Jurnal Ilmiah Sekolah Dasar
Volume 8, Number 2, 2024 pp. 379-390
P-ISSN: 2579-3276 E-ISSN: 2549-6174
Open Access: https://doi.org/10.23887/jisd.v8i2.58854

The Impact of Storyboard That Media on Students' Critical Thinking Skills in Social Sciences Subjects in Elementary Schools

Susilawati[1*], Neng Ranti[2], Muhammad Hanif[3], Ita Rustiati Ridwan[4], Nenden Sundari[5]

[1,2,3,4] Elementary School Teacher Education, Universitas Pendidikan Indonesia, Serang, Indonesia
[5] Early Childhood Teacher Education, Universitas Pendidikan Indonesia, Serang, Indonesia

ARTICLE INFO

Article history:
Received February 20, 2023
Accepted November 05, 2023
Available online May 25, 2024

Kata Kunci:
Media Storyboard That, Keterampilan Berpikir Kritis, IPS.

Keywords:
Media Storyboard That, Critical Thinking Skills, Social Studies.

ABSTRAK

Di era perkembangan teknologi digital saat ini, platform desain yang dapat diakses secara bebas dapat dimanfaatkan dalam dunia pendidikan sebagai alternatif media pembelajaran berbasis teknologi. Peneliti menemukan bahwa di sekolah dasar pembelajaran IPS masih menggunakan metode konvensional seperti ceramah dan sangat jarang menggunakan media pembelajaran sehingga siswa merasa bosan saat belajar. Oleh karena itu penelitian ini bertujuan untuk menganalisis pengaruh penggunaan media Storyboard That terhadap kemampuan berpikir kritis siswa pada materi Proklamasi Kemerdekaan. Penelitian ini menggunakan website Storyboard That beserta 5 soal esai dengan tingkat kognitif C4-C6 (menganalisis, mengevaluasi, mencipta). Penelitian ini merupakan penelitian Quasi Eksperimental dengan desain Non-equivalent Control Group Design. Jumlah sampelnya terdiri dari kelas VI A yang berjumlah 22 siswa sebagai kelas kontrol dan kelas VI B yang berjumlah 22 siswa sebagai kelas eksperimen. Teknik analisis data terdiri dari uji prasyarat uji normalitas dan homogenitas serta uji Independent Sample T-t_{est}. Hasil data Independent Sample T-$_{test}$ pada data pretest sebesar 0,539 > 0,05 dan post-test. (2-tailed) sebesar 0,000<0,05. Jadi dapat disimpulkan bahwa terdapat perbedaan yang signifikan kemampuan berpikir kritis siswa antara kelompok eksperimen yang menggunakan media Storyboard That dengan kelas kontrol yang hanya menggunakan metode ceramah konvensional. Terbukti Storyboard mampu mendorong siswa berpikir kritis melalui berbagai rangsangan visualisasi. Implementasi ini memungkinkan guru untuk menggunakannya sebagai media pembelajaran IPS yang tepat untuk meningkatkan kemampuan berpikir kritis siswa sekolah dasar.

ABSTRACT

In the current era of digital technology development, free-access design platforms can be used in education as an alternative technology-based learning medium. Researchers found that in elementary schools, social studies learning still used conventional methods such as lectures and very rarely used instructional media, so students were bored while studying. Therefore, this study aimed to analyze the effect of using Storyboard That media on students' critical thinking skills on the material of the Proclamation of Independence. This study used the Storyboard That website along with 5 essay questions with a cognitive level of C4-C6 (analyze, evaluate, create). This research is a Quasi-Experimental with Non-equivalent Control Group Design. The number of samples consisted of class VI A totaling 22 students as the control class and class VI B totaling 22 students as the experimental class. Data analysis techniques consisted of prerequisite tests of normality and homogeneity tests and Independent Sample T-$_{tests}$. The Independent Sample T-$_{test}$ data results on the pretest data were 0.539 > 0.05 and the post-test. (2-tailed) of 0.000 <0.05. So, it can be concluded that there were significant differences in students' critical thinking skills between the experimental group that used Storyboard That media and the control class that only used conventional lecturing methods. It is proven that Storyboard That encourages students to think critically through various visualization stimuli. This implementation allows teachers to use it as appropriate social studies learning media to improve elementary school students' critical thinking skills.

Corresponding author
*E-mail addresses: susilawatimadani@gmail.com (Susilawati)

1. INTRODUCTION

Quality education is an effort to face education in the 4.0 era. Education is expected to be relevant to the progress of knowledge that is growing. The quality of education should be improved by educators through innovation, for example using innovative methods or media to foster students' abilities and skills. The recent thinking ability and skills taught in schools will also follow the recent complex problem that always rapidly changing in a disruptive era. So schools need to prepare learning with mental processes that involve higher-order thinking skills (HOTS) which include the ability to process analyzing, evaluating, and creating (Eliana, 2020; Sarah et al., 2021). Social studies learning is one of the important subjects to be studied in schools, especially at the elementary school level. Social sciences are taught in elementary schools through analysis of events, facts, ideas, and generalizations of pre-existing society (Csima et al., 2018; Satriyo Pamungkas, 2022; Siregar et al., 2019). Those characteristics make the subject sort of challenging with many sources of content. The social studies subject contains historical material which is a branch of knowledge that examines events and developments and the role of society in the past. The historical content in social studies learning needs to be studied in elementary schools because it is important for students to know about historical stories and take lessons from previous experiences. History learning has an important role in schools in forming patriotism, intellectual attitudes and respecting the nation's struggle and a sense of nationalism (Agus et al., 2022; Jumardi, 2017; Setiawan et al., 2020).

