DIAKRONIKA
ISSN: 2620-9446
DOI doi.org/10.24036/diakronika/vol25-iss1/479

Building a Critical Thinking Generation: Developing an Innovative History Learning Model

Abrar Abrar[1], Nur Aeni Marta[1], M Hasmi Yanuardi[1], M Fakhruddin[1], Firlyda Risqi[2], Melda Amelia Rohana*[1], Yusuf Budi Prasetya Santosa[3]
*melda.amelia.rohana@mhs.unj.ac.id
[1]Universitas Negeri Jakarta [2]SMA Labschool Jakarta [3]Universitas Indraprasta PGRI Jakarta

Received 13 May 2025
Revised 14 June 2025
Accepted 17 June 2025
pp. 47-62

Abstract

In this digital era, many historical narratives are vulnerable to misinformation and biased interpretations that circulate freely on social media and online platforms. This requires students to develop critical thinking skills that can be improved through history learning. This study aims to develop teaching materials based on conceptual achievement and creative problem-solving models to improve students' critical thinking skills in history learning. The method used in this study is R&D with the ADDIE model. In the analysis stage, the process involves identifying core problems and understanding students' needs. The design stage focuses on planning teaching materials. The instructional product, including content, media, and student activities, is created during the development stage. The implementation stage involves testing the developed teaching materials in a real classroom environment (conducted on 32 grade XI students of SMA Labschool Jakarta). Finally, the evaluation stage assesses the effectiveness of the teaching materials in meeting the intended learning objectives. The study's results showed that the developed teaching materials effectively improved students' critical thinking skills, as evidenced by a significant increase in pretest and posttest scores (p-value < 0.05). Further effectiveness was measured using N-gain analysis, which indicated effectiveness in the moderate category, with a 32% increase. Expert validation from content and media specialists also confirmed a very high level of feasibility (> 80%). Thus, teaching materials focusing on conceptual achievement and creative problem-solving can be an alternative to traditional history learning, encouraging students to think critically and gain a deeper understanding of history.

Keywords

ADDIE Model, Concept Attainment, Creative Problem Solving, Critical Thinking, History Learning

To cite this article

Abrar, A., Marta, N. A., Yanuardi, M. H., Fakhruddin, M., Risqi, F., Rohana, M. A., Santosa, Y. B. P. (2025). Building a Critical Thinking Generation: Developing an Innovative History Learning Model. *Diakronika* 25(1), 47-62. http://doi.org/10.24036/diakronika/vol25- iss1/479.

Introduction

Critical thinking skills are essential in the digital era for discerning valid information and making rational decisions, especially in the post-truth era of questionable information (Aqila, 2023). According to Smith (2019), critical thinking enables students to comprehend a complex and ever-changing world. These skills allow them to filter information, construct strong arguments, and effectively convey opinions. This ability also allows them to face challenges in the era of abundant information more wisely and rationally. In education, particularly in implementing the Merdeka Curriculum in Indonesia, critical thinking skills are one of the essential competencies in the Pancasila Student Profile, especially within the dimension of critical reasoning. Applying the skills in teaching and learning activities can be implemented through project-based, problem-based, or inquiry-based learning models.

In the future, students will face the challenge of integrating technology into their everyday lives. According to Jones and Brown (2018), technology has transformed how we interact, learn, and work. Students must be wise in using technology to search for information, collaborate online, and solve problems creatively. Critical thinking skills are becoming increasingly important in evaluating and filtering information objectively. Furthermore, the global job market is becoming increasingly competitive. Johnson (2020) states that a dynamic world of work requires individuals who are adaptive, innovative, and able to solve complex problems. Critical thinking skills help students become effective problem solvers in an ever-evolving work environment. Thus, critical thinking skills are not only crucial in the context of education but also in everyday life and future careers. Students with strong critical thinking skills will be better equipped to face the complex and evolving challenges of the current and future eras of globalization and information technology.

History learning is vital in developing critical thinking because it challenges students beyond memorization and deeper analysis of past events and their causes (Achmadin, 2022; Koshyk & Petriv, 2022; Ni, 2023). In this process, students are trained to analyze, evaluate, and synthesize historical information while assessing the long-term consequences of events. They also learn to understand diverse perspectives by examining various sources, such as analyzing World War II from the perspective of the countries involved. One effective way to apply these skills is through the debate method in history education, which allows students to explore and defend historical perspectives based on valid data and sources. Students develop critical thinking skills through this method, including cause-and-effect analysis, evidence evaluation, multiperspectivity, and structured argumentation. Additionally, debate activities enhance communication and collaboration skills, making history learning more dynamic, participatory, and reflective.

In History learning, students are taught to evaluate the credibility of information sources by identifying biases, interests, and specific goals. This trains their skills in assessing the reliability of information, which is an essential aspect of critical thinking. One example that can be analyzed is political propaganda during the Cold War, where students learn to recognize information manipulation and understand its impact on society and global policy.

In addition, History learning helps students see the relationship between the past and the present. They can draw parallels between historical events and contemporary issues, understanding the continuities and changes. For example, when studying the 1998 reform movement in Indonesia, students can compare the struggles of pro-democracy activists with the challenges of human rights and democracy that are still relevant today.

Observations conducted in the 11th-grade social studies class of SMA Labschool Jakarta involving 32 students showed that their critical thinking skills still need significant improvement. From a cognitive perspective, students' questioning skills, assessed using Bloom's taxonomy, ranged from C1 (remembering) to C4 (analyzing). Of the 32 students observed, 10 students (31.3%) asked questions at the C1 level (remembering factual information), nine students (28.1%) at the C2 level (understanding concepts), seven students (21.9%) at the C3 level (applying knowledge to specific contexts), and only six students (18.7%) showed questions at the C4 level (analyzing historical issues or arguments). No students were observed asking questions at the C5 (evaluating) or C6 (creating) levels. These limitations hinder the development of critical thinking, so an approach that encourages participation and exploration of ideas is needed.

Research on students' critical thinking skills has been conducted by Fadli et al. (2022), Fajari & Chumdari (2021), Hakim et al. (2018), and López-Fernández et al. (2023). The difference between this study and the previous one is that the researcher developed teaching materials based on a learning

model that combines *concept attainment* and *creative problem-solving* in the context of history learning.

