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The Effect of Scrapbook Media with a Deep Learning Approach on Historical Thinking Skills and History Learning Outcomes of Students at SMAN 14 Gowa

Abdul Naim¹, Patahuddin², Ahmadin³, Bakhtiar⁴

^{1,2,3,4}Social Sciences Education Study Program, Makassar State University

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ABSTRACT

History learning in high schools, including at SMAN 14 Gowa, often emphasizes rote memorization of facts, leading to low historical thinking skills among students. This quasi-experimental pretest-posttest control group study tests the effect of Scrapbook media integrated with a Deep Learning approach on 11th-grade students' historical thinking skills and history learning outcomes, using a sample of 36 students (18 per experimental and control group) selected via purposive sampling from a population of 36. Instruments included essay tests for historical thinking, objective tests for learning outcomes, observation, and documentation, with data analyzed via the Shapiro-Wilk normality test, Levene's homogeneity test, and the independent t-test. Results revealed significant gains in the experimental group (historical thinking: mean pretest 55.67 to posttest 83.22; learning outcomes: 58.11 to 86.89) compared to the control group using infographics (historical thinking: 56.72 to 72.28; learning outcomes: 58.50 to 74.33), with mean differences of 10.94 ($t=5.55$, $p=0.000$) for historical thinking and 12.55 ($t=7.69$, $p=0.000$) for learning outcomes. Scrapbook media with Deep Learning proved more effective for student-centered history education.

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Corresponding Author:

Abdul Naim

Social Sciences Education Study Program, Makassar State University

E-mail: 240002301023@student.unm.ac.id

1. INTRODUCTION

This research is based on the phenomenon that history learning in secondary schools tends to focus on memorizing facts, dates, and figures, thus under-representing the dimensions of in-depth understanding and shaping students' historical thinking [1]. Within the context of the curriculum and the development of contemporary history education, historical thinking is positioned as an essential objective because it guides students to work with sources, contextualize events, and interpret cause-and-effect relationships critically and from multiple perspectives [2]. Several studies have shown that when history learning is

directed at developing historical thinking skills through investigative tasks, document analysis, and narrative reconstruction, students become better able to understand the relevance of the past to present-day issues and develop a reflective historical awareness [3], [4]. In the Indonesian context, history learning is also expected to strengthen national identity, character, and national commitment, so that learning strategies that are able to activate critical reasoning, historical empathy, and sensitivity to narrative diversity are becoming increasingly urgent to implement [5], [6].

On the other hand, advances in information and communication technology are driving a transformation in learning toward a more interactive, flexible, and contextual approach through the use of various digital media and platforms, both inside and outside the classroom. The integration of technology into history learning, such as the use of interactive modules, online platforms, and virtual experiences, has been shown to increase student engagement, conceptual understanding, and the ability to connect historical events with contemporary realities [7]. However, various field reports and recent studies still indicate that in many secondary schools, including those in Gowa Regency, history learning is often considered boring due to the dominance of lecture methods, assignments that emphasize information reproduction, and the limited use of media, such as textbooks and static presentations [8], [9]. This situation results in low active participation, minimal reflective discussions, and suboptimal development of **historical thinking skills and student history learning outcomes** [10].

The main problem evident in history learning at the high school level is the dominant rote approach, which has implications for students' weak historical thinking skills, such as the ability to analyze chronology, assess sources, relate contexts, and critically interpret the meaning of past events. Several studies at the national and international levels confirm that without pedagogical interventions explicitly designed to develop historical thinking, students tend to only memorize factual information without mastering how historical knowledge works as a discipline [11], [12]. Initial observations and previous research findings indicate that in high schools, particularly in Gowa Regency, many students' historical thinking skills and history learning outcomes are still in the low to moderate category, as evidenced by their difficulties in explaining cause-and-effect relationships, examining various perspectives, and connecting historical events to contemporary socio-cultural contexts [13]. This problem shows a gap between curriculum demands that emphasize high-level thinking competencies and classroom learning practices that are still oriented towards teacher-centered and memory-based evaluation alone [14], [15].

