The Reactualization of *Sipakatau*, *Sipakalebbi*, and *Sipakainge'* Values Using *La Galigo* Comic with Augmented Reality

Shinta Dewi Sugiharti Tikson[1]*, Samintang[2], Firdaus[3], Andi Khaerun Nisa[4], Wahda[5], Fahrina Mustafa[6]

[1,3,4,5,6] Management, Faculty of Economics and Business, Universitas Hasanuddin, Makassar, Indonesia
[2] Accounting, Faculty of Economics and Business, Universitas Hasanuddin, Makassar, Indonesia

A R T I C L E I N F O

A B S T R A K

Berdasarkan observasi belum terdapat media pembelajaran yang edukatif dan interaktif pada pembelajaran muatan lokal terkait penguatan karakter siswa. Penelitian ini bertujuan untuk menganalisis minat dan antusiasme siswa terhadap pembelajaran muatan lokal, memahami nilai-nilai, keberagaman, dan inklusivitas yang terkandung dalam La Galigo melalui komik berbasis Augmented Reality (AR). Penelitian ini menggunakan uji Wilcoxon Signed-Rank yang digunakan untuk membandingkan pre-test dan post-test, serta membandingkan catatan anekdot aktivitas siswa. Sebanyak 14 siswa kelas 4 dan 5 mengikuti program ini. Pengumpulan data menggunakan observasi, catatan anekdot, dan wawancara mendalam juga digunakan untuk menilai kepribadian siswa. Berdasarkan evaluasi pre-test dan post-test terdapat peningkatan pengetahuan siswa setelah digunakan metode pembelajaran komik. Perubahan pengetahuan dan sikap siswa dilakukan melalui penggunaan indikator penilaian berkelanjutan dan keterlibatan guru di kelas. Inovasi ini diharapkan dapat membantu siswa mengembangkan karakter yang lebih baik dengan memasukkan nilai-nilai berbasis trisipaka (sipakatau, sipakalebbi, dan sipakainge') ke dalam kehidupan sehari-hari.

A B S T R A C T

Base on observation there is no educative and interactive learning media in local content lessons related to strengthening student character. This study aims to analyze student interest and enthusiasm in local content lessons, understand the values, diversity, and inclusivity contained in *La Galigo* through Augmented Reality (AR)-based comic. This study is use Wilcoxon signed-rank test is used to compare the pre-test and post-test, also comparing anecdotal notes of student activities. A total of 14 students from the 4th and 5th grade participated in this program. Data collection is use observations, anecdotal records, and in-depth interviews were also used to assess students' personalities. Based on the evaluation of the pre-test and post-test, there is an increase in students' knowledge after the comic learning method is used. Changes in student's knowledge and attitude are accomplished through the use of continuous assessment indicators and the involvement of the teacher in the classroom. It is hoped that this innovation can help students develop better character by incorporating trisipaka-based values (*sipakatau, sipakalebbi, and sipakainge'*) into their daily lives.

1. INTRODUCTION

The role of elementary schools is inextricably linked to success in raising the human development index through quality education. Elementary school is the first formal educational institution used to determine success in moving education forward. The goal is to rise generation of excellence, achievement, character, and noble character. There are various challenges in developing and strengthening the character of elementary school students from the alpha generation, also known as the digital generation (Samerkhanova & Imzharova, 2018; Spante et al., 2018). Elementary school students are alpha generation, who are the most familiar with the internet of all time and are unquestionably linked to gadgets, which makes them lack in socialization, lack in creativity, and have individualistic mindset. Furthermore, experiential learning will be an important part of future teaching-learning approaches, particularly in engaging alpha students and enabling them to co-create knowledge rather than simply accessing information instantly, so that visual, auditory, and kinesthetic tools will support the future teaching learning environment, to provide a real experience with supporting social connections (Shernoff et al., 2017; Ziatdinov & Cilliers, 2021). Not only students and teachers are required to adapt to changing

conditions and technology-based learning methods, they also must adapt to the challenges of the 21st century education and the pandemic outbreak which created a domino effect in instilling character values (Putri et al., 2020; Süt & Öznaçar, 2017).