Concept attainment is a learning strategy that emphasizes the formation and understanding of concepts (Asy et al., 2022; Razi et al., 2022). Meanwhile, *creative problem-solving* (CPS) is a systematic problem-solving method that encourages the exploration of various alternatives before finding a solution (Hsieh, 2018). The novelty of this study lies in integrating these two approaches into the development of history teaching materials and pedagogical innovation, which is rarely explored in secondary education, where traditional approaches often rely solely on narrative or factual delivery.

By integrating concept attainment and creative problem-solving approaches, teaching materials promote conceptual understanding of historical events and actively engage students in the historical thinking process. The concept attainment approach enables students to identify, classify, and internalize fundamental historical concepts, including change, continuity, causation, and chronology. Meanwhile, the creative problem-solving approach encourages students to pose historical questions, critically analyze sources, and formulate interpretations or solutions to complex historical issues.

This combination effectively supports the development of historical source analysis skills, as students are trained to compare types of sources, assess their credibility, and connect historical evidence to relevant contexts. Regarding evidence-based argumentation, students are guided to construct logical arguments supported by valid historical data rather than merely expressing personal opinions. Furthermore, the approach enhances historical reflection by encouraging students to contemplate the meaning and relevance of the past in present and future realities while fostering awareness of the diverse perspectives that shape historical narratives. This integrated strategy presents a novel pedagogical model that bridges both cognitive and reflective dimensions of historical learning—a model that remains underutilized in the Indonesian educational context but holds significant potential to advance deep and meaningful historical literacy.

Research Methods

This study employs a research and development (R&D) approach, utilizing the ADDIE (Analysis, Design, Development, Implementation, Evaluation) model. The Analysis stage involves identifying learning needs, student characteristics, and material coverage through surveys and interviews with teachers and students. Learning objectives, model designs, and assessment instruments are determined at the Design stage. The Development stage includes creating, initial testing, and revising learning products. Implementation was carried out on 32 students to test the model's effectiveness through tests and observations. The participants were 17 male and 15 female students from an 11th-grade social sciences (IPS) class at SMA Labschool Jakarta. In general, their critical thinking abilities were in the moderate category, based on the results of a pretest. The selection of this class was considered representative, as the students had consistently studied history and possessed relevant academic backgrounds aligned with the conceptual and problem-solving focus of the learning model. The final stage, Evaluation, assesses the quality and sustainability of the learning model.

The population of this study consisted of all 280 eleventh-grade students. The sample was selected using purposive sampling, focusing on classes that need improvement in creativity and critical thinking skills. Data were collected through observation, interviews, questionnaires, and tests. Data analysis consisted of quantitative analysis based on questionnaires and tests, and qualitative analysis, utilizing data triangulation.

Questionnaire data on product design feasibility were obtained from experts with long experience. Two experts were invited to assess the feasibility of the product design. One was a content expert, and the other was a media expert. Their evaluation covered four key aspects: content feasibility, language feasibility, presentation feasibility, and graphic feasibility. Content feasibility refers to the alignment of the material with learning objectives, such as the accuracy of the concepts and factual information. Language feasibility includes using clear and student-friendly language that is easy to understand. Presentation feasibility involves the systematic and coherent organization of the material, including supporting visuals such as images or maps. Graphic feasibility relates to the appropriateness of the layout and design, including font selection and color usage.

The formula for product feasibility validity is as follows:

Eligibility score = *F*/nx 100%

Information:

F = answer score
n = maximum score

To determine this eligibility, the eligibility criteria are set as stated by Arikunto (2018), which are contained in the following table:

Table 1. Eligibility Criteria

Achievement Level	Qualification	Information
90%-100%	Very worthy	There is no need to revise
75%-89%	Worthy	It needs to be revised
65%-74%	Quite decent	Revised
55%-64%	Not worthy	Revised
0%-54%	Not feasible	Revised

In addition to product feasibility, quantitative data analysis is conducted during product effectiveness testing to assess its effectiveness. The design used to test the product's effectiveness is a *one-group pretest-posttest*. The design is as follows:

Table 2. One-Group Pretest-Posttest Design

Pretest	Treatment	Posttest
0_1	X	0_2

The primary data in this effectiveness test is quantitative. The quantitative data is obtained from the students' pretest and posttest results. The results of the pretest and post-test are analyzed using calculations for each individual's score, the Normalised Gain (N-Gain) test, and the t-test to determine the effectiveness of improving student learning outcomes.

Result

This research and development project aims to produce instructional materials as a module designed as an educational reading resource for students, focusing on the theme of colonialism and the Indonesian people's resistance against colonial rule. The development of this learning module is based on a comprehensive validation process involving media experts, subject matter experts, and empirical assessments conducted by educators. Additionally, feedback from students during the trial phase was also considered. Through this approach, the module is expected to be academically relevant and capable of providing an engaging and meaningful learning experience for students.

This module's alignment with the Merdeka Curriculum and its chronologically and contextually organized content sets it apart. It features creative problem-solving activities that encourage historical literacy, critical thinking, and reflective learning. With this integrated approach, the module aspires to become a valuable learning tool, pedagogically effective and deeply engaging for students.

Analysis

The results of this needs analysis were obtained from research conducted between September and October. The techniques used in collecting data for this study included questionnaires, interviews, and document analysis. This analysis stage was conducted to identify the issues among students regarding the history learning implemented by teachers at SMA Labschool Jakarta.

Student Questionnaire Results

The preliminary research was conducted by distributing a twelve-question questionnaire to 34 students as respondents. This questionnaire aimed to gather information regarding the learning needs in history education among students, covering aspects such as learning outcomes, learning objectives, instructional methods, learning resources, and understanding of the subject content. The first point in the questionnaire focused on learning outcomes. The results showed that 8% of respondents considered them unimportant, 72% considered them essential, and 20% considered them very important. This suggests that most respondents view learning outcomes as a crucial component of history education. Although most respondents perceive learning outcomes as an essential element in history education, the presence of 8% who consider them unimportant warrants closer attention. This may reflect a gap between students' understanding of the function of learning outcomes and their

implementation in daily learning activities. One possible reason is teachers' lack of clear explanations about the long-term benefits of learning outcomes, both in academic terms and in real life.

