

## E-Moodle Flipbook: Cultural Heritage-based Social Studies Learning Media Platform to Improve Student' Critical Thinking Skill in the Digital Age

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### Abstract

*This research aims to determine the effectiveness of using cultural heritage-based moodle flipbook in improving students' critical thinking skills. This research method is a quasi-experiment with the matching-only pretest-posttest control group design. This research was conducted at SMP Negeri 1 Makassar, Indonesia with a sample of 70 students, consisting of class VII C 35 students (control class) and class VII D 35 students (experimental class). Effectiveness was measured based on the n-Gain of test results analysed by t-test developed by Hake. The results found that the use of moodle flipbook as a cultural heritage-based social studies learning media platform was effective enough to improve students' critical thinking skills, as evidenced by the experimental class n-Gain (7,343%) higher and significantly different from the control class (3,944%). The results of the cultural heritage-based moodle flipbook practicality test by teacher 93% (very practical) and students were 84% (very practical), and the percentage of experimental class student activity (76,6%) was higher than the control class (56,3%) from all aspects observed. This research contributes to cultural heritage based on modern technology can be used to revive and spread ancient traditions as Memory of the world.*

**Keywords:** Flipbook; Social Studies Learning; Cultural Heritage, Critical Thinking.

### Introduction

In the ever-evolving digital age, education faces new challenges in equipping students with relevant skills to face a complex world (Cooke et al., 2021; Koh & Doroudi, 2023). On the other hand, cultural values and traditional heritage are valuable assets that must be preserved and transferred to future generations. Especially in social studies learning, the integration of cultural heritage into learning has great potential to stimulate students' critical thinking and make learning more relevant to everyday life. The use of media in bringing heritage to life is a skill referred to as part of 21st century learning (Tight, 2021). Learning through digital technology is towards the quality and form of learning that can be enabled through access to digital technology (H.-L. Chen & Wu, 2023). This is relevant to the research results (Mihailidis & Thevenin, 2013; Murdiono & Wuryandani, 2021; Tight, 2021) that argues for media education as an important framework for citizens of developing countries, including Indonesia.

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The fact that there is a gap between developed and developing countries in e-learning adoption affects individual behaviour when adopting new technologies (Madni et al., 2022). Research results (Fyfield et al., 2021; Tully & Alfaraz, 2017) found that cultural changes also occur in the learning process. The development of various search engines such as Google and Youtube has made it easier for students to search for various knowledge. This is confirmed in the results of research (Giroux, 2002; Marcus et al., 2018) found that how students think about film as a historical resource in the classroom and how students use film as evidence about the past.

One form of cultural exchange in general as written by (Adewumi, 2022; Khoshsaligheh et al., 2018; Mirrlees, 2013) that taboo languages, transmi ideas, customs, ancestral lands, and intergenerational artefacts serve to produce national communities through digital modification in new ways. This is evidenced by the findings of a number of studies (Husin et al., 2012; Soh et al., 2012; Tiara et al., 2021; Zhang, 2013) that by utilising the internet students have skills, and can improve reading, writing, listening, speaking and translating skills. Information and communication technology-based learning media can improve learning outcomes and student motivation (Lim & Baildon, 2022; Pham, 2023).

Based on the survey results of the Ministry of Communication and Information and Unicef (2014), it proves that there are 30 million children and adolescents in Indonesia as internet users, and digital media is currently the main choice of communication channels they use (Anwas, 2016). The survey also found that 98% of the children and adolescents surveyed knew about the internet and 79.5% of them were internet users. The achievements made by Indonesian students in PISA in recent years are very concerning, especially reading ability is the weakest area (Schleicher, 2019). The low development of higher order thinking skills known as Higher Order Thinking Skills (HOTS) can be seen from the results of the Programme for International Student Assessment (PIRLS) survey in 2011 Indonesia scored 428 along with 12 other countries with scores below 500 (Karakolidis et al., 2016; Sari & Setiawan, 2023). Improving students' critical thinking skills is needed especially in social studies learning, because with critical thinking skills the mind is encouraged to spread far and wide looking for solutions to social studies problems by using its own way (Mohammadi & Pouya, 2021; Rungwaraphong, 2023).

