based on the data analysis in [Table 11](#), it is known that all components of the teaching material product are in good category, so there is no need for revision. Furthermore, giving pretest and posttest to students during the field test. From the test results of teaching materials using 30 students as research subjects, the average achievement of critical thinking skills results as shown in [Figure 2](#).

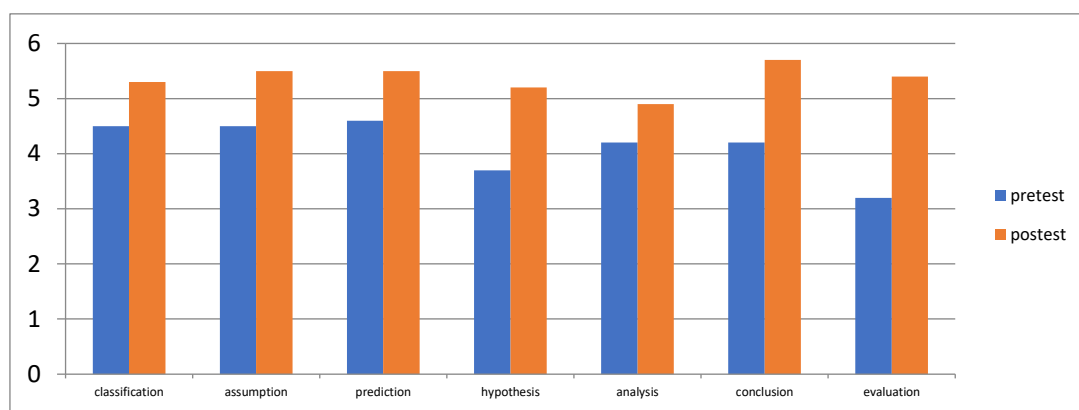


Figure 2. Comparison of Pretest and Posttest Scores of Students' Critical Thinking Skills

[Figure 2](#) shows the students' pretest and posttest scores for each indicator. Posttest scores were obtained after carrying out learning activities using the developed learning tools. The highest indicator of critical thinking skills during the posttest is concluding with an average of 5.7. Based on Bloom's taxonomy, conclusions lie at a higher level than memory, understanding, and application. This is because in this realm it requires a stage of high-level thinking skills including critical thinking. The lowest indicator of the posttest score of critical thinking skills is concluding with an average score of 4.9. Students have difficulty in analyzing concepts. Overall the results of the pretest mean of 28.90 while the post-test average of critical thinking skills is 37.57. These two learning outcomes were then carried out with data normality, homogeneity, and paired sample t test is show in [Table 12](#).

Table 12. Data Normality Test Pretest and Posttest Critical Thinking Skills

		Tests of Normality					
		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
Class		Statistic	df	Sig.	Statistic	df	Sig.
Result of critical thinking	Pretest	0.113	30	0.200	0.964	30	0.395
	Posttest	0.149	30	0.086	0.933	30	0.057

Based on the results of the Normality test in [Table 12](#), it is known that the S-W test value is > 0.05 for the Posttest, while for the Pretest the S-W test value is > 0.05 so it can be concluded that the data is normally distributed. Furthermore, a homogeneity test is carried out to find out whether the data in the variable is homogeneous or not. The test results use the help of SPSS version 26.0. The homogeneity test results are described in [Table 13](#).

Based on the data from the homogeneity test results in Table 13, for the data the significance level is more than 0.05, so it can be concluded that the results of the variant data are homogeneous. After obtaining data that is normally distributed and homogeneous, then perform a t-test to determine whether there is a difference or not there is a difference in the results of the pretest and posttest of critical thinking skills.

Table 14. T test Results

Model	Paired Differences		T	df	Sig. (2-tailed)	
	Mean	Std. Deviation				
Pair 1	Pretes	-8.667	0.922	-51.470	29	0.000
	Postes					

The results of the analysis in Table 14 show that there is a very significant difference between the pretest and posttest ($P < 0.000$, $df = 29$, $t = -51.470$) with the difference between the two being - 8.667. A negative value on the difference between the two indicates that the pretest is lower than the posttest. Based on the results of the analysis, it can be concluded that teaching materials have been proven to be significantly effective in improving student learning outcomes and critical thinking skills. Furthermore, the N-Gain Score test was carried out to determine the effectiveness of developing teaching materials on increasing students' critical thinking skills as show in Table 15.

