

## **E-Moodle Flipbook: Deconstructing local wisdom-based social studies learning media innovations, to improve students' critical thinking skills**

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### **Abstract**

The key motivation behind this research is the lack of Moodle flipbooks as an innovative tool for teachers to use and the lack of Moodle flipbooks as a local knowledge-based social studies learning medium to enhance students' critical thinking abilities. This study aims to determine the effectiveness of using Moodle flipbooks based on local wisdom in improving students' critical thinking skills, in the material of community life during the pre-literacy period. The research method is a quasi-experiment with the design of the matching-only pretest-posttest control group design. This research was conducted at SMP Negeri 2 Makassar, Indonesia with a research sample of 70 students, consisting of class VII A students 35 students (experiment class) and class VII B 35 students (control class). Effectiveness is measured based on n-gain test results analyzed with t-tests developed by Hake. The results of the study found that the use of Moodle flipbooks as an innovation in social studies learning media based on local wisdom was quite effective for improving students' critical thinking skills, as evidenced by the n-gain of the experiment class higher and significantly different from the control class.

**Keywords:** Critical thinking; E-Moodle; Flipbook; learning media; local wisdom; social studies

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## 1. Introduction

Today's technological advances are developing over time to drive many changes in human life from the information age to the digital age in all fields (Bolick, 2017; Levstik & Tyson 2010; Müller & Wulf 2020). The ability to access, adapt, and create new knowledge using new information and communication technologies is essential for social learning (Warschauer, 2004; Souabi et al., 2021). The use of technology as a learning medium is one of the innovative steps to improve the quality of education in Indonesia so that it can compete at the global level (Widyanti et al., 2020). In addition, learning through digital technology towards quality and forms of learning can be activated through access to digital technology (Hick et al., 2014; Rasa & Laherto 2022).

The current gap between developed and developing countries on the adoption of e-learning turns out to affect the behavior of individuals when adopting new technologies (Putro et al., 2022; Putro, 2020). The researches by Tully & Alfaraz (2017) and Narayan et al., (2019) show that the use of smartphones has influenced communication behavior, is that they communicate with ICT because they want to gain new experiences, want to get a response, and want to be recognized by the surrounding environment, and can shape them into individuals who like to socialize so that smartphones are now part of their lifestyle. These cultural changes also occur in the learning process. Before the development of ICT, books became the only source of knowledge. But now, students are looking for various information and knowledge through ICT, especially the internet. The development of various search engines such as Google and YouTube has made it easier for students to search for various knowledge.

Data from the Central Statistics Agency in Statistik (2012) shows that the proportion of the population aged 10 years and over in rural and urban areas on average reading for a week is still low. According to data from the Central Statistics Agency, newspaper readers are only 15.06%, magazine readers are even smaller at 6.92%, storybook readers are also very small at only 5.01%, school textbook readers are 20.49%, and science book readers are only 14.08%. In particular, these findings are relevant to PISA which is a comprehensive survey program at international events, basically assessing students' reasoning skills which are critical thinking skills (Rahayu, 2016). The achievements made by Indonesian students in PISA in recent years are very concerning, especially since the ability to read is the weakest field (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 2011 Programme for International Student Assessment (PIRLS) survey, Indonesia obtained a score of 428 along with 12 other countries with a score below 500 (Kemendikbud & Kemendikbud 2018).

According to the results of a survey by the Ministry of Communication and Information and Unicef (2014) and Anwas (2016) proving 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. The survey results also found that as many as 98% of the children and adolescents surveyed knew about the Internet and 79.5% of them were Internet users. The results of the survey conducted by Asia (2015) show that internet users in Indonesia in 2014 were 74.6 million people, while the most searched information on the internet were: news (54.2%), entertainment (16.3%), movies (10.2%), sports (8.7%), and music (8.5%). The rest include political news (7.4%), soap operas (6%), celebrity news (5.5%), gossip (5.2%), and educational content (5%).