The second point addressed learning objectives. The findings showed that 3% of respondents considered them unimportant, 69% considered them essential, and 28% considered them very important. Therefore, it can be concluded that learning objectives remain a crucial aspect of history learning. Although most students perceive learning objectives as an essential aspect of history education, the presence of 3% who consider them unimportant still warrants attention. While this percentage is relatively small, it indicates a gap in students' understanding or experience regarding the role and significance of learning objectives in the learning process. One possible reason is that the language used in formulating learning objectives is sometimes too technical or abstract, such as "analyze the impact of colonialism" or "evaluate the outcomes of the revolution," without being grounded in concrete examples or contexts familiar to students. This can make the objectives seem distant and difficult to grasp, leading to the perception that they are unimportant. Another contributing factor could be the lack of student involvement in the learning goal-setting process.

The third point focused on the instructional method. 10% of respondents considered it unimportant, 70% thought it important, and 20% considered it very important. These results suggest that how the teacher delivers the content plays a crucial role in students' success in understanding and mastering historical content. However, the 10% who found it unimportant may reflect an unengaging or irrelevant learning experience, such as overly lecture-based approaches. This highlights the need for more innovative, participatory, and inquiry-based teaching methods that actively involve students in learning.

The fourth point examined the learning resources used. Results showed that 12% of respondents considered them unimportant, 69% considered them essential, and 19% considered them very important. This suggests that students still require adequate learning resources to study historical content. Although the majority views them as necessary, the proportion that sees them as unimportant is worth noting. This may suggest that the current resources are not entirely contextual or engaging, overly textual, lacking visual elements, or perceived as disconnected from students' realities. Therefore, teachers must diversify resources, incorporating digital media, primary sources, and interactive tools to better support student engagement and historical understanding. The fifth point highlighted students' understanding of colonialism. The data showed that 6% of respondents considered it unimportant, 69% said it was important, and 25% deemed it very important. This suggests that students still require instruction on colonialism that occurred in the archipelago now known as Indonesia. However, a small portion may fail to see its importance due to a lack of understanding of how colonialism continues to affect Indonesia's social, political, and economic structures today.

The sixth point asked about students' understanding of trade routes during the colonial period. According to the results, 8% of respondents considered this aspect unimportant, 75% thought it important, and 17% regarded it as very important. This reinforces the need for students to gain in-depth knowledge of historical trade routes related to colonialism. Trade routes are crucial in understanding the motivations behind colonialism and global economic transformations. Student disinterest may stem from instructional approaches that fail to emphasize these historical connections. Therefore, spatial and visual learning strategies such as historical maps and trade route simulations can help deepen student understanding.

The seventh point addressed students' ability to analyze the role of the Ottoman Empire in global maritime history. The findings showed that 17% of respondents deemed this analysis unimportant, 67% said it was important, and 16% regarded it as very important. This indicates that students still need to develop the ability to explore the relationship between the Ottoman Empire and global maritime development. The Ottoman Empire played a key role in the Islamic world, the spice trade, and international naval geopolitics, factors that influenced Southeast Asia. This suggests the need for greater incorporation of Islamic world history into Indonesian history education so that students can better understand global historical interconnections.

The eighth point examined the various forms of Indonesian resistance to Western colonialism, particularly by the Dutch. 17% of respondents stated that this topic was unimportant, 72% considered it necessary, and 11% thought it very important. This demonstrates that studying the Indonesian struggle against Dutch colonization is vital to history education. Apathy among some students may be

due to the repetitive presentation of the topic or an overly factual delivery that lacks emotional and reflective depth.

The various questions about learning outcomes indicate that respondents still need a more comprehensive understanding of historical material. This understanding is expected to align with the learning outcomes outlined in the *Merdeka Curriculum*, which aims to provide students with meaningful and relevant learning experiences. These findings emphasize the importance of history education, which meets academic needs and helps students understand historical contexts more deeply. Given the broad scope of historical material, there is a need for a learning model specifically designed to develop students' critical thinking skills. In particular, models such as *Concept Attainment* and *Creative Problem-Solving* are essential for effectively supporting the development of critical thinking skills, enabling students to understand history and analyze, evaluate, and draw conclusions in depth. The development of such learning models is expected to integrate theory with practice, thus providing meaningful and relevant learning experiences.

Respondents were asked how they best understood complex historical concepts in the ninth point. The results showed that 28% preferred reading and memorizing, 25% preferred using images, diagrams, or concept maps, 30% preferred group discussions with peers or teachers, and 17% preferred practicing problem-solving based on historical situations. This data suggests that students expect more comprehensive, interactive, and challenging teaching materials that can enhance their critical thinking in history. In the tenth point, respondents were asked how often they struggle to find creative solutions to issues discussed in history lessons. The results were as follows: 50% reported very frequently, 21% reported usually, 10% reported rarely, and 19% reported never. These results indicate significant challenges to students' creativity within history education while highlighting the opportunity to improve teaching methods to support the development of students' creative abilities.

In the eleventh point, respondents were asked whether the current teaching materials help them think critically, such as analyzing, evaluating, and drawing conclusions. Only 5% said they were invaluable, 30% said they were helpful, and 55% said they were not very helpful. These results suggest that the current teaching materials do not effectively support the development ofstudents's critical thinking skills. Therefore, there is a need to develop more innovative, interactive teaching materials that are oriented toward higher-order thinking skills (HOTS).

In the twelfth point, respondents were asked which types of learning activities most help improve critical thinking and creativity. 12% chose group discussions or debates, 30% selected document analysis or case studies, 48% preferred scenario-based historical problem-solving, and 10% chose lectures and Q&A sessions. These results indicate that students prefer active learning methods relevant to real-world contexts, such as scenario-based problem-solving and historical document analysis. These methods provide opportunities for students to engage directly in critical thinking and develop creativit, —key objectives in history education

Results of Interviews with Educators

The initial information gathered for the needs analysis is directed at students and includes teachers who conduct the teaching. For this purpose, interviews were conducted with questions aligned with the contents of the student questionnaires.

Regarding learning outcomes, teachers stated that among the various competencies outlined in the Merdeka Curriculum, students tend to be weak in skills related to analysis and creation. They are stronger in memorization. Regarding analytical ability, fewer than 70 percent of students perform above the Minimum Mastery Criteria (MMC). Teachers observed that this may be due to the diverse educational backgrounds of the students. On the other hand, it was also revealed that students are generally enthusiastic during the learning process. This high interest in learning needs to be anticipated and utilized correctly. In other words, a form of learning that goes beyond rote memorization and engages students more meaningfull is requiredy.