In the current era of 21st-century learning, students are required to have 4C skills (Communication, Collaboration, Critical thinking, and Creativity as well as Problem-solving). The skills are not only for sharpening the knowledge to be literate in technology but also for countering disruptive information in a digital era (Astuti et al., 2019; Marsa & Desnita, 2020; Virijai et al., 2022). Technology has a very important role in terms of developing innovations, constructs, or ideas in learning. The 4C skills are very influential in increasing learning abilities in the 4.0 era which is more innovative in the development of learning technology designs. Critical thinking, especially, becomes a target skill that needs to be fostered in the context of information loads. Critical thinking and problem-solving are perceived as connective skills. Unfortunately, the basis of critical thinking could be linear and affect problem-solving (Apriliana et al., 2019; Pujiastuti & Haryadi, 2023). Critical thinking skill is the ability of students to analyze, argue, make conclusions using reasoning, assess or evaluate, and make decisions or solve problems. The process of thinking becomes critical since aiming to make rational and directed decisions in doing something (Ariani, 2020; Astiwi et al., 2020). In conclusion, critical thinking skills are necessary since they help in problem-solving and prevent individuals from making rash choices.

Looking at the characteristics of the subject, critical thinking is closely related to social science. However, social sciences are perceived as difficult to learn and boring because of the overload of content and storytelling delivery. Students have difficulty studying social studies, especially historical material because they are taught content and events but are not taught to criticize sources and use them in the future (Haseski et al., 2018; Kilis & Yildirim, 2019). As is currently the case, learning history is still out of what is expected. Starting from elementary to high school levels, history education tends to only utilize historical facts as the main material. The learning process seems tedious, does not attract students' attention nor does it give students the opportunity to learn about the meaning of a historical event. Based on observation conducted, the problems experienced by class VI in the State Elementary Schools 3 of Jungjang, especially in social studies subjects learning. Teachers still used conventional methods in teaching, even though it was unable to involve students in the learning process so that students get bored. Classroom learning still used memorizing and remembering techniques and provided a book as the only material resource. Those two practical gaps make students not interested and lack critical thinking since there is no interactive learning media to support learning in class. This is in line with what was revealed in previous research that the lecture method means making students passive and not stimulating thinking. So the accumulation of those processes potentially limits the opportunity to actively develop high-order thinking skills in learning activities (Kakosimos, 2015; Kautsar et al., 2016).

In the urgency to overcome the problem of lack of critical thinking, it is necessary to have an appropriate learning model and help by supportive media to deliver material. The combination of interactive models and media will encourage students to think critically since the material is delivered in realistic visualization (Aprilliyah, 2014; Arfiani et al., 2020). The required learning media also should divert students' attention to focus so cognitive process toward material and follow advanced rapid technology. The technology-based media is packaged in a fun way to make the teaching process more enjoyable (Hanif, 2020; Rahmawati & Ramadan, 2021). The proposed media with practical characteristics as mentioned is Storyboard That website. The Storyboard That website is one of the interactive visual learning media that can make the learning process more interactive and fun since facilitates the role of students and teachers in one platform.

Storyboard That website is expected to have the potential to solve this problem because it has many graphical and graphical features that make comic design easier. The website is an innovative tool designed to be easy to use with a simple drag-and-drop interface and hundreds of curated pieces of clipart for clear expression. The website is a digital platform where teachers and students can interact with the different responses using graphics and other features of Scenes, Characters, Textable Shapes, Infographics, Wireframes, Science, and Worksheets. It could be used to express what they think or feel about a situation, and these thoughts and feelings can be expressed in comic form (Chen & Chuang, 2021; Nisak et al., 2021). The material design in Storyboard That website is packaged into a comic because it already contains various visual graphic design features and is presented to measure students' understanding of historical material which is identical to the amount of reading text. Comics is one of the visual communication media that has the power to convey information easily and understandably (Nisak et al., 2021; Phoon et al., 2020).

The previous relevant research confirmed the suitability of using Storyboard That to foster critical thinking of students. Previous study stated storyboardthat.com as a teaching tool to increase students' imaginative capacity when studying history in secondary school (Rustandi & Rismayanti, 2021). It is also supported by study state when StoryboardsThat can make students creative by involving them directly in making comics based on what they think (Kunto et al., 2021). Students' creativity is boosted by producing comics that are different from their friends in terms of topics assigned. The creativity in the investigation was assumed to be relevant so that critical thinking could be proposed. Another research revealed the development of Storyboard That in building learning media using mathematics comics storyboarding application for secondary school (Ghofur & Youhanita, 2020). The R&D approach found that the media is applicable. Another investigation into mathematics learning media was also executed that investigation revealed the impact on students' skills to remember, interpret, apply, and analyze concepts of mathematics (Arfiani et al., 2020). The website promises interactivity as investigated the use in writing. So, another relevant variables such as critical thinking and the field of social sciences could be potentially investigated (Kembara et al., 2019). Several previous researchers have studied StoryboardsThat on design and R&D development instead of proving the significant influence or successful implementation. Meanwhile, this study will focus on empirical proof of implementation instead of its development since most of the development results are already practical. The previous research has been done, limited numbers investigate the relation toward critical thinking skills. The use of this media in elementary school is also pointing since the implementation at the level was lacking in number. Those explaine the novelty of this research on focusing the empirical investigation and focus on finding influence to critical thinking in elementary school level.

Referring to that explanation, the research aimed to analyze the effect of StoryboardThat media in social studies learning on theme 2 sub-theme 1 of the proclamation of independence material on the critical thinking skills of grade VI students in elementary schools. This investigation is expected to support social studies learning with historical material to be practical and help teachers to use more innovative learning media as an alternative to anticipating students' boredom. Through more fun learning using adaptive media, the teacher will judge problems by providing innovation in learning activities in the classroom to develop critical thinking skills.