One example of the application of technology in learning is the idea offered by NACOL (North American Council For Online Learning), a blended learning model Online learning (e-learning) that uses the internet network in its application (Ghanem & Hamayil, 2011; Liu et al., 2016; Nasution et al., 2021). Social studies education in this digital era is expected to encourage the rise of students' social awareness and prevent them from not knowing their social values. Therefore, it will be an important foundation for the development of their knowledge, feelings, and socio-cultural aspects (Telep et al., 2021). One way to foster critical thinking skills is by using learning media. Learning media including e-moodle flipbook.

Based on observations in the field, various problems were found regarding the need for social studies learning media. These problems are the use of e-moodle flipbook is not familiar by teachers at SMP Negeri 1 Makassar, Indonesia, the limitations of learning media, namely conventional textbooks do not support the interests of students who grow up in a digital culture. Lack of cultural heritage integration i.e. social studies materials related to cultural heritage are often taught theoretically without direct involvement with local culture, the impact is that students find it difficult to feel and integrate their cultural values. This social studies learning media study makes e-moodle flipbook as a cultural heritage-based social studies learning media platform to improve students' critical thinking skills in the digital age. One of the bases of material development that makes learning media not only technology-based and conveys concepts but also accommodates cultural heritage. Introducing, reviving ancestral heritage such as, the La Galigo manuscript originating from the land of Bugis, South Sulawesi, Indonesia as Memory of the Word in the digital space is an effort to maintain the existence of history globally and

maintain and strengthen cultural norms from extinction. Previous research has not revealed the use of e-moodle flipbook as a cultural heritage-based social studies learning media platform to improve students' critical thinking skills in the digital age.

#### Flipbook Digital Media Platform

Flipbook media is an album-like book in virtual form in which there is learning material using sentences containing colourful columns (Ristanto & Mahardika, [2021](#); Roemintoyo & Budiarto, [2021](#)). This flipbook media is designed as interesting as possible using a combination of beautiful colourful columns so that students are more interested, active and enthusiastic in participating in learning activities. Flipbook is also defined as professional software for converting PDF files, images, text and videos into one form like a book (Fonda & Sumargiyani, [2018](#)). Interactive flipbook media is a combined media, namely a way to produce and deliver material that combines several forms of media controlled by a computer (Rahayu et al., [2021](#)). The flipbook software can change the shape of the PDF file format to be more attractive like a digital book that moves from one page to another in the form of a 3D format that can be flipped (Janottama & Putraka, [2017](#); Mulyaningsih & Saraswati, [2017](#)).

The Open Elektronik Book Package format is an XML-based electronic book format created by an electronic book system. This new technology provides great opportunities for the utilisation of digital books in science and distance learning (Gorghiu et al., [2011](#)). The benefits of using learning media are; more standardised presentation, interesting, interactive, and efficient (De Sousa et al., [2017](#)). In this era of advanced technological development, mobile learning (M-Learning) is one of the potential opportunities to develop the quality and quality of learning. Learning media that is neatly packaged according to the needs will have a positive impact when learning takes place (Pangrazio et al., [2023](#)).

#### Heritage of Cultural Values

Cultural heritage refers to the collection of values, beliefs, traditions, customs and norms that are passed down from generation to generation within a society or cultural group. These values can also play an important role in maintaining social harmony and local cultural sustainability (Sinaga et al., [2021](#)). Skills in the 21st century are needed to support traditional cultural heritage. In this research, one of the cultural heritages transformed as a social studies learning media is one of the literary works in the prose genre, namely the La Galigo manuscript. La Galigo manuscript as a world cultural heritage that contains cultural values that become the philosophy of life for Bugis Makassar, Indonesia. (Rahman & Mariani, [2009](#)).

