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Ethnocultural wisdom and development of e-comic

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ABSTRACT

Cultivating local cultural values by adapting to technological advances, found in digital comic learning media oriented towards local Sasak wisdom, provides ease of learning and communicative language and is easy to access but still needs to be improved. The research aims to develop digital comic media that is feasible, practical and effective, oriented towards Sasak local wisdom (e-kodisa). The development stage uses the stages of analysis, design, development, implementation and evaluation (ADDIE). The research results show that digital comic media oriented towards Sasak local wisdom from material experts in category 1 is feasible, and material experts in category 2 are possible. The assessment of digital comic media from Media expert 1 is in the attainable category, and media expert 2 is very doable. The evaluation of learning design experts and language experts is in the very decent category. Trials on students show that digital comic media is practical and can be used in learning. The results of the effectiveness test showed sig. (2-tailed)<0.05 Ho is rejected, and Ha is accepted, meaning a significant difference exists between the pretest and posttest averages. So, developing digital comic media oriented towards Sasak local wisdom is feasible, practical and effective.

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1. INTRODUCTION

The educational context in the region must grow and develop according to the cultural context in which education takes place. The regional cultural context in learning should be preserved and cultivated so that it does not fade. If cultural values are lost and faded, it is feared that students will lack understanding of local cultural values, and the rapid progress of science and technology may gradually undermine the existence of regional culture [1], [2]. Local wisdom is a way of life, information, and different life strategies in the form of actions that local communities take to address various issues and meet their needs [3]. Learning in schools tends to focus on existing textbooks; the teacher, as the primary source of learning, causes students to passively only listen and memorize the material [1].

Education continues to downplay the significance of common sense and the effects of globalization, emphasizing technological progress so that students' understanding becomes uneven [4]. Using local knowledge to inform learning is one way to apply character education [3]. Cultural values and local knowledge can be used as teaching tools or resources [5]. Students' understanding of learning competencies is improved when local culture and wisdom are incorporated into the educational process [3]. Cultural factors and education are related [6].

Teachers must be competent curriculum developers for schools to create curricula that incorporate local expertise into learning [2]. Local wisdom is an ancestral tradition that people believe can mould character. It is a vital cultural resource amassed through the community's knowledge, experience, and intelligence to become self-sufficient [2], [7]. In some countries, local culture is even part of education policy [6]. Sasak local wisdom provides references and values originating from the ethics of social life through the culture and customs of the Sasak tribe, which give rise to the attitudes, behavior and actions of the Sasak people. Sasak local wisdom in the material context needs to be introduced and taught in learning and become local values or traditions that are believed to this day [8], [9]. The values of games, cultural festivals [10], dances and folk songs [11] or making music need to be integrated into learning through learning media. The learning process based on local culture and wisdom facilitates students' understanding of learning competencies [6].

The media used so far in learning still lacks variety. The outcomes of the interviews conducted with 59 elementary school teachers in the city of Mataram were carried out using random media, the most frequently used media being pictures, textbooks and the visual media PowerPoint. Educators or school administrators have not adequately carried out the development of learning media. This is the outcome of a failure to acknowledge the importance of educational media as a teaching tool for kids. The owned media is still conventional, and teachers must develop it to its full potential. No one has yet developed digital comic media for Sasak local wisdom, which contains integrative thematic material. The presentation of material in comic media does not follow thematic learning [12]. Learning activities like this make students passive, not directly involved in using media in education, monotonous and not by 21st-century learning, which is digital-based and active students. Teachers have difficulty delivering material online [13].

In 21st-century learning skills, apart from media literacy, which is criticized, it turns out that digital literacy is also receiving attention on how it can be included in the school curriculum [14]. Technology and the internet are emerging as essential components of life, showing individuals of all ages losing balance in digital reading with print reading [15]. Students show interest when comic books are used as a teaching tool and incorporate local wisdom values for character education [13]. Comics are a teaching tool that can effectively and efficiently convey information because they combine text and images. As such, they can increase the effectiveness of education [16], [17]. Young people are familiar with comics, which makes it possible to read and comprehend stories quickly and provide students with the information they need in a focused manner [18]. Material is more meaningful and easier to learn through the presentation of prose, poetry or observing images than material in the form of a series of syllables or numbers [19].