2. METHOD

The research used is a Quantitative approach with the Quasi-Experimental method. The experimental research activity method is a research method used to search for the effect of treatment on others under controlled conditions (Sugiyono, 2019). The design used is a "Nonequivalent Control Group Design". Design pattern as mentioned in Table 1. The treatment of learning using StoryboardThat is used to intervene in the critical thinking skill of students which will be measured and controlled.

The subject of this research is State Elementary School 3 of Jungjang. The population is all students in class VI elementary school totaling 44 students. Sampling was based on the cluster random sampling technique. The sample in this research activity is class VI A which is the control class and class VI B which is the experimental class. Nonequivalent control group design result is show in Table 1.

Table 1. Nonequivalent Control Group Design.

Group	Design
Experimental	0_1 x 0_2
Control	0_3 x 0_4

In the following research activities, the independent variable was the use of Storyboard That media in social science learning, and the dependent variable was the students' critical thinking skills. Researchers used instruments for data collection including written test instruments with 5 description questions in the form of pretest-posttest on cognitive aspects C4-C6 (to analyze, to evaluate, to create) with material from Theme 2 Sub-theme 1 about the meaning of the proclamation of Indonesian independence. The research procedure used includes the preparation stage, namely making research instruments such as lesson plans, pretest-posttest, and media grid questions and measuring the validity of the data that the researcher has collected and for the calculation procedure using SPSS 25. The instrument grid follows the competence of "understanding the meaning of the proclamation of independence, defense efforts for independence, and effort to develop prosperous national life". The detail can be seen in Table 2 and the Person Correlation test for the validity test in Table 3.

Table 2. Critical Thinking Skill Test Grid On Social Science Material.

Basic Competence	Competence Indicator	Indicator of Question	Cognitive Level
To understand the meaning of the Proclamation of Independence, defense efforts for independence, and effort to develop prosperous national life	To serve comic sketches about important events approaching the Proclamation of Independence of Indonesia & To provide an explanation of the goals of the proclamation of Independence as well as effort has done to defend independence and to educate national life.	Presented a reading text, students were asked to use production skills to create a concept map by using category aspects of what, where, when, who why, and how.	C6 (to create)
		Presented a question, students were asked to elaborate outline the form of implementation of the meaning of the Proclamation of Independence in everyday life, including at home, and in the community then students concluded the meaning of the Proclamation of Independence	C4 (to analyze)
		Presented paragraphs and pictures about organizing and contributing categories on profession, students are asked to provide views on the influence of independence toward farmers and traders.	C4 (to analyze)
		Presented paragraphs and pictures about organizing and contributing categories on profession, students are asked to provide views on the influence of independence toward students.	C4 (to analyze)
		Reading text is presented about checking category, students are asked to assess by providing conclusions regarding the text of efforts to improve people's welfare at the beginning of the independence period.	C5 (to evaluate)

Table 3. Test The Validity of The Instrument Questions.

Question Items	Item Correlation	The Significance of Point Problems	Category
1	0.505	0.017	Valid
2	0849	0.000	Valid
3	0.539	0.010	Valid
4	0.688	0.000	Valid
5	0.866	0.000	Valid

Based on Table 3 in the "Correlations" output above, it gained the value of Sig. (2-tailed) for the relationship and correlation of item 1 with a total score of 0.017 <0.05 and a positive Person Correlation of 0.505, it can be concluded that all item number is valid and can be used as a data collection tool in a study. Furthermore, the reliability test calculation is show in Table 4.

Table 4. Reliability Test.

Cronbach's Alpha	N of Items
0.719	5

Based on Table 4, the results of the statistical reliability test value were obtained with Cronbach Alpha of 0.719 from 5 variable items. Because the Cronbach Alpha value is 0.719 > 0.444 (r_{table}), it can be concluded that the item instrument is declared reliable as a research data collection tool. The next stage of implementation included the pre-test in the experimental and the control class. After that, treatment was carried out using Storyboard That media in the experimental class and using the lecture method in the control class. Then a post-test was held for all students on similar problems and questions.

The final stage is the stage of analyzing the data. The prerequisite analysis of normality and homogeneity. The normality analysis is calculated using the Shapiro-Wilk analysis test because the total sample does not exceed 100. Then the homogeneity test is carried out by using the Levene Test by SPSS version 25. Then to test the hypothesis, the independent sample t-test is used to measure the difference between experimental and control data. There are also the following criteria for testing the hypothesis by carrying out a comparison between t-count and t_{table} and the P value for testing this hypothesis. If the significance level is <0.05, then H_o is rejected and H_a is accepted; if the significance level is >0.05, then H_o is accepted and H_a is rejected. The last stage is testing the N-Gain score to understand the effectiveness of using methods or treatments in research activities. Categories of Interpretation of the Effectiveness of the N-Gain Score are show in Table 5.

Table 5. Table of Categories of Interpretation of the Effectiveness of the N-Gain Score.

Percentage (%)	Interpretation
< 40	Ineffective
40-55	Less effective
56-75	Effective enough
>76	Effective

3. RESULT AND DISCUSSION

Result

The Implementation of Storyboard That Comics of Social Science Subject

Researchers took initial data in the form of a pre-test to determine the initial conditions of the research sample, both in the experimental class and the control class. This is done to determine the initial conditions, and whether the research sample has the same ability or not. After obtaining the pre-test results which stated that the experimental class and the control class had the same abilities. The experimental class was introduced to using the Storyboard That website which was packaged in comic form to understand the material before answering the essay written test questions. While the control class studied using conventional methods or lectures and worked on essay-written test questions. The researcher did a post-test after that treatment.

