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Development of teaching materials for evaluating history learning to improve students' critical thinking skills

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ABSTRACT

This study aims to find out: firstly, the qualifications for developing teaching materials to evaluate observation-based history learning and secondly the level of students' critical thinking skills. The results of this research contribute to improving students' critical thinking skills through the development of teaching materials. This research method is research and development (R&D). The sample used was History Education students at Universitas PGRI Yogyakarta. The instruments used were questionnaires and interview guidelines. The data analysis technique used is descriptive qualitative to explain observational and interview data, and quantitative descriptive statistical analysis techniques to measure the validity of experts and the effectiveness of teaching materials. This study resulted in firstly, expert tests showed content standards showed a score of 90%, language standards showed a score of 91.67%, and display standards showed a score of 81.67%; all three scores showed excellent and valid meaning, secondly, the average percentage of critical thinking indicators was 80.77% for the experimental class and 70.30% for the control class. The numbers in the experimental class show high effectiveness, so the results of this study conclude that the teaching materials for historical learning evaluation developed are very effective in improving students' critical thinking skills.

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1. INTRODUCTION

The success of learning that aims to improve human resources is influenced by several factors, one of the influencing factors is the ability of teachers to develop learning evaluation programs [1]–[5]. Learning evaluation is a major part of the implementation of the learning program. Evaluation in learning aims to see how the level of learning achievement has been obtained by students [6], [7]. A good evaluation system is one that is able to provide data to students regarding all achievements and learning notes that have been carried out by students [8]. Conceptually, learning evaluation is a compulsory subject for students in the Department of Historical Education at any Indonesian University. Learning evaluation courses are given to students to equip students with the ability to develop and conduct history learning programs. Thus, students strived to be able to master the theory and application of evaluation of history learning before becoming a

history teachers [9]. In addition, the characteristics of history learning must also be understood by students in studying the evaluation of history learning because history subjects have different characteristics from other subjects [10], [11].

History is a subject that imparts knowledge, attitudes, and values regarding the process of change and development of Indonesian society and the world [12]–[14]. History learning is learning that has the task of instilling the spirit of the nation and the homeland [15]–[19]. Historical values can be developed to strengthen the character of local wisdom, especially in terms of strengthening culture [20], [21]. Therefore, the implementation of the evaluation of history learning must be in accordance with its objectives, such as fostering historical awareness, a sense of nationalism, the spirit of patriotism, and the value of multiculturalism [22], [23]. In addition, in the current context, it is also necessary to develop how to evaluate historical learning techniques by incorporating tolerance values into history classrooms [24]–[26].

Based on the above understanding, it is necessary to evaluate teaching materials for history learning that are appropriate and in accordance with the character of history subjects so that what students of the Department of Historical Education is in accordance with their future teaching needs as history teachers [19]. However, in reality, several learning evaluation references that have been published are mostly too broad in scope, especially in explaining the theory, and are intended for all subjects [27]. The reality in the field is that there is no reference for the evaluation of learning that focuses on learning history; as a result, there are still many students who do not understand the implementation of the evaluation of learning history in schools. These problems cause the critical power of students to be low [28]. Therefore, historical learning evaluation teaching materials are needed that are in accordance with the character of observation-based history learning that can improve students' critical thinking skills [29].

Basically, students have the potential for critical thinking, theoretically, this potential will be better if trained through effective learning by using systematic reading references such as teaching materials that are indeed prepared and in accordance with the achievements of students' critical thinking development [30], [31]. The content of teaching materials that are in accordance with the demands of the curriculum and accompanied by competency objectives that are in accordance with the needs of graduates, will be easy to increase students' critical thinking power through various lecture methods. In addition, applying the critical learning model in classrooms will foster critical awareness in history classrooms [32].

Several other views explain that critical thinking can be seen through student learning activities both from the learning process in the classroom and during practice in the field [33]. Critical thinking can be explored through how students get the right information according to the needs of graduates' achievements. Cultivation of critical thinking needs to be done in the lecture process so that students can find out various kinds of problems that will be present when working as a teacher [34]. Sometimes history textbooks undergo changes in line with government policies [35]. These problems actually encourage history teachers to be able to criticize every textbook, so it is very appropriate if students are taught to be taught critical learning. Therefore, teaching materials studied on campus must be able to encourage students' critical thinking skills [36]. The development of teaching materials for learning evaluation courses in the Department of Historical Education is very necessary for the teaching process. This is because course evaluation is a practice-oriented course learning, so references related to the practice are needed. Learning evaluation references that have been published are too broad in describing theories and references for all subjects. There is no reference for learning evaluation that focuses on learning history.