In addition, the method of content delivery by the teacher was also discussed. The teacher stated that they try to avoid lecture-based teaching in History classes(Karima et al., 2024). This suggests that the teacher is striving to implement student-centered learning. The goal is to encourage students to think critically when understanding historical content, especially given the abundant learning resources available in the digital age. From the teacher interviews, it was also found that students need support in terms of creativity. They require appropriate strategies to help them grow and produce various learning

outputs in line with the Merdeka Curriculum. These findings also highlight that teachers must deliver History lessons more creatively.

Concerning the availability of learning facilities and materials, the teacher mentioned that the textbooks used in class have some shortcomings. The content lacks depth and breadth in its discussion, which hinders the learning process, particularly in developing students' analytical skills. The limited reading materials make it difficult for students to analyze the content thoroughly. Therefore, a learning method is needed to enhance students' critical thinking skills, even when using materials that are not in-depth or comprehensive. This method should stimulate essential thinking by maximizing available reading resources.

Learning Process Observation Results

Observations are conducted to gather supporting data for the learning process and to collect data on learning activities. In this context, the following table presents the results of observations performed at school.

Table 3. Results of Observations of the Learning Process

No	Observation Aspect	Result Description
1	Number of students	Based on observations, the number of students per class ranges from 30 to 36.
2	Average value	Class average score 65
3	Which school are you from	Students who study generally come from junior high schools in the surrounding area.
4	Number of meetings	The Indonesian History subject is compulsory and has 2 lesson hours per week. One lesson hour lasts for 45 minutes. This is following the provisions of the Merdeka Curriculum
5	Classroom	The classroom is quite adequate, with a maximum of 36 students. In addition to tables and chairs for students, the room also has a teacher's table and chair, a whiteboard, a digital clock, *a loudspeaker*, an LCD projector, and a screen. There is also an AC whose cooling system is centrally regulated.
6	Reading books	The textbooks students use are quite comprehensive because each student has their own. In addition to textbooks, students have LKPD
7	Learning Activities	The books used in learning are in the form of textbooks determined by the school. Students use LKPD for practice In general, teacher learning methods vary. This means that teachers attempt to apply techniques that align with the demands of the Merdeka curriculum. Not many students actively ask questions of their teachers or respond to their questions. During the discussion, there were still students who were not active

Design

The design stage involves creating module teaching materials covering colonialism and Indonesian resistance. The modules created are designed to engage students in reading and discussing issues according to the activities developed in each meeting. At that stage, the first step is determining learning objectives that align with Phase F's learning achievements and the Merdeka Curriculum's learning indicators. The second step is the selection of literacy-based learning strategies and collaborative projects using media and learning resources designed using various relevant media (videos, illustrations, concept maps, etc.) that enrich students' learning experiences. The third step is preparing the structure of learning materials, which is designed based on chronological order. The fourth step involves developing varied learning activities, such as reading, analyzing documents or learning resources, and simulations, all of which support achieving learning objectives. The final step is the development of a learning module interface designed to facilitate independent learning.

Development

At the development stage, the focus is on producing teaching materials that follow the design that has been made. The first activity is content development, where the material is arranged based on the design results at the design stage. In this context, the material is written systematically and chronologically. The second activity is media development, which aims to make material delivery more effective through visual and multimedia elements, such as maps, images, and videos (utilizing hyperlinks). The layout is designed using easy-to-read fonts. The third activity is activity development and evaluation, allowing students to participate in their learning actively. The fourth activity is to conduct validation and trials to ensure that the module is suitable for use and effectively achieves its learning objectives. Material experts and media experts validate the feasibility of the module. This was done before the field trial was carried out. The results of the expert validation are described as follows.

Model Validation by Subject Matter Experts

Validation of the product from the material expert includes the following: suitability of the material with the indicators and learning objectives, the relevance of content between meetings, the suitability of content with learning outcomes, the suitability of concepts with historical contexts, the suitability of practice questions with critical thinking concepts, the accuracy of facts and ideas, the relevance of the material with the context of Indonesian and world history, the suitability of the material with students' cognitive development.

Based on the validator's assessment of the instruments provided, the following results were obtained:

Table 4. Results of Material Expert Validation

No	Aspect	Average score	%	Eligibility categories	Information
1	Suitability of material with indicators and learning objectives	9.0	90	Very feasible	There is no need to revise
2	Content relevance between meetings	8.0	80	Feasible	It needs to be revised
3	Suitability of content to learning outcomes	9.0	90	Very feasible	There is no need to revise
4	Suitability of concept to the historical context	9.0	90	Very feasible	There is no need to revise
5	Suitability of practice questions with critical thinking concepts	7.0	70	Quite decent	Revised
6	Accuracy of facts and concepts	9.0	90	Very feasible	There is no need to revise
7	Relevance of the material to the context of Indonesian and world history	9.0	90	Very feasible	There is no need to revise
8	Suitability of material to students' cognitive development	9.0	90	Very feasible	There is no need to revise

Although the results of the validity of the feasibility are as mentioned, the primary data needed is qualitative in the form of input from material experts. Based on input from material experts, two aspects are revised. The first aspect concerns the relevance of content between meetings. The second aspect concerns the suitability of practice questions with critical thinking. One of the suggestions focused on a question using a blank map. Initially, the question asked was: *Where is the city of Constantinople located*? Following the expert's recommendation, the question was revised to: *Why is Constantinople's location, as shown on the map, strategically crucial for trade routes and the expansion of European power*?

Model Validation by Media Experts

Media expert validation is broadly grouped into three aspects: language, presentation, and graphics. These three aspects consist of sub-aspects as listed below.