The StoryboardThat website design that was applied to the experimental class when the treatment took place before carrying out the following post-test. Then the students immediately started reading the comics found on the storyboard website and comics in printed form provided by the researchers. Display of the design guide for the use of comics is shown in Figure 1.

Figure 1. Display of The Design Guide for The Use of Comics.

Here students are tested to answer statements that have been made by researchers which are written on the blackboard in the form of crosswords about the meaning of the proclamation of independence that students have read in comic form. Alternately students answer by going forward and

writing it on the blackboard so they can measure the child's skills on the material they have read in comic form. Documentation of students working on a crossword quiz is show in Figure 2.

Figure 2. Students Working on a Crossword Quiz.

Students' Critical Thinking Skill Using Storyboard That Comics of the Proclamation of Independence

For the results of the student pre-test and post-test data on critical thinking, the data is presented in Table 6.

Table 6. The Results of The Pre-Test and Post-Test of The Social Science Experimental Class.

Category	Pre-test	Post-test
N	22	22
Min	24	65
Max	46	97
Means	36.14	82.45
Median	37	81
Mode	37	85

Based on Table 6, the data obtained after the students worked on the pre-test obtained a mean value was 36.14, a median value was 37, and a mode value was 37. The highest value was 46 and the lowest value was 22. Then the data obtained after students worked on the post-test obtained a mean value was 82.45, a median value was 81, and a mode value was 85. the highest value was 97 and the lowest value was 65. The results of the pretest and posttest of the social science control class is show in Table 7.

Table 7. The Results of The Pretest and Posttest of The Social Science Control Class.

Category	Pre-test	Post-test
N	22	22
Min	22	30
Max	46	70
Means	34.86	49.50
Median	36	50
Mode	37	55

Based on Table 7, the data obtained after the students worked on the pre-test obtained a mean value was 34.86, a median value was 36, and a mode value was 37. The highest value was 46 and the lowest value was 22. Then the data obtained after students worked on the post-test obtained a mean value was 49.50, a median value was 50, and a mode value was 55. The highest value was 70 and the lowest value was 30. Data on students' critical thinking skills were obtained from the pre-test and post-test can be simulated in the chart as show in Figure 3.

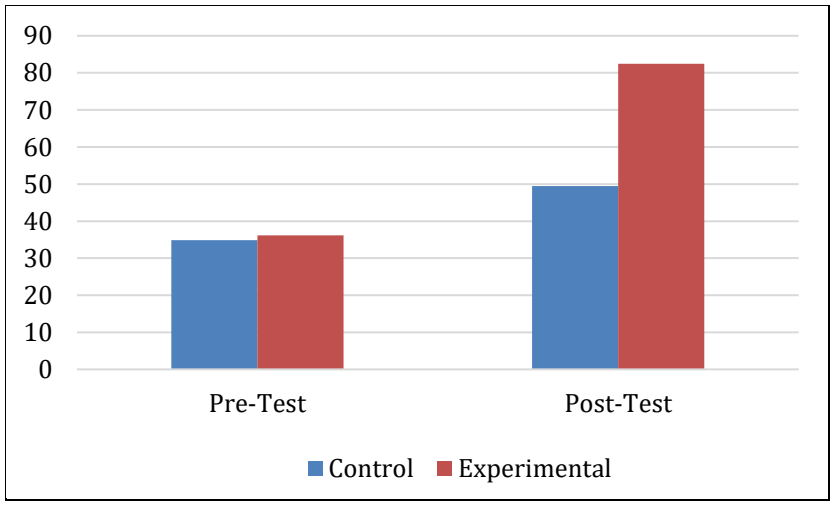

Figure 3. Pre-Test-Post-Test Average Diagram.

After data collection, the analysis of data parameters before testing the hypothesis is executed by normality and homogeneity tests. The normality testing technique used is the Shapiro-Wilk technique and the homogeneity test used is the Levene Statistical testing technique. Both data analysis requirements tests were carried out using the SPSS version 25 program and below are the test results. The result of normality test is show in Table 8.

Table 8. Normality Test Results With Shapiro-Wilk.

Data	Significance		Information
	Experiment Class	Control Class	
Pre-test	0.321 > 0.05	0.342 > 0.05	Data is normally distributed
Post-test	0.400 > 0.05	0.584 > 0.05	Data is normally distributed

Table 8 shows that the normality test of the two couple of data is normally distributed (sig > α). The pre-test and post-test data for the experimental and control groups were normally distributed. It means that the data is from a comparable source. The result of homogeneity test is show in Table 9.

Table 9. Homogeneity Test Results with Levene Statistics.

Data	Levene Statistics	df 1	df 2	Sig.
Pre-test	0.318	1	42	0.576
Post-test	0.051	1	42	0.823

Based on Table 9, it is shown that the pre-test probability (sig) was 0.318 > 0.05, while the post-test homogeneity testing for the control and experimental classes was 0.051 > 0.05 so it can be stated that the variance of the pre-test and post-test data is homogeneous or the same. It means that the data was comparable by several certain parameters. After the data fulfills the parameter normal and homogeneous, a decision can proceed to test the hypothesis using a t-test for each couple of pre-test and post-test data. Independent t-test pretest-posttest results are show in Table 10.

Table 10. Independent T-Test Pretest-Posttest Results.