Integrating technology into the curriculum becomes an integral part of good teaching (Mills, 2006; Khamcharoen et al., 2022). One example of the implementation of technology in learning is the

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idea introduced by NACOL (North American Council for Online Learning), which is a blended learning model. This learning model is not focused on face-to-face activities, but also uses online learning-based technology to support learning activities carried out in the classroom. Online learning (e-learning) that uses the internet network in its application (Stephen & Rockinson-Szapkiw 2021; Chaeruman, 2011; Ghanem & Hamayil 2011; Liu et al., 2016; Tao et al., 2011; Uno, 2023).

Findings of several research results such as Sugianto et al., (2013); Ramdania et al., (2007) suggest that the use of flipbook digital teaching media can increase understanding and increase learning achievement. This is because flipbook teaching media has become more interesting, and interactive than printed books. Sharples (2005) states that in today's era of advanced technology development, mobile learning (M-Learning) is one of the potential opportunities to develop the quality and quality of learning. Research results in Aberg et al., (2016) highlight that using digital learning resources can improve students' writing skills. Relevant research also carried out by Lai et al., (2016) found that information and communication technology-based learning media can improve student learning outcomes. The results of a meta-analysis of several studies on the use of digital learning media have confirmed its effectiveness for technology-based learning. Learning media that is neatly packaged according to needs will have a positive impact when learning takes place.

Through deconstruction, social studies learning can facilitate students closer to their environment, to their culture and all existing systems and to connect between curriculum materials learned (Supriatna, 2018). Social studies education in the era of the Industrial Revolution is expected to encourage the rise of students' social awareness and prevent them from not knowing their social values. In addition, it also seeks to increase their sensitivity to the development of science and technology and the surrounding environment. Because, this will be an important foundation for the development of aspects of their knowledge, feelings, and socio-culture (Maryani & Syamsudin 2009).

One way to cultivate critical thinking skills is to use learning media. Learning media include e-Moodle flipbook, the use of e-moodle flipbook is not yet familiar to teachers at SMP Negeri 2 Makassar, Indonesia. E-Moodle flipbook is a digital book in an interactive format utilizing electronics containing information that can be in the form of text or images. computers are used for creating and combining text, graphics, audio, and video, using tools that allow users to interact, create, and communicate (Hofstetter, 2001).

The improvement of students' critical thinking skills is indispensable especially in social studies learning, because with critical thinking skills the mind is encouraged to spread far and widely seek social studies problem solving using its way (Johnson, 2002; Rosida et al., 2017). Therefore, social studies teachers who use learning media in the form of multimedia or the use information and communication technology can inspire students through the help by showing pictures and videos as well as real examples in everyday life (Supriatna & Maulidah 2020; Sukiman, 2012). The importance of the role and function of learning media in supporting the success of a learning process, it is very necessary to make an effort to further optimize the use and use of learning media based on information and communication technology (ICT), especially social studies learning at the Junior High School level.

### **1.1. Purpose of study**

Based on the results of observations in the field, various problems were found, and the need for social studies learning media. This research is very important to respond to problems in the

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development of social studies learning in schools. The problem is related to the use of textbooks as the only learning resource that will not only keep students away from their environment but learning is not meaningful to them. In addition, the learning media used is still conventional and monotonous which causes a passive attitude towards students. Some even complained about the lack of teaching aids in social studies learning. The lack of creativity of teachers in designing interesting and innovative social studies learning media. These social studies learning media study makes the e-moodle flipbook a basis for integrating the local wisdom of the community in Makassar City, Indonesia. One of the foundations of material development that makes learning media not only technology-based and conveys concepts but also accommodates local wisdom, such as the cultural values of Bugis-Makassar, Indonesia in *Epic I La Galigo* as a problem topic in this research. Previous research has not revealed the use of e-moodle flipbooks as an innovation in social studies learning media based on local wisdom to improve students' critical thinking skills.

## **2. Methods and Materials:**

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

### **2.1. Participants**

The sample in this study was grade VII students at SMP Negeri 2 Makassar City, Indonesia, totaling 70 students consisting of class VIIA students 35 students (experiment class), and class VII B 35 students (control class).