Table 5. Media Expert Validation Results

No	Aspect	Average score	%	Eligibility categories	Information
1	The language is clear and easy for students to understand	8.0	80	feasible	Needs revision
2	Correct and consistent use of historical terms	10.0	100	Very feasible	There is no need to revise
3	The language used is suitable for the student's developmental level.	10.0	100	Very feasible	There is no need to revise
4	Systematic and coherent presentation of material	10.0	100	Very feasible	There is no need to revise
5	There are illustrations, pictures, maps, and videos that support understanding.	8.0	80	Feasible	Revised
6	Interesting and non-monotonous presentation	9.0	90	Very feasible	There is no need to revise
7	Practice questions available	10.0	100	Very feasible	There is no need to revise
8	Compliance of the layout with the material	9.0	90	Very feasible	There is no need to revise
9	Easy-to-read font selection	10.0	100	Very feasible	There is no need to revise
10	The use of color and illustrations supports the focus on the material.	10.0	100	Very feasible	There is no need to revise
11	The quality of the images and illustrations is appropriate, and the presentation is accurate.	9.0	90	Very. There is possible	There is no need to revise

Revision input from media experts regarding illustrations, images, maps, and videos should be examined regarding their placement, and any missing items should be added accordingly.

Small Group Trial

A small group trial was conducted to evaluate the effectiveness and attractiveness of the teaching module created. The trial involved five students who were randomly selected from different classes. The following effectiveness test results were obtained based on the five students' trial results.

Table 6. Small Group Effectiveness Test

Number of Respondents	Average value		Big Increase	N-gain	The highest score		Lowest Value	
	Pretest	Posts			Pretest	Posts	Pretest	Posts
5	71.6	80.6	9.0	0.32	77	87	67	73

The effectiveness test results showed an average pretest value of 71.6 before treatment using teaching materials and a posttest value of 80.6 after therapy using the same materials. The average results showed an increase of 9.0. Based on the results of the N-gain analysis, student learning outcomes were 0.32. The interpretation of N-gain on the study results is 32%. Based on the criteria set, the results are effective. Furthermore, testing was also carried out using the t-test to further determine the level of effectiveness. Based on the results of the t-test, the following calculations were obtained.

Table 7. Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Pretest	71.6	5	4,219 5,550	1,887
Posts	80.6	5		2.482

Table 8. Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 Pretest-Posttest	5	0.611	0.274

Table 9. Paired Samples Test

	Paired Differences				
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	
				Lower	Upper
Pair 1 Pretest - Posttest	9.0	4.472	2.0	3.447	14,553

Table 10. Paired Differences

	95% Confidence				
	Lower	Upper	t	df	Sig. (2-tailed)
Pair 1 Pretest - Posttest	3.447	14,553	-4.5	4	0.0108

The t-test (paired sample t-test) showed the difference between the pretest and posttest scores, which showed a t-statistic of -4.5 with a p-value of 0.0108. With a general significance level (α) of 0.05, the p-value is less than 0.05. Therefore, there is a significant difference between the pretest and posttest scores. This indicates a substantial increase after the intervention or treatment. The table above also shows a strong correlation between the pretest and posttest scores (r = 0.611), with a significant increase in the posttest compared to the pretest (p-value = 0.274). The confidence interval indicates that the average difference between the posttest and pretest scores lies between 3.447 and 14.553, with a 95% confidence level.

The results above show that the treatment during learning in *concept attainment* and *creative problem-solving learning activities* significantly increased posttest results compared to the pretest. Although a moderate relationship exists between pretest and posttest scores, it is not yet statistically significant. This is thought to be due to the influence of the limited sample size.

Revision Based on Feedback

Based on input from material experts, revisions were made to the relevance of content between meetings and the suitability of practice questions about the concept of critical thinking. The relevance of content between meetings was enhanced by highlighting the direct impact of the City of Constantinople's control on shifting the spice route to the Archipelago. The next aspect that needed improvement was the suitability of practice questions about critical thinking. In this aspect, several practice questions had their narrative statements added, and changes were made to the answering items, which required students to be more critical in examining the available answer choices.

Two aspects require revision based on qualitative input from media experts. The first aspect concerns language, ensuring it is easy for students to understand. A glossary or explanation in terms of language must be added to each meeting topic. In addition to the language aspect, revisions must be made to the illustrations, images, maps, and videos that support student understanding. In this regard, a video link should be added for each meeting to provide students with additional knowledge.

Implementation

In the implementation stage, the revised teaching module is applied on a larger scale, involving 32 students in grade XI. The application of this large class is to test the effectiveness of teaching materials in actual courses. Based on the treatment in a large group class of 32 students, the results of the effectiveness test using N-gain are presented in the following table.

Table 11. Large Group Effectiveness Test

Number of Respondents	Average value		Big Increase	N-gain	The highest score		Lowest Value	
	Pretest	Posts			Pretest	Posts	Pretest	Posts
32	70.47	82.12	11.65	0.35	83	90	43	67

The calculation results above show that the average pretest score of students before using the teaching materials was 70.47, while the average posttest score after using the teaching materials reached 82.12. These results indicate an increase of 11.65 points. Based on the N-gain analysis, the student learning outcome score was 0.35, equivalent to 35% in percentage form. According to the predetermined criteria, these results suggest that using teaching materials is highly effective.

In addition to testing the effectiveness of using N-gain, a t-test was also conducted to evaluate the effectiveness of large classes. The results are shown below based on the t-test results for the number of students, as many as 32 people.

Table 12. Paired Samples Statistics

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Pretest	69.94	32	9,367	1,656
Posts	82.94	32	5.381	0.951

Table 13. Paired Samples Correlations

	N	Correlation	Sig.
Pair 1 Pretest-Posttest	32	0.802	3.34e-08

Table 14. Paired Samples Test

	Paired Differences				
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference	
				Lower	Upper
Pair 1 Pretest - Posttest	13.0	5,984	1,058	10,842	15.157

Table 15. Paired Differences

	95% Confidence		t	df	Sig. (2-tailed)
	Lower	Upper			
Pair 1 Pretest - Posts	3.447	14,553	-12,289	31	1,881

The data above shows a significant increase in value from pretest to posttest. This is evident from the p-value results, which are far below the threshold of 0.05. The average difference of 13 points indicates a significant impact of the treatment given. Let's look at the relationship between the pretest and the posttest. A significant positive correlation means that students with high pretest scores tend to have high posttest scores despite an overall increase in the posttest scores. Meanwhile, the minor standard deviation of the posttest indicates that the posttest scores are more consistent than the pretest.