The La Galigo manuscript is a world cultural heritage that contains cultural values which are a philosophy of life for the Bugis of Makassar, Indonesia (Rahman & Mariani, [2009](#)). The La Galigo manuscript is an epic originating from South Sulawesi, Indonesia. This work was written in the Bugis language and describes the life and methodology of the Makassar Bugis community in the past. In historical records, I La Galigo is a classic literary work that originated from the Bugis land, South Sulawesi, in the XIV century. This work is considered the longest literary work in the world, known as Sureq I La Galigo . In 2011, this literary work was recognized by the world body UNESCO (United Nations Educational, Scientific, and Cultural Organization) as a world heritage and was given an award as Memory of the World (MOW) (Paeni, nd) . In the Epic I La Galigo in general, there are various cultural values which are reflected through stories, characters and moral messages (Rahman, [2006](#)). There are several fundamental values in Bugis-Makassar society, Indonesia, namely siri ' (shame), pesse' or pacce' (social sympathy and empathy), lempu (consistent), getteng (being firm), ada tongeng (honest or telling the truth). actually), and reso (hard work) (Pandang et al., [2022](#)). This value is relevant to the cultural heritage in the La Galigo manuscript which will be transformed as material in

social studies learning is cultural values of Siri' and Pacce' and Sumangeq Inninawa (Rahman, 2003).

### Critical Thinking Skills

Facing the 21st century, there are three skills that are important to have, namely: life and career skills, learning and innovation skills, and information media and technology skills. (Trilling & Fadel, 2015). In addition, (Delors et al., 1997) from the International Commission on Education for the Twenty-first Century, formulated four principles in education in the 21st century known as the four pillars of education namely learning to know, learning to do, learning to be and learning to live together. Critical thinking skills also relate to communication skills, information literacy, and the ability to examine, analyse, interpret and evaluate evidence (H. Chen & Chuang, 2021; Morgan et al., 2022). Research (Anderson, 2015) also shows that critical thinking skills are an indispensable aspect of education, namely "critical thinking skills" pursuing a humanising pedagogy.

Critical thinking ability is a reflective thinking that makes sense, with a focus on determining what to believe or do (Ennis, 1993). (Frijters, S. , ten Dam, G., & Rijlaarsdam, 2008; White, 2021) explains that critical thinking is a disciplined process that is intellectually active and skilled in conceptualising, applying, analysing, synthesising, and evaluating information gathered from observation, experience, reflection, reasoning as a guide to beliefs and actions.

Critical thinking skills need to be developed in students from an early age (Thompson, 2011). Students will find it difficult to practice critical thinking skills because they are not trained with problems, questions and analyses. Critical thinking skills are developed so that students have the ability to have adaptive attitudes and behaviours in facing challenges in the 21st century effectively with the flipbook application. The indicators for assessing critical thinking skills in this research refer to (Ennis, 1998) which is categorised into five aspects, (a) providing simple (practical) explanations, (b) building basic skills, (c) summarising, (d) confidence and (e) actions.

### Methods

This research method is a quasi-experiment with a matched-only pretest-posttest control group design (Fraenkel et al., 2012).

Table 1. The Matching Only Pretest-Posttest Control Group Design

Group	Pretest	Treatment	Posttest
Experimental Class	0	X	0
Control Class	0	C	0

Description:

0 = Student critical thinking skills test

X = Social studies learning using moodle flipbook platform

C = Social studies learning using commonly used teaching materials

### Sampling and Sampling Teacniques

The research was conducted at SMP Negeri 1 Makassar, based on the characteristics of a superior school area in the centre of Makassar City, Indonesia. Sample determination was based on probability sampling technique. Probability sampling is a sampling technique that provides equal opportunities for each member of the population to be selected as a sample member (Sugiyono, 2013). The sample of this research is class VII students at

SMP Negeri 1 Makassar City, Indonesia, totalling 70 students consisting of class VII C 35 students (control class) and class VII D 35 students (experimental class).

#### Research Instruments

The instruments in this study were observation sheets, interview sheets, practicality assessment sheets and student activities using moodle flipbook, and critical thinking skills tests.