Furthermore, the limited use of creative and meaningful learning media exacerbates **the problem of low student motivation and engagement in** history learning. The media most frequently used by teachers, such as textbooks and presentation slides, while informative, often do not provide sufficient **space for students to construct their own historical understanding through** active and reflective learning experiences. Recent research shows that media that combine visual elements, narratives, and creative project activities can increase student motivation, learning activities, and cognitive achievement by enabling them to organize information, interpret meaning, and reflect on their learning experiences [16], [17]. In this context, Scrapbooks emerge as an alternative medium that can facilitate the

integration of images, text, historical documents, and students' personal reflections into a meaningful learning product, while simultaneously supporting student-centered learning [18], [19]. Other studies also show that scrapbooks as a learning medium are effective in increasing motivation, creativity, and understanding of the material because they encourage collaborative work and active participation of students [20].

In recent years, the Deep Learning approach has been viewed as a potential strategy to address the weaknesses of superficial history instruction. Deep learning, in the context of history education, emphasizes conscious, meaningful, and engaging learning by encouraging students to connect historical concepts to life experiences, reflect on their thinking processes, and develop critical analysis skills across various sources and narratives [21]. Literature reviews confirm that deep learning strategies integrated with historical inquiry assignments, reflective discussions, and the use of relevant media can strengthen students' historical awareness and historical literacy [22], [23]. Specifically developed deep learning-based history instructional models, such as the DeepThink model, have shown significant improvements in students' critical and analytical thinking skills on historical and social issues. However, the direct integration of the Deep Learning approach with Scrapbook media in the context of history instruction in high schools, particularly in Gowa Regency, has rarely been empirically explored.

Based on these phenomena and problems, this study aims to determine the effect of using Scrapbook media with a Deep Learning approach on historical thinking skills and learning outcomes of students in the History subject of SMAN 14 Gowa. Practically, this study has an urgency to offer alternative media and learning approaches that can improve the quality of history learning in secondary schools, especially in order to develop historical thinking skills, improve learning outcomes, and foster student motivation and active involvement [14], [24]. Theoretically, this study provides novelty because it integrates Scrapbook media with a Deep Learning framework in history learning at the high school level. This combination has not been widely studied in school environments in Gowa Regency and is still limited in national empirical literature [25]. Thus, the results of this study are expected to enrich academic studies on the development of media and strategies for deep learning-based history learning, as well as serve as a practical reference for teachers in designing history learning that is more creative, meaningful, and in accordance with the characteristics of 21st-century students.

2. METHOD

This study employed a quantitative method with a quasi-experimental pretest-posttest control group design [26], [27]. The quantitative approach was chosen because it emphasized variable measurement and statistical hypothesis testing to determine the effect of Scrapbook media with a Deep Learning approach on students' historical thinking skills and history learning outcomes. The quasi-experimental design was applied because the researcher could not perform a full random assignment of subjects, so two parallel class groups were selected as the experimental and control groups. [28] explains that this design is effective for controlling confounding variables in the context of school education, while [29] emphasizes its flexibility in social research involving intact groups.

The research instruments included an essay test to measure historical thinking skills, an objective test for history learning outcomes, observation sheets for the learning process, and documentation such as activity photos and student scrapbook work. All instruments were validated and tested for reliability before use, with a test based on cognitive indicators C1-C6 consisting of 30 multiple-choice questions. Data analysis techniques included prerequisite tests such as the Shapiro-Wilk normality test and Levene's homogeneity test, followed by an independent t-test to compare means between groups. [30] supports the use of validated learning outcome test instruments to measure dependent variables in educational research, while [31] suggests instrument triangulation, such as observation, to strengthen the validity of quantitative data.

The study population was all eleventh-grade students of SMAN 14 Gowa in the 2025/2026 academic year, focusing on two parallel classes (XI A1 and XI A2) totaling 36 students. The sample was taken using a purposive sampling technique, dividing 18 students into an experimental group (taught with Scrapbook and Deep Learning media) and 18 students into a control group (taught with Infographic media). This technique was chosen because it considered class uniformity and the accessibility of the research location in Gowa Regency. [31] stated that purposive sampling is appropriate for quasi-experimental designs where samples are selected based on specific criteria, while [29] confirmed its effectiveness for accessible populations in non-randomized designs.

The research procedure was carried out in stages: (1) preparation, including instrument preparation, research permits, and validation; (2) pretests on both groups for baseline; (3) implementation of learning for 4 meetings with different treatments; (4) posttests for final measurements; (5) statistical data analysis; and (6) reporting of results. These stages ensure a logical flow from pre-treatment to impact evaluation. [31] emphasized the importance of systematic procedures to maintain experimental reliability, supported by [30], who emphasized sequencing stages in educational research to avoid bias.