The Sasak are a native population and ethnic group on the island of Lombok, which is part of the province of West Nusa Tenggara and is a small island east of Bali. Like other tribes in Indonesia, the Sasak tribe has a wealth of traditional knowledge and cultural artefacts [20]. Sasak local wisdom is an idea of life that the Sasak people's ancestors prepared to help them achieve happiness and prosperity in this life as well as the next. It is accepted as accurate, and as a result, the principles of Sasak local wisdom become the community's guiding principles in day-to-day affairs [9]. Comic media, full of local wisdom and character education, is considered to be able to adapt moral values effectively [21]. Comic media can concretize abstract concepts [22]. Comics have transformed, starting to be developed and used in digital comic media using the Pixton Edu platform [23]. Digital comics can create a more meaningful learning environment where the material taught is directly related to students' lives, and comics can become more contextual if they incorporate local wisdom [24].

The examples given are solely from textbooks; the values of local wisdom as a reflection still need to be evident in learning. It is necessary to have digital comic media focused on local Sasak wisdom. This can be achieved through easily accessible e-comic media that integrates theme material and student life values. Thus, for students to actively use Sasak's local wisdom in their learning and daily lives, developing e-comic media centered around it is imperative. Elementary school material content is integrative thematic oriented towards Sasak's local wisdom in digital comic media hopefully, this e-comic focused on local wisdom from Sasak will improve education and technology, particularly thematic learning in grade 5 elementary school. Based on the positive impact of previous research and needs in the field, it is deemed urgent to carry out more in-depth analyses and studies. This leads us to look for answers to the following questions: i) how to develop e-comic media oriented towards Sasak local wisdom that is feasible and practical?; ii) how to develop e-comic media oriented to Sasak local wisdom that is effective in improving learning outcomes in theme 8?

2. METHOD

The analysis, design, development, implementation and evaluation (ADDIE) model is being used in research and development for this study. The ADDIE model comprises analysis, design, development, implementation, and evaluation [25]–[27]. The stages of the ADDIE model are used in developing e-comic

media oriented towards Sasak's local wisdom. The ADDIE model has systematic work stages. Each phase carries out evaluation and revision of the steps passed so that local wisdom-oriented e-comic products become valid products. The analysis stage is carried out to determine learning goals and objectives, examine student needs and characteristics, identify contextual factors that encourage and inhibit learning, and find available resources. Design stage, developing plans based on needs analysis, making prototypes, and formative evaluation tests. Develop steps, create products according to needs analysis, and create e-comic media oriented to local Sasak wisdom. Implementation stage, testing products that have been created and used in learning. The evaluation stage is implementing the evaluation made and analyzing the data resulting from the evaluation plan.

Test the validity of the product to determine the suitability of the e-comic media created, with six experts in the field consisting of two media experts, two material experts, one language expert, and one learning design expert. The respondents involved in this research were students at Elementary School 15 Cakranegara. The characteristics of respondents engaged in this research were students who had studied Theme 8 about "Our friends' environment." Saturated sampling, which is a non-probability sampling technique, was employed in this study. This sampling technique was used because the entire population was used as a sample [28]. Therefore, due to limited classes, the sample used for product testing was 1 class of 26 students to determine the practicality and effectiveness of e-comic media based on local Sasak wisdom.

The instruments in this research are questionnaires and tests. The data that has been collected is analyzed qualitatively and quantitatively. Data analysis uses ANOVA to test the effectiveness of e-comic media. The Likert scale in the questionnaire to collect product feasibility data is e-comic media oriented towards Sasak's local wisdom. Media feasibility and practicality criteria were converted into qualitative data with five categories. The reference for converting scores into five categories uses a conversion score adapted from Fauzi *et al*. [29]. The concern for changing scores is presented in Table 1.