History learning is learning that contains the task of instilling the spirit of the nation and the homeland [37]. Not only that, but the values of multiculturalism are also the goal of the implementation of history learning [38]. Therefore, the implementation of the evaluation of history learning must be in accordance with objectives such as fostering historical awareness, a sense of nationalism, the spirit of patriotism, and multiculturalism [23]. Inappropriate references that exist so far often make students feel confused about how to implement them. One example in the discussion of the types of assessment described many types of assessments regardless of the character of the history subject. In order for teaching materials to be meaningful for students, they must be adapted to the character of history subjects [39].

Another problem found is that a lot of material is discussed in explaining the theory but does not consider the teacher in carrying out his daily life, circumstances, and the number of tasks the teacher does. In contrast, the purpose of its implementation is an evaluation to analyze the level of implementation of the learning program [40]. In addition, the success of the learning process is very beneficial to the appreciation and creativity of teachers [41]. So, it needs teaching materials that focus on the needs of teachers in adding to history learning that is more efficient and capable of references to increase the appreciation and creativity of history teachers.

Based on the problems above, it is necessary to develop observation-based historical learning evaluation teaching materials. The results of observations become a discussion for students in addition to getting theory in class, the results of observations are implemented by teachers in schools. Students are directed to discuss the level of relevance of evaluation theory with its implementation in schools. If there is

relevance, of course, students get a new understanding of evaluating history learning. If it is not relevant, then students need to explore the problems. Is the problem caused by the condition of teachers, students, curriculum, or teaching materials studied on campus, there are errors in the theory [42]–[44].

The results of observations in schools can provide students with insight into studying the evaluation of historical learning materials during lectures [45]. It is hoped that students will become critical in discussing and trained in finding solutions to teacher problems related to learning evaluation. The results of such lectures are expected to be able to equip students when they become teachers [40].

2. RESEARCH METHOD

This research method is research and development or (R&D) [31]. In general, there are five stages in this research and development. First, the analysis of the needs of teaching materials for the evaluation of history learning and the level of students' critical thinking skills. Second, data collection for product preparation. Third, product development of history teaching materials. Fourth, the testing of teaching materials by experts. Fifth, testing the effectiveness of teaching materials to measure critical thinking skills.

In the first stage, the researcher conducted an analysis of the need for teaching materials for the evaluation of history learning through literature study [46]. Based on the researcher's analysis, there is no historical learning evaluation teaching material that focuses on discussing the practice of evaluating history subjects. Most of the published references are too general in discussing learning evaluation, so the references need to be readjusted to suit the character of each subject. Although there are already published history learning evaluation books, they are too long to explain learning evaluation theory without being accompanied by implementation techniques.

A needs analysis was also conducted to see how high the students' critical thinking skills were. Teaching materials that are not in accordance with the character of history subjects make students less able to understand learning evaluation materials, so their critical thinking power seems low. At this stage, the researchers saw the low thinking ability of students through learning evaluation lectures. Some students seemed passive and confused by the learning evaluation theories presented in the previous teaching materials.

In the second stage, the researcher collected material for the preparation of teaching materials. Researchers conducted direct observations and interviews with history teachers at State Senior High School 5 Yogyakarta and State Vocational High School 1 Yogyakarta. Researchers chose the senior high school and vocational high school levels because history is a compulsory subject at both levels, but the density of the material differs. There are fewer history subjects in vocational high school, and they tend to be skill-based. In contrast to high school, the subject matter of history is presented widely, and in many ways, there is even a history of specialization to increase the understanding of the history of students in a more in-depth manner. Researchers made observations to see firsthand the need for the ability to evaluate history learning in schools for history teachers. Researchers made observations at schools and analyzed the documents used by history teachers in evaluating history learning. Meanwhile, interviews were conducted to explore the results of the researcher's observations by confirming directly with the history teacher regarding the practice of evaluating history learning.

In the third stage, the researcher developed the product of history teaching materials. The teaching material products are compiled through the results of literature studies and the results of observations and interviews at schools. All the data that the researchers got at school have been described in the teaching materials in detail. The aim of the researcher in developing teaching material products through literature study accompanied by the results of observations and interviews is so that the material that is prepared in-depth explains the theory of learning evaluation and is in accordance with the needs of history subjects in schools.