As part of the *Gerakan Nasional Revolusi Mental*, *Penguatan Pendidikan Karakter* (PPK) aims to strengthen students' character, which refers to the five main priority character values, namely religious attitudes, nationalism, mutual cooperation, independence, and integrity. Character education is the process of instilling or internalizing positive values in students in order for them to have good character in accordance with the values referred to in religion, culture, and national philosophy (Mustoip et al., 2018; Oktari & Kosasih, 2019). In Indonesia, character education consists of at least nine basic character pillars, beginning with 1) love for God and the universe and its contents; 2) responsibility, discipline, and independence; and 3) respect for others. 3) truthfulness; 4) respect and politeness; 5) compassion, care, and cooperation; 6) self-assurance, creativity, never giving up, and hard work; 7) fairness and leadership; 8) kindness and humility; 9) tolerance, love, peace, and unity.

Teachers nowadays use media as a teaching tool to improve character education, but many teachers still use the lecture style throughout the learning process, which bores students. Learning will be successful in elementary schools if the teacher uses a good learning strategy that will motivate kids to be engaged in the learning process (Apriati et al., 2021; Karo-Karo & Rohani, 2018; Tiarasari et al., 2018). As a result, a medium for learning is required so that students do not lose interest (Febriansyah et al., 2020; Hardiyanti et al., 2020). Books, visual equipment, audio, computers, and other physical equipment used to enhance the learning process are examples of media (Lusiyani & Dara Anindya, 2021; Saputri et al., 2018; Yamin et al., 2020). Learning media is used by teachers as a hardware and software tool to transfer information to their pupils throughout the learning process.

Several schools in Makassar are attempting to enhance student character using a local wisdom approach in the *Muatan Lokal* curriculum. The application of the local content curriculum for the Bugis-Makassar regional language at elementary school aims to actualize character values for students based on the Bugis-Makassar community's through (*sipakatau, sipakalebbi, sipakainge'*) or *trisipaka*. Based on observation and deep-interview in an elementary school in Makassar, there is no educative and interactive learning media in local content lessons related to strengthening student character. Furthermore, students' knowledge and literacy of the Buginese culture deteriorated. As a result, efforts are required to actualize the character of students through the *trisipaka* values which mean humanizing, respecting, and reminding one another. These values encourage people to be bystanders who defend bullied people and become well-liked figures among their peers (Andini & Kurniaman, 2021; Halima et al., 2021). Research stated that Bugis people are better known for their Islamic religious identity, so Islamic characteristics are more inherent in the Watansoppeng Bugis Land, influencing the Bugis people's social, customary, and cultural life, including the Panggaderreng system's *sipakatau, sipakalebbi,* and *sipakainge* culture or traditional rules governed by consider sublime (Gendolang, 2022).

The *trisipaka* value has a one-of-a-kind lesson learned that has proven to improve people's character in everyday life. Starting from *sipakatau,* this culture represents mutual respect in terms of acknowledgment and appreciation for other human beings. *Sipakatau* has five key messages: 1) correct word; 2) honesty; 3) determination; mutual respect; and 5) surrender to the Almighty God (Andriani & Ramadani, 2022; Halima et al., 2021). *Sipakalebbi* means mutual praise, affection, and cooperation. This culture teaches the importance of acknowledgment and appreciation for other people's achievements. It habituates people to appreciate the work of others, without considering their social status and encourages the subordinates to finish the work, quickly. *Sipakainge* culture means the attitude to remind, motivate, and critic each other, to aid others to practice behavior (Bumbungan et al., 2022; Halima et al., 2021). *Sipakainge* culture consists of *warani* (bravery) and *arung* (leadership) values. *Warani* represents bravery to convey ideas, opinions, suggestions, and criticism. Meanwhile, *arung* means a humble leader in dealing with differences, ideas, suggestions, and criticism from its follower.