3. RESULTS AND DISCUSSION

This study aims to determine the effect of using Scrapbook learning media combined with a Deep Learning approach on students' historical thinking skills and history learning outcomes. The study was conducted at SMAN 14 Gowa in the even semester of the current academic year, involving 36 students as research subjects.

The research subjects were divided into two groups, namely the experimental group and the control group, each consisting of 18 students. The experimental group received history learning treatment using Scrapbook media with a Deep Learning approach, while the control group was taught using Infographic media commonly used by teachers in history lessons. The research design used was a quasi-experimental design with a pretest-posttest control group design pattern.

Historical Thinking Ability Data Description

Table 1. Historical Thinking Ability Data of the Experimental Group

| No | Student Code | Pretest | Posttest |
|--------|--------------|---------|----------|
| 1. 1 | 2. E-01 | 3. 46 | 4. 76 |
| 5. 2 | 6. E-02 | 7. 50 | 8. 79 |
| 9. 3 | 10. E-03 | 11. 53 | 12. 81 |
| 13. 4 | 14. E-04 | 15. 55 | 16. 84 |
| 17. 5 | 18. E-05 | 19. 57 | 20. 86 |
| 21. 6 | 22. E-06 | 23. 58 | 24. 88 |
| 25. 7 | 26. E-07 | 27. 60 | 28. 89 |
| 29. 8 | 30. E-08 | 31. 48 | 32. 75 |
| 33. 9 | 34. E-09 | 35. 51 | 36. 80 |
| 37. 10 | 38. E-10 | 39. 63 | 40. 92 |
| 41. 11 | 42. E-11 | 43. 59 | 44. 83 |
| 45. 12 | 46. E-12 | 47. 56 | 48. 82 |
| 49. 13 | 50. E-13 | 51. 54 | 52. 78 |
| 53. 14 | 54. E-14 | 55. 66 | 56. 94 |
| 57. 15 | 58. E-15 | 59. 61 | 60. 87 |
| 61. 16 | 62. E-16 | 63. 49 | 64. 74 |
| 65. 17 | 66. E-17 | 67. 64 | 68. 91 |
| 69. 18 | 70. E-18 | 71. 52 | 72. 79 |

The table above shows that students' historical thinking skills varied significantly, ranging from 24 to 30 points. Students with low initial abilities tended to experience greater improvements, while those with medium and high initial abilities showed more moderate gains. This pattern reflects a natural learning effect, where the Scrapbook media, combined with the Deep Learning approach, were able to adapt their impact to each student's individual characteristics.

Table 2. Data on Historical Thinking Ability of the Control Group

| No | Student Code | Pretest | Posttest |
|--------|--------------|---------|----------|
| 73. 1 | 74. K-01 | 75. 49 | 76. 64 |
| 77. 2 | 78. K-02 | 79. 52 | 80. 68 |
| 81. 3 | 82. K-03 | 83. 55 | 84. 71 |
| 85. 4 | 86. K-04 | 87. 57 | 88. 73 |
| 89. 5 | 90. K-05 | 91. 59 | 92. 74 |
| 93. 6 | 94. K-06 | 95. 60 | 96. 76 |
| 97. 7 | 98. K-07 | 99. 62 | 100.78 |
| 101.8 | 102.K-08 | 103.50 | 104.65 |
| 105.9 | 106.K-09 | 107.54 | 108.69 |
| 109.10 | 110.K-10 | 111.64 | 112.81 |
| 113.11 | 114.K-11 | 115.56 | 116.70 |
| 117.12 | 118.K-12 | 119.58 | 120.73 |
| 121.13 | 122.K-13 | 123.48 | 124.63 |
| 125.14 | 126.K-14 | 127.65 | 128.82 |
| 129.15 | 130.K-15 | 131.61 | 132.77 |
| 133.16 | 134.K-16 | 135.51 | 136.66 |
| 137.17 | 138.K-17 | 139.63 | 140.79 |
| 141.18 | 142.K-18 | 143.57 | 144.72 |

The increase in students' historical thinking skills in the control group ranged from 14 to 17 points, with relatively limited variation. This indicates that the use of infographics resulted in fairly consistent improvement, but did not provide enough space for the

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development of in-depth and individual historical thinking as occurred in the experimental group.

Description of History Learning Outcomes Data

Students' history learning outcomes were measured using objective tests administered before and after treatment (pretest) and after treatment (posttest). The following data presents the individual scores of each student in the experimental and control groups.