Table 1. Score conversion with scale 5

Interval	Criteria	
$X > \bar{X}_i + 1.8\ Sbi$	Very worthy	Very practical
$\bar{X}_i + 0.6\ Sbi < X \leq \bar{X}_i + 1.8\ Sbi$	Worthy	Practical
$\bar{X}_i - 0.6\ Sbi < X \leq \bar{X}_i + 0.6\ Sbi$	Quite worthy	Quite practical
$\bar{X}_i - 1.8\ Sbi < X \leq \bar{X}_i - 0.6\ Sbi$	Less worthy	Less practical
$X \leq \bar{X}_i - 1.8\ Sbi$	Not worthy	Not practical

The feasibility questionnaire used consists of 15 statement items; the highest score for each item is five, and the lowest score is 1, so the maximum score is 15 x 5 = 75, and the minimum score is 15 x 1 = 15, $\bar{X}$= 45 and B_i= 10. The validity criteria interval is obtained after calculating the average ideal score and standard deviation based on the formula. This interval is used as a reference to see how valid the e-comic media developed by researchers is according to the validator's assessment. The table of validity criteria for the e-comic media being developed is presented in Table 2.

Meanwhile, based on the practicality questionnaire used, it consists of 10 statement items; the highest score for each item is five, and the lowest score is 1, so the maximum score is 10 x 5 = 50, and the minimum score is 10 x 1 = 10, $\bar{X}$= 30 and SB_i= 6,67. With these calculations, intervals are obtained for the criteria for the practical aspect of the e-comic media being developed. For interval criteria for the practicality of e-comic press, refer in Table 3. In the criteria, the media is said to be feasible; at least, e-comic press is in the appropriate interval. Meanwhile, in the practical aspect, e-comic press is said to be minimally applicable from the results of the questionnaire in the gap with the applicable criteria.

Table 2. Media eligibility criteria

Interval	Criteria
$X > 63$	Very worthy
$51 < X \leq 63$	Worthy
$39 < X \leq 51$	Quite worthy
$27 < X \leq 39$	Less worthy
$X \leq 27$	Not worthy

Table 3. Media practicality criteria

Interval	Criteria
$X > 42$	Very practical
$34 < X \leq 42$	Practical
$26 < X \leq 34$	Quite practical
$18 < X \leq 26$	Less practical
$X \leq 18$	Not practical

3. RESULTS AND DISCUSSION

3.1. Results

The findings in this research produce e-comic media oriented towards Sasak local wisdom that is feasible, practical, and effective. Media experts, material experts, language experts, and learning design experts have all conducted feasibility tests. Students who had studied the material were given practicality tests in the interim. ANOVA tests were run to determine if using e-comic media could improve learning outcomes. This study used the ADDIE development model to carry out development before testing. The development of e-comic press has led to the following outcomes.

3.1.1 Analysis stage

During the analysis stage, teachers are interviewed to determine what media they need for frequently used educational materials, difficult-to-understand content, and media that convey messages. Examine how pupils are taught. Teacher interviews yielded findings that students need visual media that is easy to use and understand because the optical media currently in use is PowerPoint visual media, which is produced by importing images from textbooks. There has not yet been an integrated thematic digital comic media created or used for learning in grade 5 elementary schools, especially for theme 8.

3.1.2. Design stage

At this stage, the researcher has started designing digital comics using the Canva application, choosing the type of template, making photos and sorting several pictures/videos that suit the theme and material, creating conversations, and preparing formative tests. When preparing digital comics, paying attention to the relationship between the material as knowledge and as appropriate to everyday life is necessary [30].

3.1.3. Develop stage

In this stage, creating e-comic media oriented towards local Sasak wisdom and conducting trials with six experts according to their fields of expertise. The following are the results of assessments from material experts on learning and content aspects. The expert assessments on these aspects are presented in Figure 1.