In the present era, almost every aspect of education is being influenced by technology. With the advancement of technology, teachers and students now have limitless opportunities to extend learning beyond the confines of the classroom and can now access the entire world in just a few seconds with the proper access and devices (Fitria et al., 2022; Siregar, 2020). Having access to this technology allows students to connect to learning in a more authentic and meaningful way, especially with multiple ways for students to engage with content via AR (Augmented Reality) and VR (Virtual Reality) tools. AR can be used to create learning media that cannot be done directly, such as observing an object in three dimensions. We can only observe something without having to do it directly by using a cell phone or laptop (Fitria, 2023; Halili, 2019).

Various methods have been used to improve students' knowledge and character, one of which is comic books and augmented reality (AR). Comics have valid results with a total average of 3.60 and a

positive student response of 92% in terms of kinesthetic, auditory, and visual learning styles, and all of them meet the Polya Indicator and pass the *Kriteria Ketuntasan Minimal* (KKM) requirements set by the school. The use of appropriate comic media for child development can increase learning quality and make it simpler to reach learning objectives rapidly (Alit et al., 2021; Gumilang et al., 2019; Rina et al., 2020). AR media, on the other hand, has a 75% effect on improving fifth-grade students' critical thinking skills. The following are some previous studies on the use of AR in the teaching and learning process: AR has significant potential as a method for highlighting notable aspects and bringing history to life through mobile device multimedia material, using Augmented Reality, which can realize the virtual world into the real world, it can turn these objects into 3D objects (Andriani & Ramadani, 2022; Darmayanti et al., 2022; Saputro & Saputra, 2015). So that learning is not monotonous and children are motivated to learn more, such as knowing the name of the organ and the description of each organ, the implementation of AR learning media show, it can provide an in-depth experience and understanding more interactively and interestingly in learning the components of the Total Station tool, teachers can be assisted in conveying Javanese script material, so that students are more interested in learning Javanese script ad shows very good results and is suitable for use as learning media, both in the classroom and independently (Kusuma et al., 2019; Kysela & Štorková, 2015; Restika et al., 2021).

Furthermore, some of the benefits of the AR activities were subject concretization, retention, excitement and entertainment, the opportunity to repeat, and multimedia support, the use of the AR application for learning *Salat* or *Sholat* can increase students' interest in learning and the level of students' understanding of the prayer material which is indicated by an increase in scores before and after using the application, AR integrated circulatory system electronic comic media can increase students' interest in learning, AR increases language skills and academic performance. Additionally, it decreases students' anxiety, boosts their creativity, and promotes teamwork and involvement, and using AR-based instructional media improves English subject-matter student learning results, teachers and students feel that learning is more enjoyable in the learning process based on the findings of the questionnaire used to acquire a score classified as excellent (Kurniawan et al., 2021; Ningrum et al., 2022; Shaumiwaty et al., 2022). As a result, comic and augmented reality have been shown to be valid and feasible in improving students' cognitive abilities and character (Wedyan et al., 2022; Yapici & Karakoyun, 2021).

According to the literature review, no comic media were discovered that combined the values of *trisipaka* local wisdom with AR in actualizing student characters. One of the benefits in inventing the AR-based *La Galigo* comic serves as a medium for instilling *trisipaka* values. This comic is based on the *La Galigo* manuscript, the world's longest literary work, which has been designated as a UNESCO Memory of the World. This maritime cultural value is related to the *trisipaka* value because almost all episodes of *La Galigo* revolve around sailing and travel. These two themes include maritime culture, which teaches people about a variety of topics such as egalitarian attitudes, openness, deliberation, respect for differences, and independence (Pathuddin et al., 2021; Toa, 2017). This maritime culture is consistent with *trisipaka* values, which emphasize religious attitudes, tolerance, independence, and respect for achievement, as well as peace-loving, reading-loving, caring for the environment and society, responsible, nationalist, socially concerned, communicative, and curious people (Jamaluddin et al., 2022). After explaining the background, the researchers decided to perform a study on the development of comic-based augmented reality (AR) to improve the capacity and character of grade IV and V elementary school students. This study aims to improve the character of fourth and fifth grade students who meet the qualifying criteria by using a comic-based AR application. It is intended that this research would aid educators in the use of generating comic media to improve student characters through the combination of AR technology and local wisdom *trisipaka*.