In the fourth stage, the researcher tested the product of teaching materials to experts (expert judgment). The criteria assessed by experts include content standards, language standards, and display standards. This test is carried out using a valid instrument. Expert testing was carried out by three experts in the evaluation of history learning. In the fifth stage, researchers tested the effectiveness of teaching materials. Before testing the effectiveness, the researcher tested the validity of the student assessment instrument. The instrument has been validated by a history learning evaluation expert. The effectiveness test is carried out to see how high the effectiveness of the teaching materials that have been prepared is. The results of the effectiveness number are used to see whether the teaching materials can measure students' critical thinking skills or not [47].

The researcher determined the sample from the students of the Departement of Historical Education, Universitas PGRI Yogyakarta. The sample was divided into an experimental class and a control class. Through the experimental class, the researcher conducted learning with newly developed teaching materials, while the control class carried out learning with previous teaching materials that were not developed by the

researcher [48]. Testing of critical thinking skills was carried out by researchers in the middle of student learning. Researchers assess students' critical thinking skills using critical thinking instruments that have been previously validated by experts [49].

Furthermore, the researchers processed the data from the assessment of students' critical thinking skills to calculate the effectiveness [50]. Data processing is carried out using SPSS 16. If the results of the processing show a high effectiveness rate, it means that the teaching materials developed are effective for improving students' critical thinking skills, but if the effectiveness numbers are low, it means that the teaching materials are not effective in improving students' critical thinking skills. In addition, the researcher also combines qualitative data obtained through observing students in the testing process to explain the effectiveness of teaching materials [51]. The flow of this study can be illustrated in Figure 1.

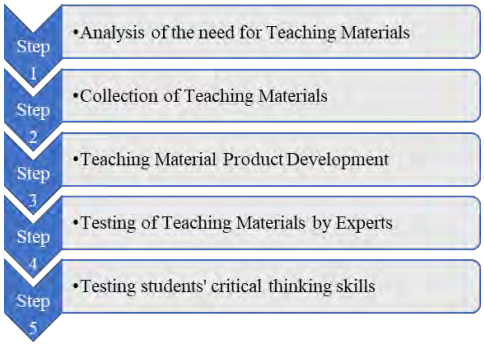

Figure 1. The flow of development of teaching materials for evaluation of history learning

3. RESULTS AND DISCUSSION

3.1. The need for the development of historical learning evaluation teaching materials

Based on the analysis of researchers in conducting a literature study on references to historical learning evaluation materials, researchers did not find learning evaluation materials that matched the character of history subjects. Most of the published teaching materials contain general learning evaluation materials for all subjects. There are also teaching materials that contain one family of knowledge, such as science [52]. Of course, these teaching materials can only add insight for students to the extent of theory without explaining how to apply it to historical subjects. There are learning evaluation teaching materials that have been published, such as Kawuryan *et al.* writings, but from a content perspective, they explain more about character values in history and focus on the evaluation model of historical learning [53]. The teaching materials do not explain the application of techniques in evaluating history learning, whereas for students as prospective teachers in schools, of course, what is needed is how to apply historical learning evaluation techniques.

Theoretically, history learning is aimed at introducing positive values such as attitudes of nationalism, patriotism, historical awareness, and so on [15], but in evaluating learning, of course, evaluation of learning in accordance with the character of historical subjects is accompanied by the application of techniques. Evaluation of history learning must be described in detail in student learning references. Through this study, researchers conducted an analysis of the need for evaluation of historical learning materials by comparing previously published lesson materials. The results of the analysis of the needs for the development of teaching materials found can be shown in Table 1.

Table 1. Results of analysis of learning material needs for history learning evaluation

No	Material needs	Published teaching materials	
		Exist	None
1	Basic principles of history learning evaluation	✓	
2	Assessment of learning outcomes	✓	
3	Cognitive assessment techniques		✓
4	Affective assessment techniques		✓
5	Psychomotor assessment techniques		✓
6	Analysis of the quality of items		✓
7	Processing learning outcomes		✓
8	Learning outcome report		✓
9	Utilization of learning outcome data		✓

3.2. Collection of teaching materials

Collect research material after conducting a needs analysis process so that the material collected by researchers is in accordance with the needs of historical learning evaluation. If the student is a student of the Department of Historical Education, the learning materials that must be studied must be in accordance with the character of the history subject. Subject matter that is in accordance with the character of history subjects is certainly more appropriate to study and can increase students' understanding of history learning techniques. Researchers collected data through observations and interviews at school and added a literature review on references related to the history learning evaluation program. This is what distinguishes teaching materials that are being developed from teaching materials that have been published. Teaching materials that have been published are based on a literature review without combining them with the evaluation of the history learning needs program in schools. Meanwhile, the teaching materials that the researcher developed were based on observation and interviews so that they were in accordance with the competency needs of the students of the Department of Historical Education. The existence of an observation process will produce more accurate data according to the needs of history subjects. The results of the observations will complement the theory so that the practice of evaluating learning in schools is clearer [54], [55].