Data	Class	Means	Sig.	Conclusion
Pretest	Experiment	36.13	0.539	H_a rejected
	Control	34.86		
Posttest	Experiment	82.45	0.000	H_a accepted
	Control	49.50		

Base on Table 10, the results of the pre-test data obtained 0.539 (Sig. (2-tailed) > 0.05), meaning that there is no difference in the average pre-test results between the experimental class and the control

class. This proves that the pre-test results of the experimental class and the control class have the same critical thinking skills of the two classes are at the same level. The post-test scores for the experimental and control classes obtained a significance value of 0.000 <0.05. It means that it is consistent with the basis for making decisions in the independent sample t-test which concluded that H_0 is rejected and H_a is accepted. The decision obtained was to accept Ha, which means that there was a significant difference between the critical thinking skills of students in the experimental class that implemented the Storyboard That comic media and the control class that did not apply the Storyboard That media in the subject matter of the meaning of the proclamation of independence.

Independent-sample t-test testing concludes the influence on average scores to know the effect of teaching storyboard media on students' critical thinking skills. In order to measure the increase in critical thinking skills in students, the N-gain (Normalized gain) measures increases in critical thinking between before and after learning in the experimental class. Referring to the results of analyzing the N-Gain score test, it indicated that the average N-Gain score for the experimental class shows that the average N-Gain score was 71.90 or 71.9% included in the quite effective category with a minimum N-Gain score of 44% and a maximum of 96%. The average N-Gain score for the control class (without storyboard media that is packaged in comic form) is 21.93 or 21.93% which is included in the ineffective category. With an N-Gain score of at least 14% and a maximum of 55%. So it can be concluded that the N-Gain in the experimental class is higher than the N-Gain in the control class. It can be stated that the use of StoryboardThat comic media presented is effective in improving students' critical thinking skills in social science subjects in elementary schools.

Discussion

The research shows that students' critical thinking skills can be influenced by presenting material presented in a comic book format, such as storyboards. It was clear that students were more involved and ready to listen to content and voice their ideas when the researcher revealed that this class used digital-based media and was conducted in small groups. Digital comic media is also very helpful because it can improve students' understanding of lesson content, students' desire to explore, and their critical thinking skills (Blumberg & Fisch, 2013; Dopo & Ismaniati, 2016). A learning system that makes it possible to memorize course material individually and collaboratively. Comparison of test results taken before and after the intervention can provide this information in the material of meaning of the proclamation of independence of Indonesia. These treatments are constructed using indicators of critical thinking by several indicators including the skills to provide clear explanations, the growth of fundamental skills, the formation of conclusions, the provision of further explanations, and the planning of plans and tactics (Boonprasom & Sintanakul, 2020; Dam et al., 2019). The following is an in-depth summary of the research findings and their discussion, with an emphasis on the problem statement, namely whether there is an effect of using storyboard media on critical thinking skills in social sciences subjects in elementary schools.

Learning Atmosphere Using Storyboard That Media Comic

This research findings support that learning with an amount of material such as history could be delivered by visual media (comic or video). Practicing students' critical thinking skills can be done by reading comics before answering questions. Reading comics can foster a critical attitude in students, so students are indirectly involved in thinking about solving problems like the stories in comics (Fahyuni & Fauji, 2017; Fitriyani et al., 2021). The learning atmosphere becomes more involving and interactive by distributing comics on the StoryboardThat website with material on the history of the proclamation of Indonesian independence on social sciences subjects. Comics with digital-based learning media are possible to increase motivation and help students can easily understand the material so that the learning process becomes more interesting and enjoyable (Oktaviana & Rusnilawati, 2022; Rina et al., 2020).

Research on the use of comic learning media has been carried out by previous studies which concluded that comic media can stimulate students, attract attention, and make it easier for elementary school students to learn (Nisak et al., 2021; Yulian, 2018). The learning atmosphere on building historical situations in social science becomes a concern of teachers since learning strategies could lead to increased teacher motivation to be more innovative in utilizing learning media. This research proves that learning media in the form of StoryboardThat comics has succeeded in improving the quality of learning through interactivity and playing imagination in comic stories. The storyboard website that is packaged into a comic is helpful for students' understanding of historical material which is identical to the amount of reading text (Febriansyah et al., 2020; Qoiruni & Wicaksono, 2022).

Storyboard That Media Feature Increased Critical Thinking Skills in Social Sciences Subjects

The findings revealed differences in critical thinking skills between the control and experimental classes and were supported by the level of improvement by gained analysis. It is assumed the effectiveness of using Storyboard that media in the experimental class since comic media understand abstract concepts with the storyline contained in comics capable of conveying moral messages in learning (Kunto et al., 2021; Yulian, 2018). The comic facilitates the learning process to discuss material and become more active and critical participants through response to the graphic content. This agrees with the view of previous researchers who argued that visual media has the potential to convey messages and improve student self-criticism (Elmahdi et al., 2018; Zeptyani & Wiarta, 2020). Among the critical thinking skills indicator test consisting of C4-C6, the questions with C4 criteria at number 2, 3, and 4 is dominantly improved. Students tend to improve more in analyzing indicators. When students are asked to analyze the meaning of the proclamation of independence in everyday life they start analyzing a problem or object into its elements and determining how interrelated these elements (Nofrion & Wijayanto, 2018; Sukatiman et al., 2020). Referring to question number 2 result, students can analyze by classifying according to type and application in interpreting the proclamation of independence properly.