2. METHOD

This community service program was carried out for three months at SDN Pannyikkokang 1, Makassar, South Sulawesi, Indonesia. Quantitative research method using Wilcoxon signed-rank test is used in this study to compare the pre-test and post-test, also anecdotal notes of student activity (Creswell & Creswell, 2018). A total of 14 students from the 4th and 5th grade participated in this program. The Wilcoxon signed-rank test is used to compare two related samples (consistent samples) or perform a paired repeated measures difference test on a single sample to determine whether the population mean rank differ. Observations, anecdotal records, and in-depth interviews were also used to assess students' personalities, particularly their understanding and application of Bugis-Makassar *trisipaka* cultural values. Every week, the technique of assessing student character development is used to record any changes in student behavior using anecdotal notes and incidental records from local content teachers. This activity drew 14 students and was facilitated by the homeroom teacher, who is also a local content teacher in the

Bugis-Makassar language. Each student is also accompanied by a local content team and teacher to assess their understanding of *trisipaka* values, both theoretically and practically. *Trisipaka* variables, operational definitions, and indicators is show in Table 1.

Table 1. *Trisipaka* Variables, Operational Definitions, and Indicators

No	Variable	Operational definition	Indicator
1	Sipakatau	*Sipakatau* is an attitude of mutual respect, not hostility, and treats other people as whole human beings.	1. Students are no longer noisy when following local content lessons 2. Students ask permission from the teacher when they want to leave the class 3. Students no longer bully their friends
2	Sipakalebbi	*Sipakalebbi* is an attitude of mutual praise, giving appreciation, and respecting others.	1. Respect the opinion of friends who provide answers. 2. Give appreciation with applause to friends who dare to appear reading La Galigo comics in class. 3. Lend stationery to friends in need.
3	Sipakainge	*Simukange*' is an attitude of *warani* (courage) and *arung* (leader) which teaches students to have the courage to express opinions, both criticism and suggestions, while *arung* teaches students to be leaders who have humility.	1. Dare to take a role in the role-play of La Galigo and read the comic story text. 2. Dare to express opinions in the learning process in class. 3. Remind friends if they do something wrong or wrong.

3. RESULT AND DISCUSSION

Result

The *La Galigo* Comic titled "*Pelayaran ke Dusung*" and the AR application were used as learning media in this program. This comic was created using the Bugis-Makassar language's local content curriculum and has been integrated with the AR application, which can be downloaded for free from the Google Play Store. This comic can assist students in understanding the concept and application of *trisipaka* values as an alternative media for learning the Lontara script in developing literacy about *La Galigo* as an intangible cultural heritage that contains maritime culture. *La Galigo*'s Comic based AR is show in Figure 1.

Figure 1. *La Galigo*'s Comic Based AR

The pre-test and post-test data obtained were processed using the Wilcoxon signed-rank test. The Wilcoxon test result is show in Table 2.

Table 2. The Results of Students' Pre-Test and Post-Test Scores in Measuring The Level of Knowledge of *Trisipaka* Values

No	Student's Initials	Class	Pre-test	Post-test	Difference	Annotation

No	Student's Initials	Class	Pre-test	Post-test	Difference	Annotation
1	APA	4B	39	40	1	Increase
2	AN	4B	30	27	-3	Decrease
3	AFF	4B	20	21	1	Increase
4	ATP	4B	27	37	10	Increase
5	RHH	4B	25	34	9	Increase
6	NS	4B	25	25	0	Stagnant
7	MHF	4B	27	26	-1	Decrease
8	AFAR	5B	30	32	2	Increase
9	EAF	5B	20	29	9	Increase
10	F	5B	25	36	11	Increase
11	FZ	5B	26	35	9	Increase
12	JD	5B	29	27	-2	Decrease
13	YR	5B	20	35	15	Increase
14	IN	5B	20	20	0	Stagnant