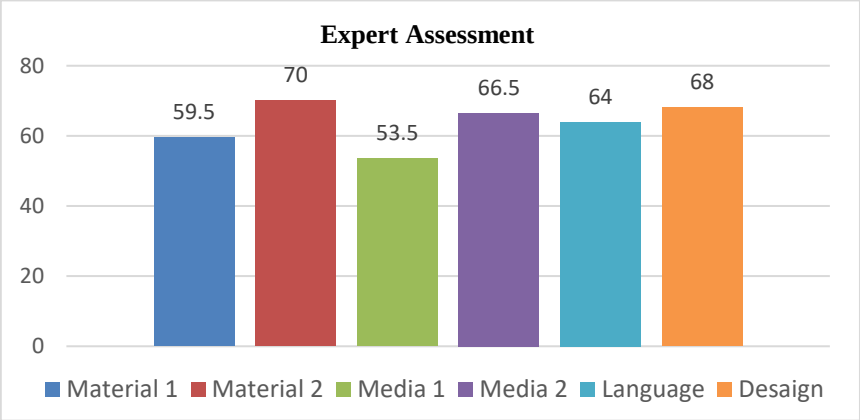

Figure 1. Expert rating percentage

Sasak local wisdom-oriented e-comic media from material experts in category 1 is feasible and material experts in category 2 are declared very appropriate. The e-comic media assessment from media expert 1 was in the possible category, and media expert two was declared very feasible. The assessment of learning design experts and language experts is in the very decent category. Furthermore, the material expert assessment results 1 and 2 are presented in Figure 2.

Based on Figure 2, the content aspect of material expert 1 is 83%, and material expert 2 is 95%; the assessment of both material experts is in the very appropriate category. In the learning aspect, material expert 1 is in the proper category, and content expert 2 is in the very relevant category, according to the assessments of the two experts, namely 76% and 92%. Meanwhile, the results of the validating Sasak local wisdom-oriented e-comic products from material experts can be seen in Figure 3.

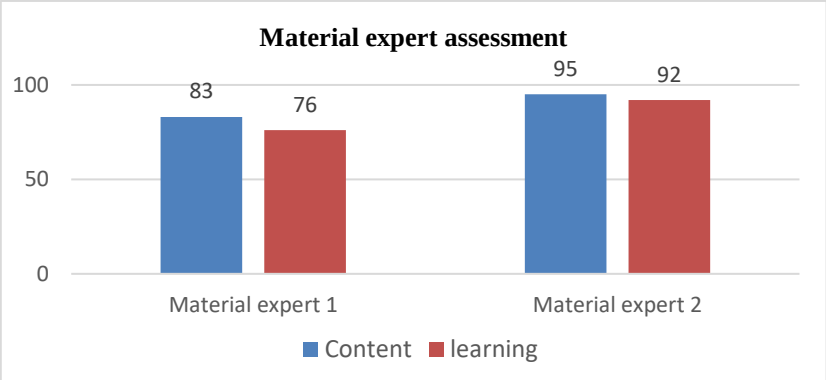

Figure 2. Bar chart percentage of subject matter experts

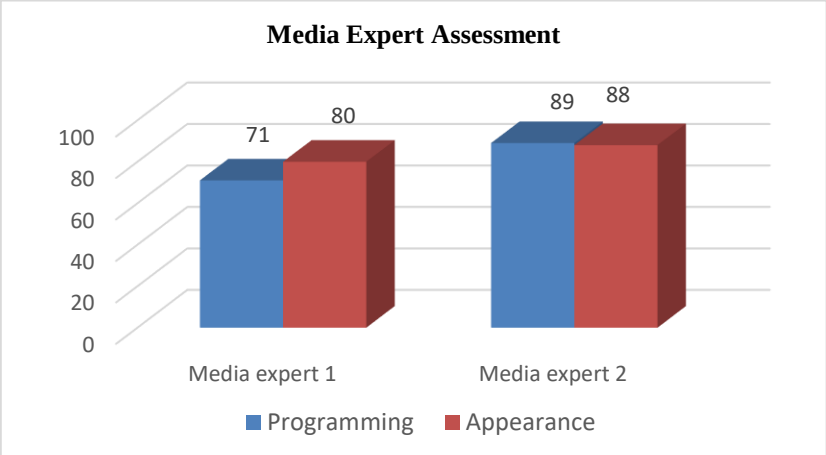

Figure 3. Media expert percentage bar chart

Based on Figure 3, the programming aspect of media expert 1 is 71% in the feasible category, and media expert 2 is 89% in the very doable category. In terms of appearance, media expert 1 is in the adequate category, and media expert 2 is in the very appropriate category, according to the assessments of the two experts, namely 80% and 88%. The results of the validation of Sasak local wisdom-oriented e-comic products from learning design experts and language experts can be seen in Figure 4.