Researchers made direct observations of State Senior High School 5 Yogyakarta and State Vocational High School 1 Yogyakarta the researcher analyzed the historical learning evaluation documents owned by history teachers, including Learning Program Plans, task instruments each basic competence, Daily Test instruments, Mid-Semester Tests, and Final Semester Tests. All the documents analyzed by the researcher are documents related to the program evaluation conducted by history teachers at State Senior High School 5 Yogyakarta and State Vocational High School 1 Yogyakarta. In addition, the researcher also conducted in-depth interviews with history teachers at State Senior High School 5 Yogyakarta and at State Vocational High School 1 Yogyakarta. Interviews were conducted to explore the data from observations that have been carried out. Through interviews, researchers get a lot of additional material that was not found when conducting observations. Also, get an explanation of the advantages and disadvantages of each historical subject assessment technique, including the types of assessments on cognitive, affective and psychomotor aspects.

3.3. Product development of history learning evaluation teaching materials

Basically, the development of teaching materials is a process of selection, adaptation, and preparation according to the needs analysis [56]. Therefore, at the product development stage, researchers have compiled material obtained through observation and interviews and added a literature review on references related to the evaluation of learning programs. Before explaining the material discussed in each chapter, the researcher explained the purpose of the lecture and the indicators. The learning objectives are explained to provide knowledge to students with competency orientation that will be obtained when studying each chapter. At the same time, the explanation indicators are so that students know the main topics that will be studied in each chapter. Through explanations of the objectives of lectures and education, students have got a basic picture of the lecture process that will be carried out so that students are able to prepare for structured learning [57].

In preparing the material, in addition to explaining evaluation theories, the researcher explained in detail the learning evaluation techniques. So that students who read not only know the theory but also know the implementation technique [58]. Through an adequate understanding of theory and equipped with an understanding of implementation techniques, students are expected to be able to evaluate history learning. Researchers always provide examples of the instruments used in explaining the material on evaluation techniques. This is done so that students who read can know the components that must be included in the preparation of the instrument. Learning evaluation teaching materials that describe many examples of instruments can improve students' understanding of learning evaluation techniques. In addition, researchers always exemplify the use of instruments in history subject matter; thus, students understand the evaluation of learning in historical subjects. In addition, students will think critically about the components of the instrument to encourage evaluation so that students can develop better instruments [49].

The researcher also presented a summary and practice questions at the end of the discussion in each chapter. The summary is prepared with the aim that students are able to understand comprehensively the main points of discussion in each chapter. Through the summary presentation, students will not understand a piece of the material but will understand it with a constructive mindset in each evaluation of the learning discussion [59]. The preparation of practice questions aims to measure the level of understanding obtained by students and the level of student skills in preparing historical learning evaluation instruments in each chapter. Researchers are very concerned about the character of history subject matter because history learning has a strategic role in shaping the dignified character and civilization of the Indonesian nation as well as in the

formation of a generation that has a sense of nationality and love for the homeland. This can be done starting from the objectives, implementation of learning, materials, sources, and media to evaluation [60].

Therefore, the development of teaching materials is carried out by fulfilling these aspects so that the objectives of learning history can be achieved [61]. The completeness of the historical learning evaluation teaching materials that have been compiled by the researcher shows that there is a development process in the teaching materials. The contents of the development of teaching materials that have been prepared contain chapter 1 purpose, chapter 2 indicators, chapter 3 theory, chapter 4 technique, chapter 5 summary, and chapter 6 exercise as shown in Figure 2.