According to Table 2, the developed media are classified pretty well. As a result, AR comic media about La Galigo has been recognized genuine and appropriate for use in education. Table 2 shows that there are 9 students (65%) experiencing an increase in knowledge after being given the comic learning method, 2 students (14%) did not show any change in knowledge after being given the comic learning method, and 3 students (21%) showed a decline in knowledge after being given the comic learning method. Based on these findings, each teacher and student evaluation of the digital comic media developed includes images that can assist students grasp the *trisipaka* issue. This film is also presented in augmented reality format, allowing students to revisit it if they do not understand a certain idea. According to these observations and in-depth interviews, the teacher's daily anecdotal and incidental records are then recapitulated into monthly notes for each student, displaying character strengthening with various attitudes: Nine children are no longer obnoxious when listening to local subject lessons, anxiously anticipate the teacher's explanation, ask permission to leave the classroom from the teacher, and no longer bully their classmates. Then the result of Wilcoxon signed rank test is show in Table 3.

Table 3. Wilcoxon Signed-Rank Test

		N	Mean Rank	Sum of Ranks
Postest - Pretest	Negative Ranks	3[a]	4.17	12.50
	Positive Ranks	9[b]	7.28	65.50
	Ties	2[c]		
	Total	14		

a. Postest < Pretest; b. Postest > Pretest; c. Postest = Pretest

Based on Table 3, from 14 subjects nine students experinced knowledge increase, two students did not change, and three students showed a decline of *trisipaka* Bugis cultural values after being given the comic learning method. The result of test statistic is show in Table 4.

Table 4. Test Statistics[a]

	Postest - Pretest
Z	-2.086[b]
Asymp. Sig. (2-tailed)	0.037

a. Wilcoxon Signed Ranks Test; b. Based on negative ranks.

Base on Table 4 the value of Asymp. Sig. (2-tailed) is 0.037, which means H_a is accepted because there is an increase in students' knowledge after the comic learning method is used. Results of analysis of anecdotal records in measuring the level of application of trisipaka values is show in Table 5.

Table 5. Results of Analysis of Anecdotal Records in Measuring The Level of Application of *Trisipaka* Values

No	Student's Initials	Class	Implementation		Difference	Annotation
			Initial Notes	Final Notes		
1	APA	4B	1	5	4	High

No	Student's Initials	Class	Initial Notes	Final Notes	Difference	Annotation
			Implementation		**Difference**	**Annotation**
2	AN	4B	1	1	0	Low
3	AFF	4B	1	4	3	Moderate
4	ATP	4B	1	3	2	Fair
5	RHH	4B	0	4	4	High
6	NS	4B	2	5	3	Moderate
7	MHF	4B	1	3	2	Fair
8	AFAR	5B	2	5	3	Moderate
9	EAF	5B	0	4	4	High
10	F	5B	1	3	2	Fair
11	FZ	5B	0	2	2	Fair
12	JD	5B	3	5	2	Fair
13	YR	5B	0	4	4	High
14	IN	5B	1	1	0	Low

Based on anecdotal notes as show in Table 5 taken at the start and end of this program, the numbers 1-5 represent the frequency of students applying the 3S values during the process. This anecdotal notes of student activities related to *trisipaka* implementation were recorded by the teacher and the team. Table 5 showed 4 students (29%) experienced a high improvement in students' attitudes after being given the comic learning method, 3 students (21%) experienced a moderate improvement in students' attitudes after being given the comic learning method, 5 students (36%) experienced a fair improvement in students' attitudes after being given the comic learning method, and 2 students (14%) experienced low improvement in students' attitudes after being given the comic learning method. Based on student observations and in-depth interviews with teachers, the teacher's daily anecdotal and incidental records are then recapitulated into monthly notes for each student, which includes: daring to play the role of La Galigo and read the comic story text, daring to express themselves in class during the learning process, reminding friends when they do something wrong, and working well with others in the class. Analysis of anecdotal records with the wilcoxon signed-rank test is show in Table 6.