### **2.2. Data collection instruments**

The instruments in this study are observation sheets, interview sheets, practicality assessment sheets, and student activities using Moodle flipbooks, as well as critical thinking skills tests.

### **2.3. Data analysis**

The research data collected in this study is in the form of qualitative data and quantitative data. Qualitative data will be analyzed descriptively by triangulation of methods and data sources. Data analysis includes the practicality of using Moodle flipbooks in the form of student response questionnaire data analyzed qualitatively (percentage). Analysis to calculate the percentage of student responses adapted from Arikunto, (2009) is very practical (if 84 – 100% of students respond positively), practical (68 – 83), quite practical (52 – 67), less practical (36 – 51), and impractical (less than 35%). Quantitative data were collected through critical thinking skills tests against experiential classes and control classes. The form of the test used in this study was a multiple-choice test with 25 questions because, with the multiple-choice test, the author was able to find out the effectiveness of using Moodle flipbooks to improve students' critical thinking skills. Indicators of critical thinking skills include: providing simple (practical) explanations, building basic skills, inference, beliefs, and actions (Ennis, 1998). The data obtained in the form of pretest and posttest values were analyzed descriptively and quantitatively using N-gain and t-tests. The normalized gain rule (N-gain) was developed by Hakke, (1999) in percent form (%) is effective (> 76), moderately effective (56-75), less effective (40-55), and ineffective (< 40). While the t-test refers to the formula in Sudjana, 2005) with a 5% confidence level.

### **2.4. Ethical consideration**

All study participants' privacy, liberty, and sense of dignity were protected by the researchers. At every level of the research process, precautions were taken to guarantee that participants received sensitive and respectful treatment. Participants' comments or concerns were swiftly and adequately addressed.

**3. Results**

**3.1. The effectiveness of Moodle flipbook as an innovation in social studies learning media based on local wisdom to improve students' critical thinking skills.**

Based on the results of material identification, it was found that there are several cultural values as local wisdom of Bugis-Makassar, Indonesia in this study is referring to the values in *Epic I La Galigo* which are relevant as a source of social studies learning, especially in class VII material for pre-literacy community life.

These values are the cultural values of *siri'* and *pesse'* (shame and sympathy), and the cultural values of *sipakatau'*, *sippakalebbi'*, and *sipakainge'* (mutual respect, respect, and reminder). The results of this study are aimed at presenting material by transforming the value of local wisdom in various features of the presentation, namely animated videos, and illustrations to improve students' critical thinking skills, as in the following Moodle flipbook picture:

**Figure 1**  
*Moodle flipbook display*





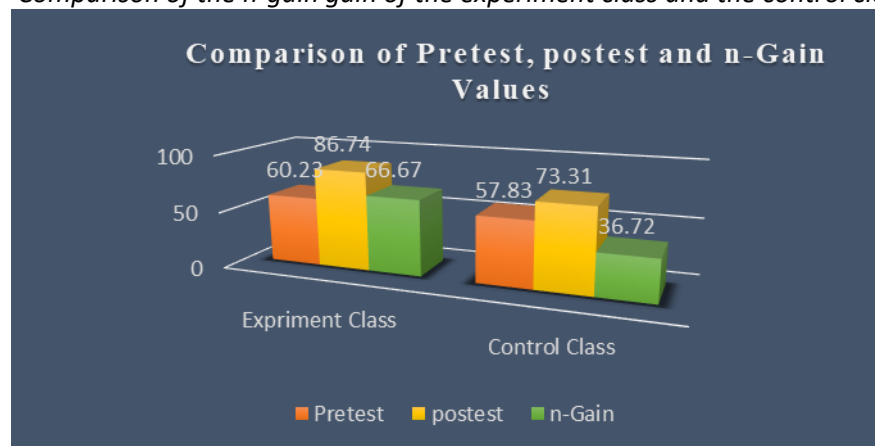
From the Moodle flipbook above, implementation has been carried out to see the effectiveness of Moodle flipbook as an innovation in social studies learning media based on local wisdom. The implementation was carried out in class VII at SMP Negeri 2 Makassar, Indonesia, namely an experiential class and a control class to improve students' critical thinking skills. The results of this Moodle flipbook effectiveness study were measured based on n-gain pretest results and posttest in the experiment class and control class. Furthermore, a t-test is carried out to determine the significance of the increase in student tests. The following are the results of the n-Gain in this study, shown in table 1. the following:

**Table 1**  
*Pretest-posttest values for experiment class and control classes*

Number	Class	Average Value		Average Group	n-Gain	Per	Average n-Gain
		Pretest	Posttest				
1	Experiment	60,23	86,74	66,67			51,26%
2	Control	57,83	73,31	36,72			
<b>Category</b>							<b>Quite Effective</b>

Based on the table above, it is found that there is a difference in overall critical thinking skills between the experiment class and the control class. N-gain between the experimental and control groups assessed/tested after the posttest showed the experimental group was more effective or better compared to the control group. From the data, it shows that the n-gain value used is the group n-gain value not the n-gain value per sample/person. The n-gain value of the experimental class already includes the difference between the pretest and posttest, because comparing the n-gain value is only 1, which is an average of 51.26% with the effective cukuf category of Moodle flipbook as an innovation in social studies learning media. The difference in pretest, posttest, and n-gain values between the experiment class and the control class can be seen in the following graphic Figure 2:

**Figure 2**  
*Comparison of the n-gain gain of the experiment class and the control class*



In the chart, it can be seen that there is a difference in the acquisition of the n-Gain score value where the experiment class obtained an average n-Gain of 66.67% while the control class averaged n-Gain 36.72%.

### 3.2. Practicality and student activities using Moodle flipbook as a local wisdom-based media innovation to improve students' critical thinking skills.

The picture of the practicality of Moodle flipbook as an innovation in social studies learning media based on local wisdom to improve students' critical thinking skills can be seen in the response of students as users of learning media. Moodle flipbook practicality processing data was collected through observation activities by providing questionnaires carried out directly by researchers.

The results of the assessment with several indicators that become an assessment of the practicality of Moodle flipbook as a media innovation based on local wisdom are the interest in presenting Moodle flipbooks, skills training, evaluation, media as a source of concepts of local values, and language. The results of the assessment can be seen in Table 2 below:

**Table 2**

*Results of the analysis of student responses to the Practicality of the Moodle Flipbook*

Number	Observed aspects	Student Response Percentage (%)	Practicality Criteria
1	Presentation Interest	89,20	Very practical
2	Trained skills	86,67	Very practical
3	The relevance of the material to the concept of local wisdom values	69,80	Practical
4	Evaluation	81,80	Practical
5	Language	88,00	Very practical
<b>Average</b>		<b>83,09</b>	<b>Practical</b>

Based on the results of the analysis of the students' responses, it shows that Moodle flipbook as an innovation in social studies learning media based on local wisdom is very practical to use to improve students' critical thinking skills. Meanwhile, the results of observations of student activities between the experiment class and the control class during learning can be seen in Table 3 below:

**Table 3**

*Student activity during the learning process*

Number	Observed aspects	Experimental Class	Percentage (%)	Control Class	Percentage (%)
		Average		Average	
1	Readiness of students to receive subject matter	21	84,0	18	72,0
2	Student activity in discussion activities	17	68,0	15	60,0
3	Student activities in discussion activities	16	64,0	10	40,0
4	Student activeness working on assignments in Moodle Flipbook	22	88,0	16	64,0
5	Able to develop findings according to the context of the problem	19	76,0	15	60,0
6	Able to apply the values of local wisdom in the discussion process	18	72,0	16	64,0

7	Students follow the excitement of studying carefully and dare to criticize	16	64,0	10	40,0
8	Student activity in end-of-lesson activities	15	60,0	14	56,0
	Total Percentage of Student Activity		72,0		57,0

Based on Table 3 above, it turns out that student activity in the learning process in the experiential class using Moodle flipbooks is higher (72.0%) compared to the Kotrol class (57.0%). This shows that students' interest in using Moodle flipbooks based on local wisdom can increase student activity to be actively involved in learning to improve students' critical thinking skills.