Evaluation

The evaluation stage in the ADDIE model aims to assess the effectiveness of the learning module that has been designed and implemented. This evaluation is carried out formatively and summatively to ensure that learning objectives are achieved optimally. The evaluation process includes analysis of learning achievement data, input from students and educators, and reflection on module implementation. Data collection was conducted using various methods, including open-ended questionnaires to gather individual written responses and focus group discussions to explore in greater depth the experiences, perceptions, and suggestions of both students and teachers regarding using the module. This approach allows for a comprehensive evaluation, both quantitatively and qualitatively.

In the formative evaluation, material and media experts' first step was validation, and the results showed that the module was highly feasible. However, revisions were made to improve the relationship

between topics, adjust the practice questions to incorporate critical thinking concepts, enhance the quality of illustrations, and add supporting elements such as interactive videos.

The second part of the formative evaluation was a small-group trial, which showed a significant increase in post-test scores compared to the pretest. In addition, students provided feedback that the module was visually appealing and helped them understand historical material better. However, some participants suggested a more interactive presentation to increase learning engagement.

The summative evaluation was conducted after implementing the module in extensive class learning involving 32 students. There are three components in this evaluation. The first is the analysis of learning outcomes, where posttest data showed an average score increase of 13 points compared to the pretest. The positive correlation between pretest and posttest scores indicates the consistency of students' improvement in understanding. This score increase also positively impacted students' motivation and interest in history. This was evident from the students' enthusiasm when completing assignments and discussing issues presented in the creative problem-solving stages of the module. Students became more confident in their ability to grasp historical material that was previously considered difficult.

Additionally, the lower standard deviation of the posttest than the pretest suggests that the posttest scores are more consistent among students. The second component is the module's effectiveness, demonstrating that it has been proven effective in enhancing students' critical thinking skills through a creative problem-solving approach and concept mastery. The collaborative activities designed in the module successfully motivated students to be more active in discussions and problem-solving. The last component is reflection, which demonstrates that the module designed through the ADDIE model is relevant to the needs of history learning. It can also enhance students' critical thinking skills and creativity, making them adaptable for future learning. Additionally, this module has the potential to be implemented in other schools with similar contexts, both public and private, due to its flexible structure and alignment with the Merdeka Curriculum. With appropriate adjustments, the module could also be applied at different educational levels, such as junior high schools, to introduce contextual historical understanding and actively engage students in the learning process.

Discussion

Concept Attainment

Concept Attainment, a learning strategy focused on grasping concepts, plays a crucial role in history learning. This strategy encourages students to understand concepts by distinguishing between examples and non-examples (Noreen & Chaudhary, 2022). This process enables students to identify key characteristics of a historical event, such as the Indonesian people's struggle against colonialism. This facilitates an understanding of cause-and-effect relationships in historical learning. This strategy is fundamental in history learning because students often struggle to differentiate between events based on abstract historical concepts, such as colonialism, nationalism, or imperialism. Students memorize isolated facts without a strong conceptual foundation or grasp the underlying meaning or historical significance. For example, students might not clearly distinguish between economic and political colonialism unless guided to identify their characteristics through comparative examples.

A practical application of the Concept Attainment strategy can be found in teaching the module's anti-colonial resistance theme in Indonesia. Students are then asked to observe patterns, compare characteristics, and draw conclusions about what defines an act of resistance. This encourages deeper historical understanding and critical analysis.

The module implements this strategy through structured learning activities requiring students to distinguish examples from non-examples. These activities include analyzing short historical narratives, completing comparison tables, engaging in group discussions to justify their categorization, and completing reflective worksheets to articulate the defining features of the studied concept. This approach makes history learning more meaningful while fostering students' conceptual thinking and historical literacy.

The strategy is effective in history learning because it involves inquiry-based activities that encourage students to organize and clarify ideas through group discussions (Kaur, 2017). The discussions foster a collaborative learning environment in which students gain a deeper understanding of complex historical concepts, such as the interconnections between colonialism, its impact on local cultures, and the historical processes accompanying it (Firza & Aisiah, 2019).

The application of *Concept Attainment* supports a visual literacy-based approach, such as using concept maps, images, or illustrations to strengthen student understanding (Mina et al., 2022). This strategy utilizes various visual media to convey material interestingly and interactively, as Kholison et al. (2023) suggested in their research on the importance of visual media in learning. In history learning, the approach has been shown to increase student engagement (Habib, 2019). This study confirms that the *Concept Attainment strategy* motivates students to actively engage in discussions and explore key historical concepts, such as changes in the spice trade route due to colonization, which directly impact both global and local contexts.

Creative Problem Solving

Creative Problem Solving (CPS) is a systematic problem-solving method emphasizing exploring alternative ideas before finding a solution. CPS fosters critical and creative thinking in history learning, particularly on the spice trade and colonialism (Hsieh, 2018). Students are not only guided to understand past events but also to connect them with present-day global challenges. For example, when learning about the spice trade, students examine how European powers colonized the archipelago for its spices and compare this with modern economic domination, such as multinational control over natural resources. By drawing parallels between VOC monopolies and contemporary exploitation in mining or palm oil sectors, students reflect on how history repeats in different forms and how it can inform their social awareness.

The module guides students through CPS-based activities: identifying problems, gathering historical data, defining core issues, brainstorming solutions, selecting the most relevant response, and planning how to implement it in today's critical consciousness, showing that history is not just about the past but a tool to understand and shape the future.

The CPS process involves three stages: fact-finding, idea-finding, and solution-finding (Lee et al., 2023). These stages are implemented through document analysis, case studies, or historical scenario-based simulations. For example, students can be asked to explore the role of the Ottoman Empire in global trade and its influence on colonialism in the Indonesian archipelago (Ward, 2023).

The approach also supports the development of student creativity. CPS involves integrating innovative ideas to create relevant solutions. In history learning, CPS motivates students to think critically and develop creative solutions to historical challenges, such as analyzing the spice trade route (Setiyowati & Shodikin, 2022). This activity provides students with collaborative learning experiences while fostering higher-order thinking skills. The study showed that CPS significantly improved students' critical and creative thinking skills (Van Hooijdonk et al., 2023). By providing space for experimentation and exploration, this method helps students develop skills relevant to 21st-century challenges, making it an essential component of history learning.