Table 3. Data on History Learning Outcomes of the Experimental Group

| No | Student Code | Pretest | Posttest |
|--------|--------------|---------|----------|
| 145.1 | 146.E-01 | 147.52 | 148.82 |
| 149.2 | 150.E-02 | 151.55 | 152.85 |
| 153.3 | 154.E-03 | 155.58 | 156.88 |
| 157.4 | 158.E-04 | 159.60 | 160.90 |
| 161.5 | 162.E-05 | 163.57 | 164.87 |
| 165.6 | 166.E-06 | 167.62 | 168.91 |
| 169.7 | 170.E-07 | 171.64 | 172.92 |
| 173.8 | 174.E-08 | 175.50 | 176.80 |
| 177.9 | 178.E-09 | 179.54 | 180.84 |
| 181.10 | 182.E-10 | 183.66 | 184.94 |
| 185.11 | 186.E-11 | 187.59 | 188.86 |
| 189.12 | 190.E-12 | 191.56 | 192.83 |
| 193.13 | 194.E-13 | 195.53 | 196.81 |
| 197.14 | 198.E-14 | 199.68 | 200.95 |
| 201.15 | 202.E-15 | 203.61 | 204.89 |
| 205.16 | 206.E-16 | 207.51 | 208.79 |
| 209.17 | 210.E-17 | 211.65 | 212.93 |
| 213.18 | 214.E-18 | 215.55 | 216.85 |

The data show that all students in the experimental group experienced an increase in their history learning outcomes, ranging from 27 to 30 points. This variation in improvement reflects that the Scrapbook learning method, combined with the Deep Learning approach, is able to accommodate differences in students' initial abilities. Students with lower initial scores showed significant improvement, while those with higher initial abilities continued to experience significant strengthening of their conceptual understanding.

Table 4. Data on History Learning Outcomes of the Control Group

| No | Student Code | Pretest | Posttest |
|--------|--------------|---------|----------|
| 217.1 | 218.K-01 | 219.53 | 220.69 |
| 221.2 | 222.K-02 | 223.56 | 224.72 |
| 225.3 | 226.K-03 | 227.58 | 228.74 |
| 229.4 | 230.K-04 | 231.60 | 232.76 |
| 233.5 | 234.K-05 | 235.59 | 236.75 |
| 237.6 | 238.K-06 | 239.61 | 240.77 |
| 241.7 | 242.K-07 | 243.63 | 244.79 |
| 245.8 | 246.K-08 | 247.52 | 248.68 |
| 249.9 | 250.K-09 | 251.55 | 252.71 |
| 253.10 | 254.K-10 | 255.65 | 256.82 |
| 257.11 | 258.K-11 | 259.57 | 260.72 |
| 261.12 | 262.K-12 | 263.59 | 264.74 |
| 265.13 | 266.K-13 | 267.51 | 268.66 |
| 269.14 | 270.K-14 | 271.66 | 272.83 |
| 273.15 | 274.K-15 | 275.62 | 276.78 |
| 277.16 | 278.K-16 | 279.54 | 280.69 |
| 281.17 | 282.K-17 | 283.64 | 284.80 |
| 285.18 | 286.K-18 | 287.58 | 288.73 |

The improvement in students' history learning outcomes in the control group ranged from 15 to 17 points and tended to be consistent. This indicates that infographics are effective in improving basic understanding of historical material, but they do not fully encourage conceptual deepening and strengthen comprehensive understanding as they did in the experimental group.

Prerequisite Test

a. Normality Test

Table 5. Normality Test

| | Shapiro-Wilk | | |
|--|--------------|----|------|
| | Statistics | df | Sig. |
| Pretest of Historical Thinking Ability of the Experimental Group | .979 | 18 | .945 |
| Posttest of Historical Thinking Ability of Experimental Group | .966 | 18 | .715 |
| Pretest of Historical Thinking Ability of the Control Group | .963 | 18 | .664 |
| Posttest of Historical Thinking Ability of the Control Group | .969 | 18 | .779 |
| Pretest of History Learning Outcomes of the Experimental Group | .960 | 18 | .607 |
| Posttest of History Learning Outcomes of the Experimental Group | .944 | 18 | .337 |
| Pretest of History Learning Outcomes of the Control Group | .974 | 18 | .876 |
| Posttest of History Learning Outcomes of the Control Group | .979 | 18 | .939 |

A normality test was conducted to determine whether the historical thinking ability data and history learning outcomes of students in the experimental and control groups were normally distributed. The Shapiro–Wilk test was used in this study because the sample size

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in each group was less than 50 respondents (n = 18), making this test the most appropriate and sensitive.