Table 6. Analysis of Anecdotal Records with the Wilcoxon Signed-Rank Test

		N	Mean Rank	Sum of Ranks
Final - Initial	Negative Ranks	0[a]	0.00	0.00
	Positive Ranks	12[b]	6.50	78.00
	Ties	2[c]		
	Total	14		

a. Final Observation < Initial Observation; b. Final Observation > Initial Observation; c. Final Observation = Initial Observation

There were twelve students who experienced an improvement in attitude and two students did not experience an increase in attitude towards the application of *trisipaka* Bugis cultural values after being given the comic learning method. The result of test statistic is show in Table 7.

Table 7. Test Statistics[a]

	Initial Observation – Final Observation
Z	-3.100[b]
Asymp. Sig. (2-tailed)	0.002

a. Wilcoxon Signed Ranks Test; b. Based on negative ranks.

Based on Table 7, it is known that value of Asymp. Sig. (2-tailed) is 0.02 < a significance level of 0.05. It is concluded that Ha is accepted, which means there is an improvement in students' attitudes after being given the comic learning method.

Discussion

This program presents solutions to build and strengthen student character by combining the noble values of local wisdom and technology through an AR application. AR can be used in almost any lecture or course to help students develop problem-solving and high-level reasoning skills, and the results showed that students were generally willing to accept using AR to learn geometry, and AR-supported

teaching methods significantly improved students' learning outcomes (Cress et al., 2019; Koparan et al., 2023). On the other hand, the use of AR in educational contexts has pedagogical implications; AR can impact the learning process in three dimensions: physical, cognitive, and contextual, and motivation is the second most generally stated benefit of employing AR in educational settings (Garzón et al., 2019; Silva et al., 2023). Based on the pre-test, the majority of students did not understand the essence of *trisipaka* values implemented in their daily activities. This is demonstrated by students who continue to make noise, arrive late for class, littering, and annoy their classmates. Students are also unaware of *La Galigo*, one of South Sulawesi's cultural treasures, in which each episode employs various forms of *trisipaka* values. In this research, validation and practicality of *La Galigo* comic-based AR media have been carried out by validators, teachers, and students. The first stage that is carried out is the analysis stage. This analysis stage contains the problems that occur as well as the influencing factors and solutions to these problems. At this stage and based on interviews with fourth and fifth grade teachers, there are still some elementary school grade IV and V students whose capacity buildings are low, for that we need media to encourage students' character (Alawamleh et al., 2022; Khotimah & Hidayat, 2022).

Researchers began designing AR comic media to be developed. First, the researcher chooses a title and theme according to the La Galigo material, then the researcher chooses the characters, setting, and storyline, then arranges it into a story. Finally make dialogue according to the story that has been designed into three classes (*sipakatau, sipakalebbi, sipakainge*) and a role-play session. Furthermore, the development stage at this stage is validated after the product has been designed (Gumilang et al., 2019; Rosyida & Subroto, 2018). At the time of validation, the researcher made an instrument as an assessment of the media that had been designed and assessed by the validator. Validation is carried out by the teachers and researcher using Wilcoxon Match Pair Test and Anectodal Records. The next stage, namely the implementation stage, at this stage a trial was carried out on 14 students at SDN Pannyikkokang 1 Makassar, this saw the practicality of the media being developed. Prior to the trial, the media was revised according to the suggestions and input from the teachers. The last stage is evaluation (evaluate) at this stage repairs or revisions are carried out to compare the values given by media experts, material experts, linguists and also practitioner experts on this comic media (İlhan, 2021; Rosyida & Subroto, 2018; Toh et al., 2017).