Critical Thinking Skills

Critical thinking skills are a primary goal of learning history, as they involve analyzing, evaluating, and interpreting information. This is reflected in research that shows that *Concept attainment-based learning* and CPS can help students understand facts and evaluate and interpret historical events in depth (Hasan, 2012). Critical thinking enables students to ask analytical questions about the reasons behind Dutch colonization and its impact on local communities. This ability is developed through tasks such as analyzing historical documents and developing arguments based on evidence. Lin's (2017) research emphasizes the importance of creativity as part of critical thinking, which involves exploring various perspectives on historical events.

Applying critical thinking skills enables students to understand history in its context. Students can develop broader insights into the relationship between historical context and current global challenges by connecting past events to modern challenges (Dai et al., 2019). This aligns with the objectives of history learning, which include developing higher-order thinking skills (Kochhar, 2008). Critical thinking skills developed through this method also improve students' understanding of complex materials, such as the Indonesian people's resistance against colonialism. Baumgarten's (2017) research confirms that analysis-based history learning helps students understand the material and learn relevant lessons for today's social and cultural challenges.

Development of Teaching Materials

In addition to learning methods such as *Concept Attainment* and CPS, developing interesting and relevant teaching materials is essential in learning history. Research indicates that teaching

materials designed with a visual and multimedia-based approach, such as concept maps and videos, can enhance students' learning experiences (Tolkacheva & Ivanov, 2022).

Technology is an essential component of modern learning. Students can understand historical events more deeply by incorporating elements such as interactive video barcodes into their modules. For example, videos depicting the spice route or the Indonesian national struggle can give students richer insights (Khalid et al., 2020). Recent studies by Fahruddin, Muis, and Wahyuni (2024) and Umar (2024) demonstrate that digital technology in history education significantly enhances student engagement and enriches their learning experience. Through interactive visual media, digital applications, videos, and online quizzes, students become more active, motivated, and interested in participating in the learning process.

Collaborative activities such as group discussions, simulations, and problem-based projects are other methods that support student engagement. Research indicates that these approaches enhance students' understanding of the material and foster their development of interpersonal and collaborative skills, which are crucial in the era of globalization (Utari et al., 2023).

Finally, formative and summative assessments should be designed to assess mastery of the material and critical and creative thinking skills. Thus, history learning focuses on memorization and provides students with relevant skills to face future challenges (De Vos et al., 2021). Formative assessment is conducted through short Kahoot quizzes, which test students' understanding of Dutch colonialism. Additionally, classroom discussions are held where students are asked to connect colonial practices with their current impact on Indonesia's socio-economic structure. Meanwhile, summative assessment takes the form of essay writing, requiring students to analyze the long-term effects of colonialism on Indonesia's agricultural system.

To assess students' critical thinking skills, the teacher used a rubric with indicators such as analyzing historical causes and consequences, constructing logical arguments supported by evidence, and offering contextual or creative interpretations.

Conclusion

Critical thinking is crucial in history learning, as it helps students analyze, evaluate, and synthesize information. This study developed teaching materials using the Concept Attainment and Creative Problem-Solving models within the ADDIE framework. Trials with grade XI students showed a significant improvement in learning outcomes, with an N-gain score of 0.35, indicating moderate effectiveness. Expert validation confirmed the module's high quality in both content and design. Concept Attainment helped students understand key historical ideas by distinguishing between examples and non-examples. CPS enabled students to critically identify problems, assess sources, and connect historical events to present-day issues. These strategies increased student engagement through collaborative and analytical learning activities. Given its alignment with the Merdeka Curriculum, this model is recommended for broader implementation to promote deeper and more reflective learning of history.

References

Achmadin, B. Z. (2022). Urgensi historicall thinking skills bagi peserta didik dalam pembelajaran sejarah kebudayaan Islam. *Muta'allim: Jurnal Pendidikan Agama Islam*, *1*(2), 96–114.

Aqila, N. M. N. (2023, May 23). *Post-truth, ancaman serius bagi kredibilitas informasi*. ITS News.

Arikunto, S. (2018). *Dasar-Dasar Evaluasi Pendidikan*. Bumi Aksara.

Asy, ari, Wikanta, W., Fitrah Juniawan, M., & Budi Sartika, S. (2022). Concept attainment model (CAM) empowers critical thinking skills and mastery of concepts for high school students. *Science Education Journal (SEJ)*, *6*(2). https://doi.org/10.21070/sej.v%vi%i.1625

Baumgarten, L. (2017). Historical learning in History teaching: some considerations. *Critica Historica*, *VIII*(15).

Dai, D. Y., Cheng, H., & Yang, P. (2019). QEOSA: A pedagogical model that harnesses cultural resources to foster creative problem-solving. In *Frontiers in Psychology* (Vol. 10, Issue MAR). Frontiers Media S.A. https://doi.org/10.3389/fpsyg.2019.00833

De Vos, E., Baccarne, B., & Emmanouil, M. (2021). Creative problem-finding: A shift in focus for creative tools. In H. Grierson, E. Bohemia, & L. Buck (Eds.), *International conference on*

engineering and product design education. The design society a worldwide community. https://doi.org/10.35199/EPDE.2021.72

Fadli, M. R., Rochmat, S., Sudrajat, A., Aman, Rohman, A., & Kuswono. (2022). Flipped classroom in history learning to improve students' critical thinking. *International Journal of Evaluation and Research in Education*, *11*(3), 1416–1423. https://doi.org/10.11591/ijere.v11i3.22785

Fahruddin, F., Rosidi, Moh. I., Fitroh, I., Darsono, D., & Saefudin, A. (2024). Transforming History Education: Enhancing Student Engagement and Literacy through Interactive Methods. *SAR Journal - Science and Research*, 396–403. https://doi.org/10.18421/SAR74-14

Fajari, S. L. E. W., & Chumdari. (2021). Critical thinking skills and their impacts on elementary school students. *Malaysian Journal of Learning and Instruction*, *18*(2), 161–187. https://doi.org/10.32890/mjli2021.18.2.6

Firza, F., & Aisiah, A. (2019). Error of proposal writing by students. 3rd Asian Education Symposium (AES 2018),

Habib, H. (2019). Effectiveness of Concept Attainment Teaching Model on Achievement of XII Standard Students in Social Sciences. *Shanlax International Journal of Education*, *7*(3), 11–15. https://doi.org/10.34293/education.v7i3.415

Hakim, M. F. Al, Sariyatun, S., & Sudiyanto, S. (2018). Constructing students' critical thinking skills through discovery learning models and contextual teaching and learning model as solution of problems in learning history. *International Journal of Multicultural and Multireligious Understanding*, *5*(4), 175. https://doi.org/10.18415/ijmmu.v5i4.240

Hasan, S. H. (2012). *Pendidikan sejarah Indonesia: Isu dalam ide dan pembelajaran* (A. Mulyana, Ed.; Cetakan I). Rizqi Press.