The decision-making criteria in the Shapiro–Wilk test are as follows:

- If the Sig. value > 0.05, then the data is normally distributed.
- If the Sig. value ≤ 0.05, then the data is not normally distributed.

b. Homogeneity Test

Table 6. Homogeneity Test

| Homogeneity Test of Historical Thinking Ability of Experimental Group | | | | |
|---|-------------------|-----|--------|------|
| | Levene Statistics | df1 | df2 | Sig. |
| Based on Mean | .132 | 1 | 34 | .719 |
| Based on Median | .099 | 1 | 34 | .754 |
| Based on Median and with adjusted df | .099 | 1 | 33,598 | .755 |
| Based on trimmed mean | .130 | 1 | 34 | .721 |

| Homogeneity Test of Historical Thinking Ability of the Control Group | | | | |
|--|-------------------|-----|--------|------|
| | Levene Statistics | df1 | df2 | Sig. |
| Based on Mean | .170 | 1 | 34 | .683 |
| Based on Median | .192 | 1 | 34 | .664 |
| Based on Median and with adjusted df | .192 | 1 | 33,742 | .664 |
| Based on trimmed mean | .172 | 1 | 34 | .681 |

| Homogeneity Test of History Learning Outcomes of the Experimental Group | | | | |
|---|-------------------|-----|--------|------|
| | Levene Statistics | df1 | df2 | Sig. |
| Based on Mean | .151 | 1 | 34 | .700 |
| Based on Median | .134 | 1 | 34 | .716 |
| Based on Median and with adjusted df | .134 | 1 | 33,443 | .716 |
| Based on trimmed mean | .141 | 1 | 34 | .710 |

| Homogeneity Test of History Learning Outcomes of the Experimental Group | | | | |
|---|-------------------|-----|--------|------|
| | Levene Statistics | df1 | df2 | Sig. |
| Based on Mean | .132 | 1 | 34 | .719 |
| Based on Median | .099 | 1 | 34 | .754 |
| Based on Median and with adjusted df | .099 | 1 | 33,598 | .755 |
| Based on trimmed mean | .130 | 1 | 34 | .721 |

A homogeneity test was conducted to determine whether the data on historical thinking skills and history learning outcomes of students in the experimental and control groups were homogeneous. The homogeneity test in this study used the Lavene Statistic (n = 18).

The decision-making criteria in the Lavene Statistic test are as follows:

- If the Sig. value > 0.05, then the data is homogeneous.
- If the Sig. value ≤ 0.05, then the data is not homogeneous.

Hypothesis Testing

Table 7. Hypothesis Testing

| Class | Mean Difference | t-value | Sig. (p) |
|--|-----------------|---------|----------|
| Experiment vs. Control: Historical Thinking Skills | 10.94 | 5.55 | 0.000 |
| Experiment vs. Control: History Learning Outcomes | 12.55 | 7.69 | 0.000 |

Hypothesis testing in this study was conducted to determine whether there were significant differences between the experimental and control groups in students' historical thinking skills and history learning outcomes. Data analysis used an independent t-test because the data came from two different groups and met the assumptions of normality and homogeneity.

The decision-making criteria in the independent t-test are as follows:

- If the Sig. (p) value < 0.05 , then H_0 is rejected and H_1 is accepted.
- If the Sig. (p) value ≥ 0.05 , then H_0 is accepted and H_1 is rejected.

Discussion

The Influence of Scrapbook Media with a Deep Learning Approach on Historical Thinking Skills

The results of the study indicate that the use of Scrapbook media with a Deep Learning approach has a significant influence on the historical thinking skills of students at SMAN 14 Gowa. This is evidenced by the results of the independent t-test, which shows a Sig. (p) value = $0.000 < 0.05$, with a Mean Difference of 10.94 and a t-value of 5.55. These findings indicate that the average historical thinking skills of students in the experimental group are significantly higher than those of the control group taught using Infographic media.

The improvement in higher-level historical thinking skills in the experimental group is inseparable from the characteristics of the Scrapbook medium, which requires active student involvement in the learning process. Scrapbooks allow students to collect, select, organize, and reflect on historical information visually and narratively. This process aligns with the principles of the Deep Learning approach, which emphasizes conceptual understanding, interconnectedness, and reflection on the meaning of learning.