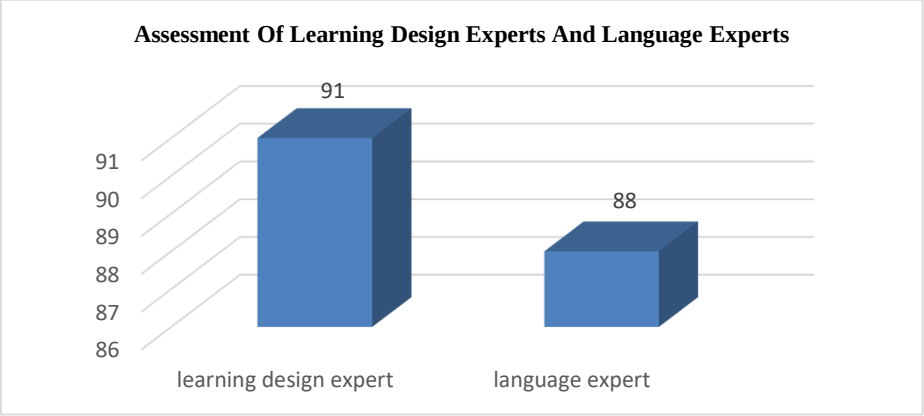

Figure 4. Bar chart of percentage of learning design experts and language experts

Based on Figure 4, design experts are 91% in the very feasible category, and language experts are 88% in the very doable category. These results indicate that the Sasak local wisdom-oriented e-comic product continues to be tested for practicality with students. These results can be seen in Figure 5.

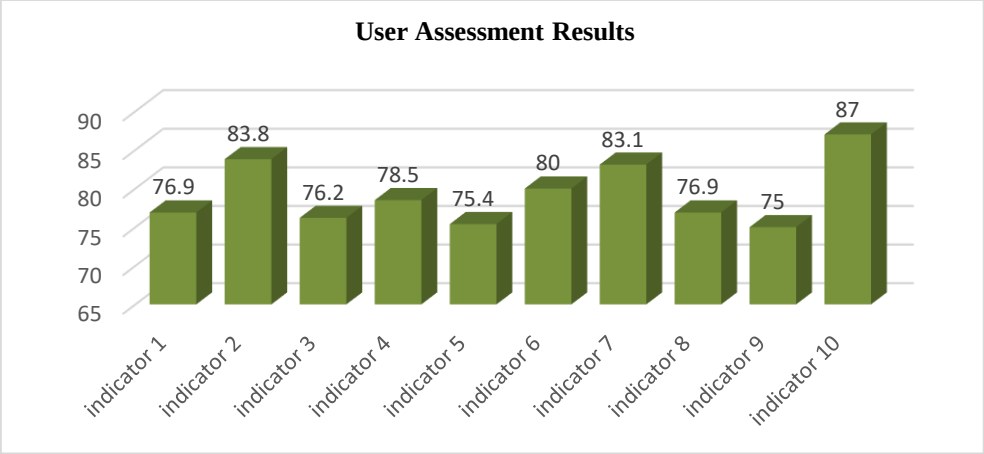

Figure 5. User assessment results (users)

The results of user assessments, namely students who tested the product, showed that there were seven statements in the feasible category, namely numbers 1, 3, 4, 5, 6, 8, and 9, while three words were in the very doable category, namely numbers 2, 7 and 10. The testing results by this user mean that the product can be practically used in learning. The results of the practicality test for e-comic media developed based on student assessments can be seen in Table 4.

Based on the table, it is found that user assessments of e-comic media are in a practical interval with an average score of 39.62. Furthermore, in more detail, two people from the 26 users of the e-comic media developed an assessment with reasonably practical criteria, the assessment with applicable criteria by as many as 18 people, and an evaluation with efficient standards by as many as six people.