Based on the results of data analysis, the effectiveness of Moodle flipbook as an innovation in social studies learning media based on local wisdom is quite effective for improving students' critical thinking skills at SMP Negeri 2 Makassar, Indonesia. These results can be seen from the acquisition of an average score of n-Gain critical thinking skills of higher experiment class students, namely (66.67%) with an effective category and a control class (36.37%) with an ineffective category.

In the experiment class, the learning process was carried out using a Moodle flipbook, while the control class did not use a Moodle flipbook as an innovation in social studies learning media. The use of Moodle flipbook as an invoice of social studies learning media based on local wisdom in *Epos I La Galigo* as a cultural value of Bugis-Makassar, Indonesia is the value of *siri'* and *pacce'* (value of shame and sympathy), the value of *sipakatau'*, *sippakalebbi'* and *sipakainge'* (mutual respect, respect, and reminder (Rahman & Mariani 2009). The critical thinking skills trained refer by Ennis (1998) are categorized into five aspects, (a) providing simple (practical) explanations, (b) building basic skills, (c) inferring, (d) beliefs, and (e) actions. The integration of local wisdom values is to improve critical thinking skills resulting from the pretest and posttest as shown in Table 4 below:

**Table 4**  
*Integration of local wisdom values to improve critical thinking skills*

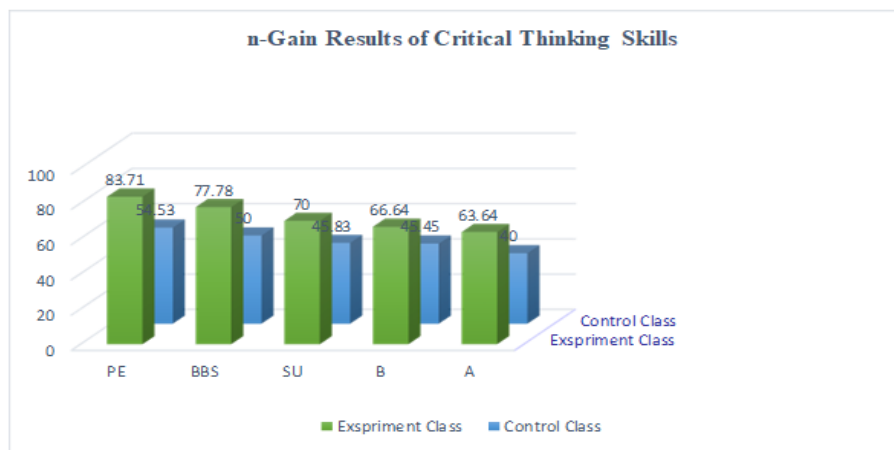
Class VII Materials	The Value of Local Bugis-Makassar Wisdom, Indonesia in <i>Epic I La Galigo</i>	Indicators of Crtis Thinking Skills
Community Life in the Pre-literacy Period	<i>Siri'</i> and <i>Pesse's</i> values (values of shame and sympathy)	1. Provide a simple (practical) explanation 2. Build basic skills 3. Summing up
	<i>Sipakatau''</i> , <i>Sippakalebbi'</i> and <i>Sipakainge'</i> values (mutual respect, respect, and reminder)	4. Belief 5. Action

Based on the table above, the n-Gain results for each of the critical thinking indicators in the experiment class and control class can be seen in the figure of chart 2 below:



**Figure 2**

*Gain value of each critical thinking skill indicator*



**Information:**

PE: Provide a simple (practical) explanation

BBS: Build basic skills

SU: Summing up

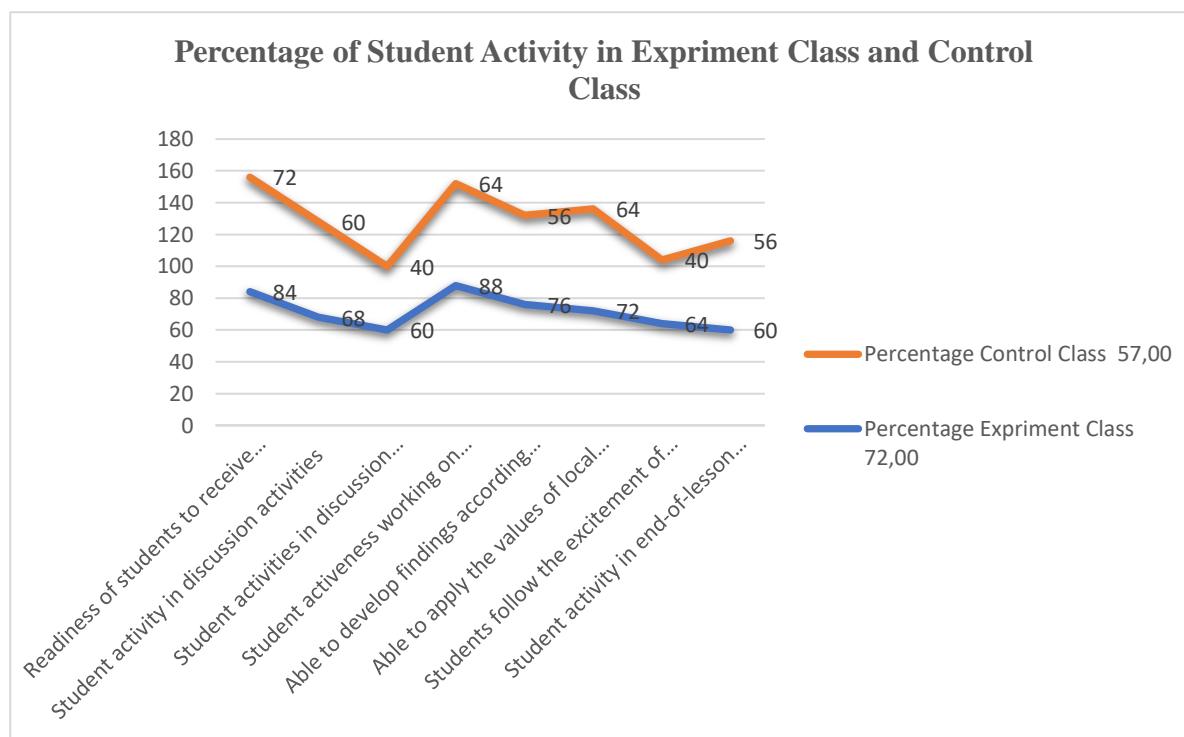
B: Belief

A: Action

The results of the statistical analysis of the average n-Gain of 35 grade VII students at SMP Negeri 2 Makassar, Indonesia, the largest gains on each indicator gave a simple explanation for the experiment class (83.71%), while the control class (54.53%). While the smallest gain of n-Gain found on the same indicator is to give action. The experiment class was (63.64%) and the control class was (40.00%). Based on the picture, it can be concluded that there is a difference in critical thinking skills between classes that use Moodle flipbooks and classes that only use package books without learning media innovation. However, there appeared to be a growth in critical thinking skills in both test classes for each indicator, but the growth assessment class outperformed all control class indicators which meant more effective or higher. These findings are reinforced by the advantages of ICT. According to Fryer (2001), it is possible to train higher-order thinking skills (problem-solving, decision-making, synthesis analytical thinking, etc.) as well as indirectly improve ICT literacy.

Another effectiveness that supports that Moodle flipbooks based on local wisdom are quite effective for improving students' critical thinking skills can be seen in student activities in the learning process, such as the 3 garfik figure below:

**Figure 3**  
Classroom learning process activities



The graphic image above shows that it turns out that student activity in the experiential class is higher when compared to the control class in all aspects that are studied. These findings are in line with the benefits of using learning media, namely; More raw, interesting, interactive, and efficient presentation (Arsyad, 2002).