#### Data Analysis

The research data collected in this study are qualitative data and quantitative data. Qualitative data will be analysed descriptively with triangulation of methods and data sources. Data analysis includes the practicality of using moodle flipbook in the form of student response questionnaire data analysed qualitatively (percentage). The analysis to calculate the percentage of student responses was adapted from (Arikunto, 2009) namely very practical (if 84 - 100% of students respond positively), practical (68 - 83), quite practical (52 - 67), less practical (36 - 51), and not practical (less than 35%). Quantitative data was conducted through critical thinking skills tests on experimental and control classes. The form of test used in this study is a multiple choice test with 25 items, because with a multiple choice test the author can determine the effectiveness of using moodle flipbook to improve students' critical thinking skills. Indicators of critical thinking skills include: providing simple (practical) explanations, building basic skills, inferring, beliefs and actions (Ennis, 1998). The data obtained in the form of pretest and posttest scores were analysed descriptively quantitatively using N-gain and t-test. The normalised gain rule (Ngain) was developed by (Hakke, 1999) in the form of percent (%) is effective (> 76), moderately effective (56-75), less effective (40-55), and ineffective (< 40). While the t-test refers to the formula (Sudjana, 2020) with 5% confidence level.

### Research Results

The Effectiveness of E-moodle Flipbook as a Cultural Heritage-based Social Studies Media Platform to Improve Students' Critical Thinking Skill in the Digital Age

Based on the results of the identification of the material found cultural value as a Bugis-Makassar cultural heritage, Indonesia is referring to the cultural heritage in the La Galigo text that is relevant as a social studies learning resource on grade VII material recognising the ancestral traces of the Indonesian nation. The value is the cultural value of Siri' and Pacce' and Sumangeq and Inninawa. The implementation was carried out in class VII at SMP Negeri 1 Makassar, Indonesia. The results of this research on the effectiveness of moodle flipbook, measured based on the n-Gain of pretest and post-test results in the experimental class and control class. Furthermore, a t-test was conducted to determine the significance of the increase in student test results. The following are the results of the n-Gain in this study, shown in table 2

Table 2. Pretest-Posttest Scores for the Experimental and Control Groups

No.	Class	Average Value		Average n-Gain per group	Average n-Gain
		Pretest	Posttest		
1	Experiment	12,710	20,060	7,343	56,4 %
2	Control	11,390	15,330	3,944	
Category					Effective Enough

Source: Researcher (data processed, 2023) from at SMP Negeri 1 Makassar, Indonesia

Based on the table above, it is found that there is an overall difference in critical thinking skills between the experimental and control classes. The n-gain between the experimental and control groups tested after the posttest showed the experimental group was more effective or better than the control group. The data shows that the n-gain value used is the group n-gain value not the n-gain value per sample. The n-gain value of the experimental class includes the difference between the pretest and posttest, because comparing the n-Gain value is only 1, which is an average of 56.4% with a fairly effective category of moodle flipbook as a social studies learning media platform. To see the difference in pretest, posttest and n-Gain scores between the experimental and control classes can be seen in the following graph 1:

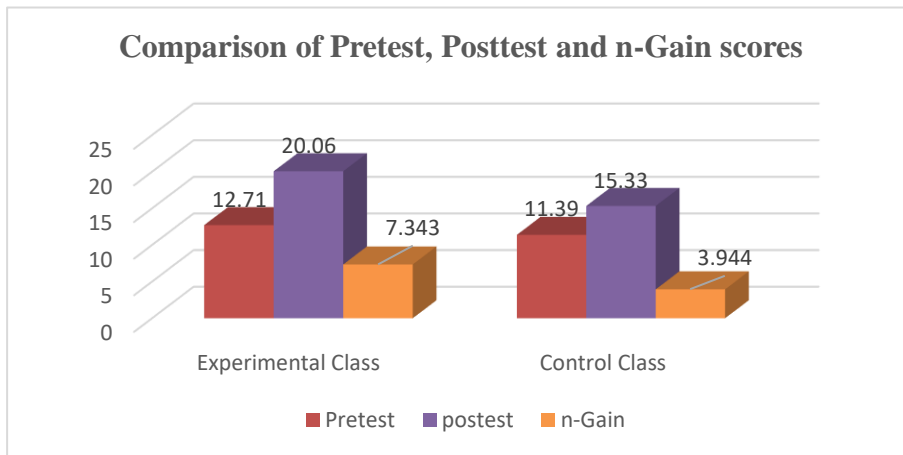


Figure 1: Comparison of Pretest, Posttest and n-Gain Values (Experimental Class and Control Class)

The graph above shows the value of critical thinking skills before treatment (pretest) measured using 25 items in the experimental group obtained an average of 12.710 and in the control group obtained an average of 11.390. These results indicate the condition of critical thinking skills in the experimental group and control group tends to be balanced or the same. Then the value of critical thinking skills after treatment (posttest) in the experimental group obtained an average of 20.060 and in the control group obtained an average of 15.330. These results indicate that the experimental group experienced a greater increase in the value of critical thinking skills compared to the control group. In the graph, it can be seen that there is a difference in the acquisition of the n-Gain score where the experimental class obtained an average n-Gain of 7.343% while the control class had an average n-Gain of 3.944%. These results indicate that the increase in the value of critical thinking skills in the experimental group is greater than the control group.

Practicality and Activity of E-moodle Flipbook as a Cultural Heritage-based Sosial Studies Media Platform to Improve Students' Crutical Thinking Skill in the Digital Age

The description of the practicality of moodle flipbook as a cultural heritage-based social studies learning media platform to improve students' critical thinking skills can be seen in the responses of teachers and students as users of learning media. Data processing of moodle flipbook practicality is collected through observation activities by administering questionnaires conducted directly by researchers. The following are the results of the teacher response assessment related to the practicality of social studies teaching materials based on e-book applications described in table 3 below:

Table 3. Results of Analysis of Teacher Response to the Practicality of Moodle Flipbook as a Cultural Heritage-based Social Studies Learning Media Paltform

No.	Assessment Indicator	Teacher Response Percentage (%)	Practicality Criteria
1	Covers one sub-competency	93%	Very Practical
2	The discussion of substance is correct, complete and actual/ current	90%	Very Practical
3	The level of language difficulty is appropriate to the students' thinking ability	93,3%	Very Practical
4	Sentences are clear, coherent, complete and easy to understand.	96,6%	Very Practical
	Average	93,3%	Very Practical

Source: Researcher (data processed, 2023) from Teacher Responses at SMP Negeri 1 Makassar, Indonesia

From the results of the assessment of teacher responses to the practicality of moodle flipbook as a cultural heritage-based social studies learning media platform, it was found that of the four indicators, the average assessment was categorised as Very Practical. The results of the assessment obtained the total score as a whole is 373.2 with an average overall percentage score of 93.3% and is in the interpretation of 84%-100% is Very Practical Category.

The assessment of student responses to the practicality of moodle flipbook as a cultural heritage-based media platform is with five indicators. The response assessment was given to the experimental class that had used e-moodle flipbook totalling 35 students. The results of the assessment are presented in table 4 below:

Table 4. Results of Analysis of Student Response to the Practicality of Moodle Flipbook as a Cultural Heritage-based Social Studies Learning Media Paltform

No.	Aspects observed	Student response percentage (%)	Practicality Criteria
1	Presentation Interest	86,3	Very practical
2	Skills practised	84,4	Very practical
3	Relevance of the material to the concept of local wisdom values	80	Practical
4	Evaluation	85,1	Very practical
5	Language	87,4	Very practical
	Average	84,6	Very Practical

Source: Researcher (data processed, 2023) from Student Activity of Experimental Class and Control Class at SMP Negeri 1 Makassar, Indonesia

Based on table 4 above, it turns out that student activity in the learning process in the experimental class using moodle flipbook is higher (76.6) compared to the control class (56.3). This shows that students' interest in using cultural heritage-based moodle flipbooks can increase student activity to be actively involved in learning so as to improve students' critical thinking skills.