Historical thinking skills, which include understanding chronology, analyzing cause and effect, interpreting historical sources, examining the perspectives of figures, and analyzing the relevance of history to contemporary life, develop optimally when students engage in meaningful learning activities. In scrapbook-based learning, students not only passively receive information but also actively construct their own understanding through discussion, exploring sources, and creatively presenting historical events. This differs from learning using infographics, which tends to be informative and one-way.

Furthermore, the variation in historical thinking skill scores across the experimental group demonstrates that the Deep Learning approach is able to accommodate differences in student characteristics and initial abilities. Students with low initial abilities experienced significant improvement, while those with medium and high initial abilities were able to deepen their historical understanding more reflectively. This pattern reflects that Scrapbook-based learning not only improves academic scores but also strengthens higher-order thinking processes, which are the primary goal of history learning [20].

The Influence of Scrapbook Media with a Deep Learning Approach on History Learning Outcomes

The results of the study also showed that the Scrapbook media with a Deep Learning approach had a significant influence on students' history learning outcomes. This was evidenced by the results of the independent t-test, which showed a Sig. (p) value of $0.000 < 0.05$, with a Mean Difference of 12.55 and a t-value of 7.69. These values indicate that the average history learning outcomes of students in the experimental group were higher than those in the control group.

The greater improvement in learning outcomes in the experimental group indicates that the use of Scrapbooks not only impacts historical thinking skills but also cognitive mastery of historical material. Scrapbook media presents learning materials in integrated visual, text, and narrative forms, making it easier for students to understand abstract and complex historical concepts. The process of compiling Scrapbooks encourages students to understand the material in depth before reorganizing it into visual and written forms, thus strengthening conceptual understanding.

The Deep Learning approach applied in this learning also encourages students to relate historical material to real-life experiences and everyday contexts. This makes learning more meaningful and less focused on memorizing facts. This aligns with the theory of meaningful learning, which states that deeper understanding leads to stronger knowledge retention and improves learning outcomes [32]. In contrast, while learning using infographics in the control group did improve student learning outcomes, the improvement was relatively modest and tended to be uniform. Infographics emphasize concise and visual presentation of information, making them effective for initial understanding but less likely to encourage in-depth exploration, reflection, and knowledge construction.

Overall, the research results show that Scrapbook media with a Deep Learning approach is more effective than Infographic media in history learning. This is evident from the higher Mean Difference value in both variables, both historical thinking skills and history learning outcomes. This difference in effectiveness indicates that history learning requires media and approaches that not only convey information but also facilitate critical, analytical, and reflective thinking processes. Scrapbooks as a learning medium provide space for students to express their historical understanding creatively, while strengthening higher-order thinking skills that are a requirement of 21st-century learning [33]. These findings also reinforce the view that the Deep Learning approach is highly relevant to be applied in history learning, because it is able to shift the learning paradigm from teacher-centered to student-centered. Students are no longer recipients of information, but become active subjects who construct their own knowledge through meaningful processes.

4. CONCLUSION

Integrating scrapbook media with a Deep Learning approach can improve Grade 11 students' historical thinking skills and history learning outcomes more effectively than infographic-based instruction at SMAN 14 Gowa. This pattern suggests that learning tasks requiring students to select information, organize evidence, and produce reflective historical

narratives support the development of disciplinary historical reasoning emphasized in history education literature.

In practice, the findings imply that history teachers can use Deep Learning-based scrapbook projects to strengthen student-centered learning by promoting evidence use, contextual interpretation, and reflective explanation rather than focusing mainly on information transmission. At the school level, this approach can be implemented as an alternative instructional strategy to support higher-order competencies in contemporary curricula through structured project stages, clear assessment rubrics, and guided reflection throughout the learning process.

Despite these positive results, the study has important boundaries: it involved a small sample from a single school, so generalization to other contexts should be made cautiously, and the relatively short intervention period does not yet confirm whether the improvements are sustained over time. Therefore, future research should replicate the intervention with larger and more diverse samples, extend the duration to examine retention and long-term development, and test moderating factors such as motivation, prior achievement, and the quality of teacher facilitation; further comparative studies with other inquiry-oriented media are also needed to identify which design features most strongly drive growth in historical thinking and meaningful learning for broader educational stakeholders.

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