Digital comics made via the StoryboardThat website are simple electronic media that teachers could employ (Alit et al., 2021; Oktaviana & Rusnilawati, 2022). Simplicity becomes the strength of this website instead of another platform. The effectiveness of StoryboardThat comic media is proven to influence students' critical thinking because it has certain paths to make information clear, easy to use, instantaneous, and sequential. Characters feature on the Storyboard That website has many choices that can be adapted to the atmosphere of the storyline to prepare for the plot setting (Kunto et al., 2021; Seo et al., 2021). With this, teacher creativity is needed in utilizing Storyboard That comic media to be more innovative in designing activities as well as adding animation and sound elements to their presentation. The findings are in line with previous research, the results of his research proved to increase student critical thinking when using Storyboard That media. Storyboard That website not only can be printed but also digital so that it is more practical (Kunto et al., 2021).

This research is limited to only one variable of skill to be measured, critical thinking skill, with 3 types of cognitive categories. The social subject with a character of material with the amount of information probably becomes the limit of the suitability of the storyboard to the successful implementation. Another limitation could be from the respondents that only for elementary school level. From the results of the relevant research above, it can be concluded that the StoryboardThat website has successfully discovered critical thinking besides creativity. The potential further research could also address other 21st-century skills and high-order thinking skills such as problem-solving or collaboration. The enhancement on other topics, levels, or scope could be suggested. The point of view of the aspect of critical thinking from other elements and ways of assessment also becomes an alternative to deepen the findings of this research. For practical suggestions, teachers could be suggested to employ and develop the use of StoryboardThat on relevant topics of teaching. The adjustment of the students' needs and variables should be targeted need to be a concern. The teacher also suggested using the media to work on quizzes and another technology-based website to make students more enthusiastic in the learning process.

4. CONCLUSION

Based on the results of the data analysis, it can be concluded that StoryboardThat websites can be effective learning media to improve students' critical thinking skills in the historical material in elementary school. The storyboard website is proven can help students understand social science subjects that need more visualization. By using Storyboard That to make comics, learning becomes more innovative, and fun and can increase student activity in the learning process. The problem of lack of critical thinking and providing interesting material of social science, especially historical material, is successfully solved by its implementation. It is proven that Storyboard That encourages students to think critically through various visualization stimuli. This implementation allows teachers to use it as appropriate social sciences learning media to improve elementary school students' critical thinking skills.

5. REFERENCES

Agus, O., Shavab, K., Supriatna, N., Yulifar, L., & Mulyana, A. (2022). Fostering Creative Thinking Through Gamification in History Learning. *Proceedings of the Annual Conference on Research, Educational Implementation, Social Studies and History (AREISSH 2021)*, 144–150. https://doi.org/10.2991/978-2-494069-17-6_16.

Alit, K., Adnyani, D., Wibawa, I. M. C., & Margunayasa, I. G. (2021). Alternative Energy Sources on Digital Comic Media. *International Journal of Elementary Education*, *5*(1), 61–70. https://doi.org/10.23887/ijee.v5i1.34333.

Apriliana, L. P., Handayani, I., & Awalludin, S. A. (2019). The Effect of a Problem Centered Learning on Student's Mathematical Critical Thinking. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, *4*(2), 124–133. https://doi.org/10.23917/jramathedu.v4i2.8386.

Aprilliyah. (2014). Pengembangan Media Pembelajaran Modul Interaktif Pada Materi Jurnal Khusus Kelas X Akuntansi di SMK Negeri Mojoagung. *Jurnal Khusus*, *2*(2), 1–7. https://jurnalmahasiswa.unesa.ac.id/index.php/35/article/view/9412.

Arfiani, D. D., Ulya, H., & Wanabuliandari, S. (2020). The Effect of REACT Model Assisted Fable-Math Book Media on Mathematical Problem Solving Of Elementary School Students. *Mathematics Education Journal*, *4*(2), 116–125. https://doi.org/10.22219/mej.v4i2.12523.

Ariani, T. (2020). Analysis of Students' Critical Thinking Skills in Physics Problems. *Kasuari: Physics Education Journal (KPEJ)*, *3*(1), 1–17. https://doi.org/10.37891/kpej.v3i1.119.

Astiwi, K. P. T., Antara, P. A., Agustiana, & T., I. G. A. (2020). Pengembangan Instrumen Penilaian Kemampuan Berpikir Kritis Siswa SD pada Mata Pelajaran PPKn. *Jurnal Ilmiah Pendidikan Profesi Guru*, *3*(3), Ilmiah Pendidikan Profesi Guru, 3(3), 459. https://ejournal.undiksha.ac.id/index.php/JIPPG/article/view/29457/0.

Astuti, A. P., Aziz, A., Sumarti, S. S., & Bharati, D. A. L. (2019). Preparing 21st Century Teachers: Implementation of 4C Character's Pre-Service Teacher through Teaching Practice. *Journal of Physics: Conference Series*, *1233*(1). https://doi.org/10.1088/1742-6596/1233/1/012109.

Blumberg, F. C., & Fisch, S. M. (2013). Introduction: Digital games as a context for cognitive development, learning, and developmental research. *New Directions for Child and Adolescent Development, 139*, 1–9. https://doi.org/10.1002/cad.20026.

Boonprasom, C., & Sintanakul, K. (2020). The Development of Collaborative Learning Management System Using Problem-Based on Cloud Learning to Enhance Critical Thinking. *2020 7th International Conference on Technical Education (ICTechEd7)*, 13–18. https://doi.org/10.1109/ICTechEd749582.2020.9101249.

Chen, H., & Chuang, Y. (2021). The effects of digital storytelling games on high school students' critical thinking skills. *Journal of Computer Assisted Learning*, *37*(1), 265–274. https://doi.org/10.1111/jcal.12487.

Csima, M., Finánczy, J., Nyitrai, Á., & Podráczky, J. (2018). Research on the health literacy of professionals working in early childhood education. *Kontakt*, *20*(4), e356–e362. https://doi.org/10.1016/j.kontakt.2018.10.002.