### Discussion

Based on the results of data analysis, the effectiveness of moodle flipbook as a cultural heritage-based social studies learning media platform is effective enough to improve students' critical thinking skills at SMP Negeri 1 Makassar, Indonesia. The results of the analysis prove that the improvement of students' critical thinking skills for the experimental class obtained much better results when compared to the acquisition of the control class. In the experimental class, the learning process was carried out using moodle flipbook while the control class did not use moodle flipbook as a social studies learning media platform. The use of moodle flipbook as a social studies learning media platform based on cultural heritage in the La Galigo manuscript is the value of siri' and pacce (the value of shame and self-esteem), the value of Sumangeq Inninawa (Strength) (Rahman, 2003). While the critical thinking skills of (Ennis, 1998) which is categorised in five aspects. The integration of cultural heritage values to improve critical thinking skills resulted from the pretest and posttest as shown in Table 5 below:

Table 5: Integration of Cultural Heritage to Improve Critical Thinking Skills

Class Materials	VII Cultural Heritage of Bugis-Makassar, Indonesia in La Galigo Manuscript	Critical Thinking Skills Indicator
Getting to Know the Ancestral Traces of the Indonesian Nation	Siri' and Pesse' values (value of shame and sympathy)	<ul style="list-style-type: none"> <li>• Provide simple (practical) explanations</li> <li>• Building basic skills</li> <li>• Summarising</li> </ul>
	Sumangeq Inninawa value (strength value)	<ul style="list-style-type: none"> <li>• Confidence</li> <li>• Action</li> </ul>

Source: Researchers (data processed, 2023) Adaptation of (Ennis, 1998) Indicators of Critical Thinking Skills

Based on the table above, the n-Gain results for each critical thinking indicator in the experimental class and control class can be seen in Figure 2 below:

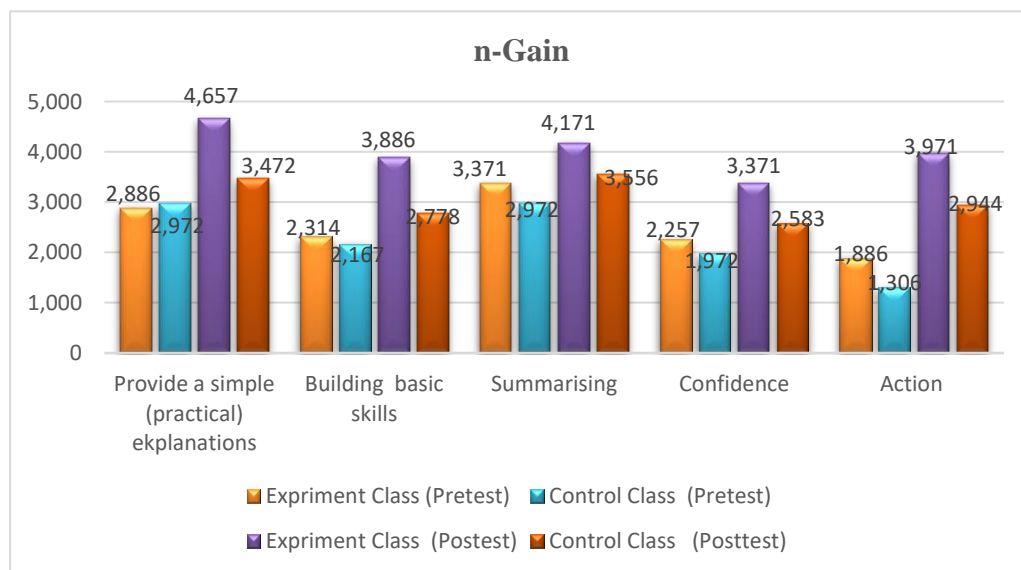


Figure 2: Results of the n-Gain value of each indicator of critical thinking skills