Hsieh, C. Y. (2018). Developing Design through a Creative Problem-Solving Process: A Group Community Art Project. *International Journal of Art and Design Education*, *37*(3), 541–553. https://doi.org/10.1111/jade.12155

Johnson, M. (2020). Attainment model: A framework for effective learning. *Educational Research Quarterly*, *52*(3), 201–215.

Jones, A., & Brown, K. (2018). Enhancing critical thinking skills through history education. *History Review*, *30*(4), 267–280.

Kaur, R. (2017). Effect of concept attainment model on achievement of secondary school students in physics. *Indian Journal of Applied Research*, *7*(12), 242–243. https://www.worldwidejournals.com/indian-journal-of-applied-research-(IJAR)/recent_issues_pdf/2017/December/December_2017_1512118360__148.pdf

Karima, E. M., Nurlizawati, N., Firza, F., Abidin, N. F., & Ibrahim, Y. (2024). Reducing Cognitive Bias of Pre-Service History Teachers through Augmented Reality. *JOIV: International Journal on Informatics Visualization*, *8*(1), 520-525.

Khalid, M., Saad, S., Abdul Hamid, S. R., Ridhuan Abdullah, M., Ibrahim, H., & Shahrill, M. (2020). Enhancing creativity and problem-solving skills through creative problem-solving in teaching mathematics. *Creativity Studies*, *13*(2), 270–291. https://doi.org/10.3846/cs.2020.11027

Kholison, M., Suja, A., Setyawan, C. E., & Hantoro, R. R. (2023). Pengembangan bahan ajar bahasa Arab dengan pendekatan kemahiran berbicara. *Lahjah Arabiyah: Jurnal Bahasa Arab Dan Pendidikan Bahasa Arab*, *4*(1), 90–102. https://doi.org/10.35316/lahjah.v4i1.90-102

Kochhar, S. K. (2008). *Pembelajaran sejarah terjemahan Purwanta dan Yovita Hardiwati* (A. A. Nusantara, Ed.). Grasindo.

Koshyk, O. B., & Petriv, G. V. (2022). Methods of critical thinking development when studying history. *Gumanitarni Studii: Pedagogika, Psihologia, Filosofia*, *13*(4).

Lee, T., O'Mahony, L., & Lebeck, P. (2023). Creative problem-solving everyday dinamics and practice. In T. Lee, L. O'Mahony, & P. Lebeck (Eds.), *Creativity and innovation* (pp. 117–147). Palgrave Macmillan.

Lin, C.-Y. (2017). Threshold Effects of Creative Problem-Solving Attributes on Creativity in the Math Abilities of Taiwanese Upper Elementary Students. *Education Research International*, *2017*(1). https://doi.org/10.1155/2017/4571383

López-Fernández, C., Tirado-Olivares, S., Mínguez-Pardo, R., & Cózar-Gutiérrez, R. (2023). Putting critical thinking at the center of history lessons in primary education through error- and

historical thinking-based instruction. *Thinking Skills and Creativity*, *49*. https://doi.org/10.1016/j.tsc.2023.101316

Mina, D. R., Rathod, H., & Sahayak, A. (2022). The effectiveness of Concept Attainment Model in teaching Social Science subject. In *International Journal of Research in all Subjects in Multi Languages* (Vol. 156, Issue 1). www.raijmr.com

Ni, L. B. (2023). Adapting History Education for the 21st Century: Integrating Technology and Critical Thinking Skills. *Jurnal Spekta*, *4*(2), 216. https://doi.org/10.12198/spekta.v4i2.8572

Noreen, Z., & Chaudhary, A. H. (2022). Study of effectiveness of concept attainment model of teaching on academic achievement in economics. *Journal of Educational Sciences and Research*, 44–60. https://doi.org/10.52587/jesar.08.02.04

Razi, F., Rusdi, R., & Fachruddin, M. (2022). Penerapan model concept attainment untuk meningkatkan hasil belajar pada materi segitiga dan segiempat. *JKPM (Jurnal Kajian Pendidikan Matematika)*, *7*(2), 255. https://doi.org/10.30998/jkpm.v7i2.13093

Setiyowati, Y., & Shodikin, A. (2022). Analysis of Student's Critical Thinking Ability in Solving HOTS (Higher-Order Thinking Skills) Problems with Creative Problem-Solving Model. *Jurnal Inovasi Pendidikan Dan Pembelajaran Matematika*, *8*(1).

Smith, J. (2019). The role of creative problem solving in education. *Journal of Educational Psychology*, *45*(2), 123–135.

Tolkacheva, E. A., & Ivanov, S. G. (2022). Teaching materials in the implementation of the technology «learning through teaching». *Development of Education*, *5*(4), 79–86. https://doi.org/10.31483/r-104328

Umar, F. (2024). Engaging with History in the Digital Age: A Study of Technology-Based Distance Learning in History. *Journal of Policy Research*, *10*(2), 873–878. https://doi.org/10.61506/02.00308

Utari, S. W. H., Dwijanto, D., & Dewi, N. R. (2023). Improving Mathematical Creative Thinking Ability In Creative Problem Solving Model With Scaffolding Strategy. *Mathline : Jurnal Matematika Dan Pendidikan Matematika*, *8*(1), 137–152. https://doi.org/10.31943/mathline.v8i1.363

Van Hooijdonk, M., Mainhard, T., Kroesbergen, E. H., & Van Tartwijk, J. (2023). Creative problem solving in primary school students. *Learning and Instruction*, *88*. https://doi.org/10.1016/j.learninstruc.2023.101823

Ward, T. B. (2023). Creative problem solving. In R. Reiter-Palmon & S. Hunter (Eds.), *Handbook of organizational creativity* (Second, pp. 73–91). Elsevier.