#### 4. Discussion

The use of learning media in the form of multimedia or the use of information and communication technology can inspire students through the help of showing pictures and videos as well as real examples in everyday life (Supriatna & Maulidah 2020). Sukiman (2012) states that learning media can clarify the presentation of messages and information so that it can facilitate and improve learning processes and outcomes.

The improvement of critical thinking skills in the experiment class on indicators provides a simple explanation higher than other indicators because students feel helped by the features in the Moodle flipbook such as animated video shows and illustrations. This research is supported by Aksoy (2012) who emphasizes that the animation method is more effective than the traditional teaching method in improving student learning outcomes because animation can enrich students' competence in a variety of teaching materials. In line with Susanto (2016), the effort to establish optimal Shiva's critical thinking skills is the existence of innovative and interactive learning, students are seen as thinkers, not as mediators, facilitators, and motivators who help students in learning. In addition, it is strengthened by Mills, (2006) that integrating technology into the curriculum becomes an integral part of good teaching.

The study also found that students' critical thinking skills, as the n-Gain results found indicators of taking action in two classes to be in the low category. This shows that learning using Moodle flipbooks has not been able to grow students' critical thinking skills to the fullest with limited time and requires a long process in training students' critical thinking skills. This ability will develop optimally if it is deliberately developed. These findings are relevant to McKendree (2002) that critical thinking skills can be developed, but cannot be trained all at once. Therefore, critical thinking skills need to be developed in students from an early age and continue to be trained so that students think creatively (Sapriya, 2009; Thompson, 2011; Hatzigianni et al., 2023). The improvement of students' critical thinking skills is indispensable especially in social studies learning, because with critical thinking skills the mind is encouraged to spread far and widely seek social studies problem solving using its way (Johnson, 2002; Vieira et al., 2011).

Meanwhile, the results of the analysis of the practicality of Moodle flipbook as a media innovation based on local wisdom to improve students' critical thinking skills can be found with positive student responses. According to the results of the analysis, it was found that students felt interested in Moodle flipbooks aimed at aspects such as interest in presenting Moodle flipbooks, skills training, evaluation, and media as a source of concepts of local values, and language. Students feel attracted to Moodle flipbooks because the appearance and format help foster motivation and train critical thinking there are variations of features, namely video animations, illustrations, and phenomena relevant to social studies material. The results of the student response illustrate that seeing a photo or picture is higher in meaning than reading or hearing (Houts et al., 2006; Pendidikan, 2006). The average result of student response to the practicality of Moodle flipbook as an innovation in social studies learning media is 83.09% where the percentage is in the range of 68-83 if interpreted on the scale of interpretation criteria scores get practical or interesting categories (Arikunto, 2009).

The presence of technology in education can be interpreted into three paradigms, namely (a) technology as a tool or in the form of a technological product that can be used in education, (b) technology as content or as part of material that can be used as content in education, and (c) technology as an application program or learning and management tool that is effective and efficient (Munir, 2012). The benefits of Moodle flipbook as an innovation in social studies learning media based on local wisdom to improve students' critical thinking skills are more interesting and easier to understand, presenting multimedia messages, modifying student learning more actively and varied, and learning more flexibly.

## **5. Conclusion**

Based on the results of the analysis and discussion, the conclusion in this study is that the effectiveness of using Moodle Flipbook as an innovation in social studies learning media based on local wisdom to improve students' critical thinking skills at SMP Negeri 2 Makassar, Indonesia can be seen from three findings. The findings were (1) an effectiveness test that showed the experiential group was more effective or better compared to the control group with all indicators of critical thinking skills, (2) the practicality test found that students felt interested in the Moodle flipbook aimed at the observed aspects was the interest in presenting the Moodle flipbook, the skills trained, evaluation, media as a source of the concept of local values, and language, and (3) student activity in the learning process, students in the experiential class are higher when compared to the control class of all aspects that are studied.

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Unlike 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 flipbooks as an innovation in social studies learning media based on local wisdom to improve students' critical thinking skills. For further research, it is necessary to develop an e-learning-based social studies learning model with local wisdom to improve students' metacognitive skills. The data supporting these findings are available from corresponding authors who match the research problem and are found naturally.

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