Based on the visualisation picture above, it can be understood that the use of moodle flipbook is an effective category that can improve students' critical thinking skills. The occurrence of an increase in critical thinking skills shows that the experimental class experienced an increase in all indicators that were higher than the control class, both pretest and posttest. From the graph above, that in the aspect of providing simple explanations is higher, namely compared to other indicators, because students feel helped by moodle flipbook features such as animated video shows and illustrations. This research is supported by the results of research (Aksoy, [2012](#); Hayat, [2021](#)) that animation methods are more effective than traditional teaching methods in raising student learning outcomes because animations are able to enrich student competencies in a variety of teaching materials. Previous research results (Naufal & Kurniasari, [2022](#); Susanto et al., [2022](#)) about e-books to improve students' critical thinking. The results show that e-books can improve students' critical thinking skills. Through digital media innovation, narratives, videos and practice questions, and there are interactive elements with the presence of animation as a variety of e-book learning so that it does not seem alone and varied. The e-book developed is able to foster self-efficacy and critical thinking skills in an interactive digital format. Interactive digital is done with experimental simulations, HOTS level interactive questions with feed back, and hyperlinks to other learning resources so that there is an increase in students' critical thinking (Hikmaturosyidah & Racmadiarti, [2022](#); Pradina & Suyatna, [2018](#)).

This research also found, it turns out that students' critical thinking skills, as the n-Gain results found the indicator of taking action in two classes are in the low category. This is in line with (McKendree et al., [2002](#)) that critical thinking skills can be developed, but cannot be trained at once. Improving students' critical thinking skills is needed especially in social studies learning, because with critical thinking skills the mind is encouraged to spread far and wide looking for solutions to social studies problems by using its own way (Bellaera et al., [2021](#); Hsu et al., [2022](#); Mayer, [2008](#)).

While the results of the analysis of the practicality of moodle flipbook as a cultural heritage-based media platform found that students felt interested in moodle flipbook which was indicated by aspects of interest in the presentation of moodle flipbook, skills trained, evaluation, media as a source of local values concepts, and language. Students feel interested in moodle flipbook because the appearance and format really help foster motivation and train critical thinking in which there are a variety of features, namely video animation, illustrations and phenomena relevant to social studies material. The results of student responses illustrate that seeing a photo or image is higher in meaning than reading or listening (Flores, [2021](#); Houts et al., [2006](#)).

Based on the findings, it can be understood that the benefits of moodle flipbook as a cultural heritage-based social studies learning media platform to improve students' critical thinking skills are more interesting and easy to understand, present multimedia messages, motivate students' learning to be more active, varied, and more flexible learning.

## **Conclusions**

The implementation of moodle flipbook for seventh grade students at SMP Negeri 1 Makassar, Indonesia shows that the effectiveness of using moodle flipbook as a cultural heritage-based social studies learning media platform to improve students' critical thinking skills can be seen from (1) the effectiveness test which shows that the experimental group is more effective or better than the control group, (2) the practicality test found that students felt interested in the moodle flipbook which was shown by the aspects of interest in the presentation of the moodle flipbook, skills trained, evaluation, media as a source of local values concepts, and language, and (3) student activity in the learning process, students in the experimental class were higher when compared to the control class from all aspects observed.

In contrast to the results of previous studies that only found the effectiveness of digital media in social studies learning and have not specifically revealed the use of moodle flipbook as a cultural heritage-based social studies learning media platform to improve students' critical thinking skills. For further research, it is necessary to develop an e-learning-based social studies learning model embedded in cultural heritage to improve students' metacognitive skills.

#### Funding

This research was funded by Balai Pembiayaan Pendidikan Tinggi (BPPT) and Lembaga Pengelola Dana Pendidikan (LPDP), specifically for publication funding.

#### Acknowledgments

Thanks to the Indonesian Education Service Centre (PUSLAPDIK), Beasiswa pendidikan Indonesia (BPI) and Lembaga pengelola Dana Pendidikan (LPDP) for providing financial support for the publication and thanks to the Indonesian Education University for their permission to conduct this research.

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