Dam, M., Ottenhof, K., Van Boxtel, C., & Janssen, F. (2019). Understanding cellular respiration through simulation using lego as a concrete dynamic model. *Education Sciences*, *9*(2), 72. https://doi.org/10.3390/educsci9020072.

Dopo, F. B., & Ismaniati, C. (2016). Persepsi guru tentang digital natives, sumber belajar digital dan motivasi memanfaatkan sumber belajar digital. *Jurnal Inovasi Teknologi Pendidikan*, *3*(1), 13–24. https://doi.org/10.21831/tp.v3i1.8 280.

Eliana, N. (2020). Analisis Kemampuan Berpikir Kritis Siswa dalam Menyelesaikan Soal-Soal Ipa Berorientasi Hots. *Jurnal Pendidikan Dasar*, *11*(2), 170–180. https://doi.org/10.21009/JPD.011.18.

Elmahdi, I., Al-Hattami, A., & Fawzi, H. (2018). Using Technology for Formative Assessment to Improve Students' Learning. *Turkish Online Journal of Educational Technology-TOJET*, *17*(2), 182–188. https://eric.ed.gov/?id=EJ1176157.

Fahyuni, E. F., & Fauji, I. (2017). Pengembangan Komik Akidah Akhlak Untuk Meningkatkan Minat Baca dan Prestasi Belajar Siswa di Sekolah Dasar. *Halaqa: Islamic Education Journal*, *1*(1), 17–26. https://doi.org/10.21070/halaqa.v1i1.817.

Febriansyah, D., Dwiputra, K., Budiyanto, T. M., & Adz, T. (2020). Textbooks Transformation Into Digital Comics As Innovative Learning Media for Social Science Studies in Junior High School. *International Journal Pedagogy of Social Studies*, *5*(2), 9–16. https://doi.org/10.17509/ijposs.v5i2.29068.

Fitriyani, Y., Eliyanti, M., & Lestari, M. A. (2021). The Application Of Comic Media To Improve Literature Ability In Understanding Mathematics Story Problems In Elementary School. *AULADUNA: Jurnal Pendidikan Dasar Islam*, *8*(2), 168–179. https://doi.org/10.24252/auladuna.v8i2a5.2021.

Ghofur, A., & Youhanita, E. (2020). Interactive Media Development to Improve Student Motivation. *IJECA (International Journal of Education and Curriculum Application)*, *3*(1), 1–11. https://doi.org/10.31764/ijeca.v3i1.2026.

Hanif, M. (2020). The Development And Effectiveness Of Motion Graphic Animation Videos To Improve Primary School Students' Sciences Learning Outcomes. *International Journal of Instruction*, *13*(4), 247–266. https://doi.org/10.29333/iji.2020.13416a..

Haseski, H. I., Ilic, U., & Tugtekin, U. (2018). Defining a New 21st Century Skill-Computational Thinking: Concepts and Trends. *International Education Studies*, *11*(4), 29. https://doi.org/10.5539/ies.v11n4p29.

Jumardi, J. (2017). Peranan Pelajaran Sejarah Dalam Pengembangan Karakter Siswa Melalui Pembelajaran Berbasis Nilai Sejarah Lokal di SMA Negeri 65 Jakarta Barat. *Jurnal Pendidikan Sejarah*, *6*(2), 70–80. https://doi.org/10.21009/jps.062.08.

Kakosimos, K. E. (2015). Example of a micro-adaptive instruction methodology for the improvement of flipped-classrooms and adaptive-learning based on advanced blended-learning tools. *Education for Chemical Engineers*, *12*, 1–11. https://doi.org/10.1016/j.ece.2015.06.001.

Kautsar, I. A., Kubota, S., Musashi, Y., & Sugitani, K. (2016). Lecturer Based Supportive Tool Development and Approaches for Learning Material Sharing under Bandwidth Limitation. *Journal of Information Processing*, *24*(2), 358–369. https://doi.org/10.2197/IPSJJIP.24.358.

Kembara, M. D., Rozak, R. W. A., & Hadian, V. A. (2019). Research-based Lectures to Improve Students' 4C (Communication, Collaboration, Critical Thinking, and Creativity) Skills. *Proceedings of the International Symposium on Social Sciences, Education, and Humanities (ISSEH 2018)*. https://doi.org/10.2991/isseh-18.2019.6.

Kilis, S., & Yildirim, Z. (2019). Posting Patterns of Students' Social Presence, Cognitive Presence, and Teaching Presence in Online Learning ONLINE LEARNING. *Online Learning*, *23*(2), 179–195. https://avesis.metu.edu.tr/yayin/c602500e-43ee-41cb-8d82-1240bba9f249/posting-patterns-of-students-social-presence-cognitive-presence-and-teaching-presence-in-online-learning.

Kunto, I., Ariani, D., Widyaningrum, R., & Syahyani, R. (2021). Ragam Storyboard Untuk Produksi Media Pembelajaran. *Jurnal Pembelajaran Inovatif*, *4*(1), 108–120. https://doi.org/10.21009/jpi.041.14.

Marsa, P. B., & Desnita, D. (2020). Analisis Media, Sumber Belajar, dan Bahan Ajar Yang Digunakan Guru Fisika SMA Materi Gelombang Di Sumatera Barat Ditinjau Dari Kebutuhan Belajar Abad 21. *Jurnal Eksakta Pendidikan (Jep)*, *4*(1), 81. https://doi.org/10.24036/jep/vol4-iss1/422.

Nisak, N. M., Arifin, M. B. U. B., Fahyuni, E. F., & Rahmawati, I. M. (2021). The Development of Comic Formatted Fiqh Textbook for Islamic Elementary School. *European Journal of Education Studies*, *8*(1), 114–125. https://doi.org/10.46827/ejes.v8i1.3513.