Table 4. Data on the practicality of e-comic media

User's assessment										Total score	Criteria
1	2	3	4	5	6	7	8	9	10		
3	4	4	3	3	3	3	3	3	3	32	Quite practical
3	5	3	3	3	3	4	3	3	3	33	Quite practical
3	3	3	3	4	4	5	4	3	4	36	Practical
4	5	3	3	4	5	5	3	3	4	39	Practical
3	4	5	4	3	5	3	5	3	5	40	Practical
4	3	4	5	4	3	4	5	5	4	41	Practical
5	3	4	4	5	5	4	5	4	5	44	Very practical
4	5	3	5	3	4	4	3	5	5	41	Practical
5	3	4	4	3	3	5	4	3	5	39	Practical
4	5	3	3	3	5	4	3	3	5	38	Practical
5	4	4	5	4	5	5	4	3	4	43	Very practical
4	5	5	4	4	3	4	4	5	4	42	Practical
5	5	5	5	5	5	5	5	5	5	50	Very practical
4	5	4	5	4	5	4	3	4	4	42	Practical
3	4	3	3	5	3	3	3	3	5	35	Practical
4	5	5	4	3	4	5	4	5	5	44	Very practical
5	4	3	5	3	3	5	4	4	5	41	Practical
3	4	3	4	3	3	4	4	4	5	37	Practical
4	4	3	4	3	3	4	4	3	4	36	Practical
3	3	3	4	5	4	4	3	5	4	38	Practical
3	4	4	3	4	4	3	5	4	3	37	Practical
3	3	5	4	3	5	3	5	4	5	40	Practical
4	5	4	3	3	5	5	3	3	4	39	Practical
5	5	4	5	5	4	5	4	4	4	45	Very practical
4	5	5	4	5	5	4	4	3	4	43	Very practical
3	4	3	3	4	3	4	3	3	5	35	Practical
Average										39.62	Practical

3.1.4. Implement stage

In the implementation stage, local wisdom-oriented e-comic products are used in the learning process and carrying out evaluation plans. The learning process using e-comics, oriented towards local Sasak wisdom in learning, is presented in Figure 6.

Figure 6. Use of e-comics media during learning

3.1.5. Evaluate stage

Evaluate stage, analyze the evaluation results and determine the achievements of students who have used e-comics in learning to evaluate the effectiveness of e-comic products. The data normality test shows that the pretest data is average because sig. (0.504>0.05), and the posttest data is average because sig. (0.309>0.05). Next, a pretest and posttest were conducted to determine the effectiveness of the e-comic media used in learning. Statistical tests of the effectiveness of e-comic media on learning can be seen in Table 5.

Based on the table, the Sig. value is obtained. (2-tailed) is 0.005<0.05, meaning Ho is rejected and Ha is accepted, so there is a significant difference between the pretest and posttest averages. Based on this, e-comic media based on local Sasak wisdom is effectively used in learning. Next, to measure its effectiveness, it is analyzed using the N-Gain test, and the N-gain score is 0.16, which is in the low category, meaning that e-comic media based on local Sasak wisdom has a common effect on learning outcomes. Therefore, it is recommended that e-comics media be used with more varied models; e-comics media must measure students' learning motivation.

Table 5. Paired samples test results

Paired samples test									
		Paired differences							
		Mean	Std. Deviation	Std. Error mean	95% confidence interval of the difference		t	df	Sig. (2-tailed)
					Lower	Upper			
Pair 1	Pretest - Posttest	-1.577	2.610	.512	-2.631	-.523	-3.080	25	.005