After carrying out the education process for students with the knowledge and implementation of *trisipaka* values through three classes, the next student activity is participating in role-play by playing the characters in the *La Galigo* comic "*Pelayaran ke Dusung*". Role-playing is a method of introducing the episode of *La Galigo* that talks about Sawerigading's cousin's adventures in *Dusung*. Role-play is a cooperative learning model that is capable of increasing students' self-confidence and creativity in the learning process, establishing correlations between students, leaving a strong and lasting impression on students' memories, being interesting, thus making the class enthusiastic and dynamic, arousing enthusiasm in students, increasing togetherness, and being capable of increasing the empathy of elementary school students, which has been proven to be valid, practicable, and effective (Asfar et al., 2021; Rochmawati et al., 2021).

Besides that, role-play activity was suitable for the students, fun and entertaining, and could increase their confidence apart from that a positive student-teacher relationship also played a big role during the learning process of ethnic language, facilitates helper–user equality and increases students' involvement, self-efficacy, and empathic abilities in mental health practice, and encourages the learners to generate their own reality, develops the skill to interact with other people, increases motivation of students, encourages shy students to be engaged in activities, increases selfconfidence, and makes them aware regarding the complexity (Adams & Mabusela, 2014; Rashid & Qaisar, 2017; Rønning & Bjørkly, 2019).

The validation results of Wilcoxon Match Pair Test and Anecdotal Records in AR comic media are in the valid category. The results show that this comic media meets the valid and very feasible criteria with a Asymp. Sig. (2-tailed) is 0.037, which means there is an increase in students' knowledge after the comic learning method is used. The results of the validity test can be presented with value of Asymp. Sig. (2-tailed) is 0.02 < a significance level of 0.05, which means there is an improvement in students' attitudes after being given the comic learning method (Yusof & Alas, 2021). So that it can be concluded that the data is normally distributed, then the hypothesis significance test between the two samples in pairs to determine the effect of AR comic media on students' character was carried out by paired t-test.

It is in line with previous study aimed to describe the implementation of interactive digital using comic media which was applied at SD to increase student engagement and learning outcomes (Khotimah & Hidayat, 2022). The results of the application of comic media showed that the mean achieved by PES students is 76.36 with a standard deviation of 12.60, while the total average is 68.68 with a standard deviation of 15.91. The statistical value shows that the average learning outcomes of students from PES

are greater than students from SES. The results showed effectiveness of the use of digital-based educational comic media in improving learning outcomes in elementary school students. The consequences of this study provide an overview of the use of AR comic media to improve the character of fourth and fifth grade students. This study will be especially valuable for elementary school teachers as a reference when implementing classroom instruction. The study's disadvantage is its relatively narrow research scope; this study only included one school as a participant. It is hoped that future research will be able to deepen and widen the field of research on AR comic media deployment.

There are some limitations to this study (a) This study was done in a limited time of only three months, which means we were unable to do an in-depth observation of changes in students' knowledge and attitudes; (b) The AR-based *La Galigo* Comic used in this study needs to be further developed and tested for its effectiveness as a learning media by administering it to a larger sample; and (c) Future research can use mix-method by using quantitative and qualitative method for a more comprehensive result.

4. CONCLUSION

La Galigo is the world's longest literary work, and it has only recently been introduced in two forms: staging (musical theatre) and script. The Augmented Reality (AR)-based *La Galigo* comic is here as an innovation that combines local wisdom values with AR-based technology. The AR-based *La Galigo* Comic Innovation "*Pelayaran ke Dusung*" has been proven to be an effective learning media for 14 students in grade IV and V at SDN Pannyikkokang 1 Makassar. This learning media is capable of increasing students' knowledge and improved their attitude by understanding and implementing trisipaka character values, as well as encouraging active and enthusiastic participation of students in following local content subjects in the Bugis-Makassar regional language.

5. ACKNOWLEDGEMENT

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