Nofrion, N., & Wijayanto, B. (2018). Learning activities in higher order thinking skill (HOTS) oriented learning context. *Geosfera Indonesia*, *3*(2), 122. https://doi.org/10.19184/geosi.v3i2.8126.

Oktaviana, D. L., & Rusnilawati. (2022). Role Playing with Digital Comics in Preventing Bullying and Cyberbullying Behavior in Elementary School. *Jurnal Ilmiah Sekolah Dasar*, *6*(4), 603–609. https://doi.org/https://doi.org/10.23887/jisd.v6i4.53685.

Phoon, H.-Y., Roslan, R., Shahrill, M., & Said, H. M. (2020). The Role of Comics in Elementary School Science Education. *Formatif: Jurnal Ilmiah Pendidikan MIPA*, *10*(2), 67–76. https://doi.org/10.30998/formatif.v10i2.6257.

Pujiastuti, H., & Haryadi, R. (2023). Higher-Order Thinking Skills Profile of Islamic Boarding School Students on Geometry through the STEM–based Video Approach. *International Journal of STEM Education for Sustainability*, *3*(1). https://doi.org/10.53889/ijses.v3i1.135.

Qoiruni, S., & Wicaksono, V. D. (2022). Pengembangan Komik Digital Untuk Materi Pengamalan Nilai-Nilai Pancasila dalam Permainan Tradisional Kelas V SD. *Jurnal Penelitian Pendidikan Guru Sekolah Dasar*, *10*(4), 792–803. https://doi.org/https://ejournal.unesa.ac.id/index.php/jurnal-penelitian-pgsd/article/view/46427.

Rahmawati, F., & Ramadan, Z. H. (2021). Improving High-Level Thinking Skills in Students Through Powtoon-Based Animation Video Media. *Journal of Education Technology*, *5*(4), 654. https://doi.org/10.23887/jet.v5i4.41037.

Rina, N., Suminar, J. R., Damayani, N. A., & Hafiar, H. (2020). Character education based on digital comic media. *International Journal of Interactive Mobile Technologies*, *14*(3), 107–127. https://doi.org/10.3991/ijim.v14i03.12111.

Rustandi, A., & Rismayanti. (2021). Penerapan Model ADDIE dalam Pengembangan Media Pembelajaran di SMPN 22 Kota Samarinda. *Jurnal Fasilkom*, *11*(2), 57–60. https://doi.org/10.37859/jf.v11i2.2546.

Sarah, F., Khaldun, I., & Gani, A. (2021). The Development Higher Order Thinking Skill (Hots) As Questions In Chemistry Study (Solubility And Solubility Product Constant). *Jurnal Pendidikan Sains (Jps)*, *9*(1), 51. https://doi.org/10.26714/jps.9.1.2021.51-60.

Satriyo Pamungkas, H. A. (2022). Strategi Pembelajaran IPS Masa Pandemi Covid-19 Di SMP Laboratorium

Kota Jambi. *Istoria: Jurnal Ilmiah Pendidikan Sejarah Universitas Batanghari Jambi*, *5*(2), 24–39. https://doi.org/10.33087/istoria.v5i2.112.

Seo, K., Tang, J., Roll, I., Fels, S., & Yoon, D. (2021). The impact of artificial intelligence on learner–instructor interaction in online learning. *International Journal of Educational Technology in Higher Education*, *18*(1), 54. https://doi.org/10.1186/s41239-021-00292-9.

Setiawan, J., Aman, & Wulandari, T. (2020). Understanding Indonesian history, interest in learning history and national insight with nationalism attitude. *International Journal of Evaluation and Research in Education*, *9*(2), 364–373. https://doi.org/10.11591/ijere.v9i2.20474.

Siregar, R., Setiawan, D., & Hadiningrum, S. (2019). The Development of Social Studies Learning Based on Local Wisdom to Improve Students' Social Skills at Social Science Faculty of Universitas Negeri Medan. *In 1st International Conference on Social Sciences and Interdisciplinary Studies (ICSSI)*. https://doi.org/10.2991/icssis-18.2019.71.

Sugiyono. (2019). *Metode Penelitian Pendidikan (Kualitiatif, Kualitatif, Kombinasi, R&D dan Penelitian Pendidikan*. Alfabeta.

Sukatiman, S., Akhyar, M., Siswandari, & Roemintoyo. (2020). Enhancing higher-order thinking skills in vocational education through scaffolding-problem based learning. *Open Engineering*, *10*(1), 612–619. https://doi.org/10.1515/eng-2020-0070.

Virijai, F., Asrizal, A., & Festiyed, F. (2022). Meta Analisis Pengaruh Bahan Ajar Terhadap Kemampuan Berpikir Kritis Siswa Dalam Menghadapi Era Revolusi 4.0. *Jurnal Penelitian Pembelajaran Fisika*, *8*(1), 54. https://doi.org/10.24036/jppf.v8i1.115806.

Yulian, V. N. (2018). Developing Teaching Materials Using Comic Media to Enhance Students' Mathematical Communication. *IOP Conference Series: Materials Science and Engineering*, *335*(1), 012110. https://doi.org/10.1088/1757-899X/335/1/012110.

Zeptyani, & Wiarta. (2020). Pengaruh Project-Based Outdoor Learning Activity Menggunakan Media Audio Visual Terhadap Perilaku Belajar Anak Usia Dini. *Jurnal Pendidikan Anak Usia Dini Undiksha*, *8*(2), 69–79. https://doi.org/10.23887/paud.v8i2.24740.