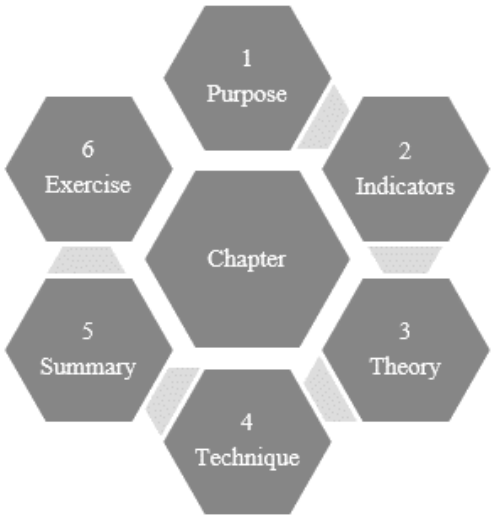

Figure 2. Contents of teaching materials for evaluation of history learning

After the teaching materials have been developed, the next step is to test the resulting product. The validity test is done by using the expert judgment method. The researcher asked three experts to assess the teaching materials that had been made in terms of content, language, and appearance. Analysis of the validity of teaching materials can be calculated by the following formula [46] in [62]. The range of quantitative scores in Table 2 is then adjusted to the needs of data processing in this study, with a maximum ideal score of 20 and an ideal minimum score of 4. The existing qualitative criteria are then interpreted to conclude the results of the assessment of the assessed standards.

Table 2. Criteria for conversion of quantitative data to qualitative data

Quantitative score range	Qualitative criteria
$\overline{x} > M + 1{,}5SB$	Very good
$M + 0.5SB < \overline{x} < M + 1.5SB$	Good
$M - 0.5SB < \overline{x} < M + 0.5SB$	Enough
$M - 1.5SB < \overline{x} < M - 0.5SB$	Not enough
$\overline{x} < M - 1.5SB$	Very less

The standard assessment of the content of teaching materials was carried out by three experts. The results based on Table 2. the results obtained are a comparison of 90% of the content of the material compiled. The average assessment of the three materials against the standard shows a score of 18.33. Then, the quantitative score range in Table 3 is adjusted to the needs of data processing in this study, with an ideal maximum score of 20 and an ideal minimum score of 4. Qualitative criteria are then interpreted to conclude the results of the assessment of the assessed standards. Based on the guidelines in Table 3, it is considered very good, and the guidelines in Table 4, can be used without revision.

Assessment of language standards of teaching materials was carried out by three experts. Based on the calculations in Table 5, the percentage results obtained are 91.67% of the languages that have been compiled. The average rating of the three materials against the standard shows a score of 18.33, so it is considered very good and valid for use without revision.

Table 3. Criteria for assessment conclusion

Quantitative score range	Qualitative criteria	Conclusion
$\overline{x} \geq 16$	Very good	No need for revision
$13{,}3 \leq \overline{x} < 16$	Good	No need for revision
$10{,}67 \leq \overline{x} < 13.3$	Enough	Revised
$8 \leq \overline{x} < 10.67$	Not enough	Revised
$\overline{x} < 8$	Very less	Revised

Table 4. Results of feasibility assessment of teaching materials standard content

Expert	Total score	Score maximum	Percentage (%)
1	16	20	80
2	19	20	95
3	19	20	95
Total	54	60	-
Average	18.33		90

Table 5. Results of feasibility assessment of language standard teaching materials

Expert	Total score	Score Maximum	Percentage (%)
1	19	20	95
2	17	20	85
3	19	20	95
Total	55	60	
Average	18.33		91.67

The results of the standard display of teaching materials conducted by three experts are shown in Table 6. The percentage results of the standard assessment are 91.67%. The average assessment of the three materials against the standard shows a score of 16.33, so it is considered very good and valid for use without revision.

Table 6. Results of feasibility assessment of teaching materials standard display

Expert	Total score	Score Maximum	Percentage (%)
1	17	20	95
2	16	20	85
3	16	20	95
Total	55	60	-
Average	16.33		91.67

In addition to providing an assessment in the form of a score from the assessment sheet provided, the expert validator also comments and suggestions on the teaching materials being assessed. Comments and suggestions from the validator will certainly be taken into consideration to improve the teaching materials that have been made before being tested on students. Suggestions given by the validator are in Table 7.

Table 7. Expert validator comments

Name of expert	Comments/suggestions
Expert validator 1	Usable
Expert validator 2	Overall good; only minor improvements for layout consistency
Expert validator 3	The content and language of the material are good; the display must be even more beautified.

3.4. The effectiveness of teaching materials in improving students' critical thinking skills

Researchers tested the effectiveness of teaching materials to improve critical thinking skills with experimental research methods. The research model taken is Posttest Only Control Design. In the Posttest Only Control Design, there are two groups, each of which is chosen randomly. The first group was given treatment, hereinafter referred to as the experimental group, while the other group was not treated, hereinafter referred to as the control group [63]. The treatment referred to in this study is the provision of teaching materials that have previously been compiled and tested for validity.