Table 15. N-Gain Score Test

No.	Name	Score		N-Gain Score	Category
		Pretest	Posttest		
1	FDP	48	80	0.62	Medium
2	DW	47	75	0.53	Medium
3	AR	64	85	0.58	High
4	FA	58	82	0.57	Medium
5	VNC	58	87	0.69	Medium
6	ND	56	85	0.66	Medium
7	VA	69	94	0.81	Medium
8	AE	50	77	0.54	Medium
9	Y W.R	55	88	0.73	Medium
10	AM	56	87	0.70	High
11	ES	53	85	0.68	High
12	HE	51	90	0.80	High
13	GW	53	76	0.49	Medium
14	EYA	55	93	0.84	Medium
15	DP	53	84	0.66	Medium
16	HY	45	75	0.55	Medium
17	CDS	54	90	0.78	High
18	DAW	60	88	0.70	Medium
19	DANW	53	84	0.66	Medium
20	AN	48	88	0.77	High
21	DTP	53	87	0.72	Medium
22	NWS	55	76	0.47	Medium
23	DY	51	88	0.76	Medium
24	CNA	60	89	0.73	Medium
25	PDM	53	88	0.74	Medium
26	ROA	64	89	0.69	Medium
27	NH	53	78	0.53	Medium
28	DEA	53	80	0.57	Medium
29	GPI	55	87	0.71	Medium
30	NVS	54	86	0.70	Medium
Average		54.17	81.63	0.59	Medium

Based on [Table 15](#), the average value of N-gain for improving students' critical thinking skills gets a score of 0.59 in the medium category. So, it can be concluded that teaching materials have proven to be effective in improving students' critical thinking skills.

Discussion

The products developed in this study are teaching materials for thematic learning courses. The results of the effectiveness of the use of teaching materials in improving critical thinking skills are seen from the results of the critical thinking skills of students in class 4A (experimental class) whose learning uses teaching materials for thematic learning courses with the results of the critical thinking skills of class 4B (control class) who use ordinary textbooks. The number of experimental class pretest scores was 1625 with an average percentage of 54.17%. The number of acquisition scores has increased in the implementation of the Posttest, which is 2449 or 81.63%. Based on the results of the t test calculation, the significance value is $0.000 < 0.05$ so that there is a significant difference between the Pretest and Posttest results of critical thinking skills in the experimental class. From these results, the use of teaching materials for thematic learning courses developed has a better value than the use of existing thematic learning books. This is because the teaching materials developed are easier to learn when compared to existing books. Furthermore, the N-gain test was carried out, showing that the average N-gain score was 0.59 in the moderate category, the N-gain percent of 59.48% was included in the moderately effective category with a minimum N-gain value of 31.82% and a maximum of 78.72%. Thus, it can be concluded that the use of teaching materials for thematic learning courses is quite effective in improving the critical thinking skills of PGSD students ([Apriati et al., 2021](#); [Tinja et al., 2017](#)). In addition, researchers also compared whether there was a (significant) difference related to the effectiveness of using teaching materials developed by researchers with existing teaching materials in improving students' critical thinking skills using the independent t test technique for the N-gain score (%).

The results of the calculation of the Sig. value of $0.000 < 0.05$ thus it can be concluded that there is a significant difference in effectiveness (real) between the use of teaching materials developed by researchers and existing teaching materials to improve the critical thinking skills of PGSD students. This is due to the use of teaching materials that can train students in improving critical thinking skills, especially in 7 steps that can invite students to participate actively in the learning process, namely classifying, assuming, predicting, hypothesizing, analyzing, concluding, and evaluating. This is in accordance with research that the development of thematic teaching materials can improve independent learning abilities, so as to develop students' critical thinking skills ([Nasrul, 2018](#); [Syafriatma & Amini, 2021](#); [Wulandari et al., 2020](#)). According to previous study people who think critically will evaluate and conclude things based on facts to make decisions ([Rahmi et al., 2019](#)). Critical thinking skills are one of the basic capital or intellectual capital that is very important for everyone, besides that according to other study this ability is a fundamental part of human maturity ([Rahman, 2019](#)). Critical thinking is the activity of analyzing ideas or ideas in a more specific direction, distinguishing sharply, selecting, identifying, studying and developing them in a more perfect direction. In addition to critical thinking skills, this study also examined student creativity in thematic learning ([Megavitri et al., 2023](#); [Muhali, 2019](#)). The novelty of this research is to complement existing research with several updates that have never been done in previous studies. The novelty is the development of teaching materials by including elements of critical thinking skills and including examples of learning devices according to Permendikbud. The novelty of this research is to see how students' abilities before being given teaching materials and after using teaching materials developed by integrating critical thinking skills. The implication of this research is that it can contribute to the world of education, especially in the learning process to run effectively with the use of teaching materials that are in accordance with the latest regulations. In addition, it is hoped that further research can examine the development of teaching materials by integrating other skills in thematic learning. Future researchers can add the variables studied as a form of renewal provided and can conduct gender reviews to get more specific results.

4. CONCLUSION

Teaching materials for thematic learning courses for Primary School Teacher Education (PGSD) students have characteristics that contain aspects of critical thinking and components of learning tools that must be applied to PGSD study program students. From the results of the research, the products developed are suitable for implementation in thematic learning courses for PGSD study programs. This teaching material has been assessed as feasible based on the results of product evaluation at the validation stage by learning experts, subject content experts, media experts, group tests and field tests. The development of teaching materials for thematic learning courses is quite effective in improving the

critical thinking skills of PGSD students. Based on the results of the t-test calculation for N-gain, it is concluded that there is a significant (real) difference in effectiveness between the use of teaching materials developed by researchers and existing teaching materials to improve the critical thinking skills of PGSD students.

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