The initial step taken before the inferential statistical test is the prerequisite test in the form of normality and homogeneity tests. The normality test was carried out using the Shapiro-Wilk test on SPSS 16.

The Shapiro-Wilk test was chosen precisely because the number of samples taken was small. The results of the Shapiro-Wilk Test can be seen in Table 8.

Table 8. Results of Shapiro-Wilk SPSS

Class	Statistics	Shapiro-Wilk df	Sig.
Experiment	.914	13	.211
Control	.874	13	.058

The significance value of Shapiro-Wilk in the experimental class is 0.211, while the significance value of Shapiro-Wilk in the control class is 0.058. The significance value > 0.05 indicates that the distribution of the variables is normal, both in the experimental class and the control class. The next step after doing the normality test is the homogeneity test. The homogeneity test was obtained by performing the F test. The F test obtained a significance value of 0.060. The significance value > 0.05 indicates the data of the two groups is homogeneous. After the prerequisite test was met, the data were analyzed by comparing the two samples using the independent T-Test. The hypotheses built in the independent T-Test comparative test are:

$$H_0: \mu_1 = \mu_2, \quad (1)$$

$$H_1: \mu_1 \neq \mu_2 \quad (2)$$

The error rate taken is 5%, so hypothesis H_0 is accepted if sig. > 0.05. On the other hand, H_0 is rejected if sig. < 0.05. In the results of the independent T-Test analysis, the significance value shows the number 0.00 < 0.05, so H_0 is rejected, and H_1 is accepted. The interpretation and acceptance of H_1 mean that there are different averages between the two sample groups, so learning in the experimental class is effective for students' critical thinking skills. The effectiveness of using teaching materials in learning is also shown in the assessment of each student's critical power indicator. Researchers took six indicators in assessing students' critical thinking skills. The results of the comparison of each indicator in the experimental class and control class are shown in Table 9.

Table 9. Percentage results of each critical thinking indicator

No	Indicator	Experiment class (%)	Control class (%)
1	Detected problem	81.73	75.96
2	Identify	79.81	69.23
3	Gives arguments	85.58	76.92
4	Presenting reasons and evidence	78.84	67.95
5	Develop	80.76	66.35
6	Concluding	77.88	65.38

Table 9 shows that for each indicator of critical thinking ability, the result of the percentage of the experimental class's ability is always superior to the percentage of the control class's ability. The most striking difference is seen in the developing indicator. In this indicator, the percentage of the experimental class is 80.76%, while the percentage of the control class is 66.35%. The combination of all indicators produces an average percentage of 80.77% for the experimental class and 70.30% for the control class. So, it can be seen that the teaching materials developed are very effective in increasing students' critical thinking power.

The effectiveness of successful lecture achievement is influenced by many factors, one of which is the use of lecture references [64]. References that have been tested for effectiveness mean that they are appropriate to be used as lecture references. Lectures using learning evaluation teaching materials that have been developed by researchers will be able to improve students' critical abilities [65], [66]. Students who have the ability to think critically can develop their thinking processes [67]. Through this process, students are encouraged to be skilled in carrying out learning evaluations starting from compiling instruments, applying instruments, and processing instrument data. These skills will lead to the success of the history learning evaluation program [68]. Teachers must try to develop study materials according to the character of the subject so that learning is optimal [69].

4. CONCLUSION

The development of historical learning evaluation teaching materials, which is carried out through the observation process, produces comprehensive material and is in accordance with the competency needs of students of the Department of Historical Education. The results of the expert validity test show the percentage of standard content of teaching materials with a score of 90%, the percentage of language standards shows a score of 91.67%, and the percentage of display standards shows a score of 81.67%. The three results show very good and valid meanings. The student's critical thinking ability test shows that every indicator of the critical thinking ability of the experimental class is always superior to the percentage of the ability of the control class. The combination of all indicators in the experimental class resulted in an average percentage of 80.77%. So, it can be seen that the teaching materials that are arranged are very effective in increasing students' critical thinking skills. History learning trains us to analyze problems in the past to take solution actions in the future. So, it is necessary to evaluate the competence of learning well. The teaching materials that have been developed by researchers are very appropriate to be used as study material in the evaluation of history learning lectures.

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