3.2. Discussion

Based on the preliminary needs analysis, an e-comic focused on Sasak local wisdom on Theme 8 was created in the fifth grade of elementary school. This e-comic media contains integrated thematic material from the material in the curriculum, so that students can directly use it in learning, with characterizations and examples adapted to the daily life of Sasak students as a guide to life because culture can be used as a guide to life [10], [30]. After determining the application to be used, namely Canva, the development of e-comic media products was carried out. Material experts offer the following recommendations: i) sufficient material integration as determined by goals (KD) and indicators; ii) excellent material depth and breadth as determined by KD and indicators; iii) material selection based on students' everyday lives; iv) practice questions as determined by KD and competency achievement indicators; and v) question formulation that is straightforward for students to understand. Suggestions from media experts include: i) There is still writing that does not comply with grammar, such as capital letters in the middle of words/sentences; this can still be improved; ii) The source of the video/image is more straightforward to write below the video/image in small font so it does not need to be written in the reference list at the end; and iii) The identity of the developer needs to be included. The content aspect of comic material based on local wisdom culture is essential [12].

Meanwhile, the input from linguists is: i) The text needs to be reread to revise the writing system. In particular, the use of capital letters, letters that need to be italicized, punctuation, word choices that do not match words in Indonesian, and repeated word choices in one sentence; ii) Reading materials for elementary school children need to be written entirely so that the information received by children is conveyed well; iii) Pictures supporting the learning process should be captioned; iv) Elementary school children need reading material with good grammar so that their language skills are well formed from an early age, so they understand what they read [12]; v) Dialogues should be focused on achieving learning goals; vi) Readability needs to be checked, especially the display of some displays that are unclear; the type and size of letters need to be chosen appropriately so that children can scan them, and the font is proportional [12].

Learning design experts provide the following suggestions: i) Give captions to pictures of rice fields; ii) Explanation of material on different screens, do not have too many sentences on one screen; iii) Industrial visualization, using images around students because coherent images or stories with local wisdom will easily integrate regional moral values [12]; iv) Provide a picture or background of a market or shop; v) In the answer key, provide an explanation not only of the answer key; vi) The choice of assignments or media meets the needs of students. The most input from experts on the choice of font type, which must be adapted to Students in elementary school, it was changed from the Irene Florentina font to using Cardo with a minimum size of 16. So, it is hoped that the readability level of students who use it is legible. Writing and language receive special attention because they are closely related to spelling, capital letters, vocabulary, and punctuation, which students must easily understand. After all, e-comics are a visual medium that combines social and emotional content in telling stories [31], [32]. Conversations that contain material using simple language but still paying attention to grammar so that they can provide examples for students in writing or speaking. All suggestions from experts are revised before being tested on students.

Implementation of Sasak local wisdom-oriented e-comic media in learning to determine effectiveness. In the normality test, the average pretest data shows sig (0.504>0.05), and the posttest data is average because sig (0.309>0.05). Continued with hypothesis testing, Sig. was obtained. (2-tailed)<0.05 Ho is rejected, and Ha is accepted; there is a significant difference between the pretest and posttest averages. An N-gain score of 0.16 is in the low category, meaning that Sasak local wisdom-oriented e-comic media has a common effect on learning outcomes. Integrating ethnocultural material in subjects has a positive impact on student understanding [33], [34]. E-comic media based on local Sasak wisdom is effectively used in learning. Sasak local wisdom-oriented e-comic media was declared feasible, practical, and effective, like the comics developed by Sahin [12], [22], [31], [35] which has a positive effect on attitudes towards learning and improves students' thinking abilities and creativity. Comic media can be more contextual if it integrates local wisdom to use it for learning effectively [23]. This is in line with previous studies [36], [37]. Comic media is effectively used as a learning medium and can help teachers in learning. The previous theories are relevant to the results of the research that has been carried out.

4. CONCLUSION

Sasak local wisdom-oriented e-comic media is very feasible, practical, and effective. The integrated thematic material is in e-comic media oriented towards Sasak local wisdom, where the material is easier and more fun for students to learn; examples and illustrations are given, which students usually experience according to their region, namely the Sasak tribe. The presentation of material follows ongoing thematic learning. Presentation of material in the form of stories that is communicative, friendly, and fosters student tolerance. This research is still used in a scope that is still limited to research subjects and research variables. Sasak local wisdom-oriented e-comic media needs to be socialized and used in learning to test other variables; for example, e-comic media measures learning motivation, perception, and other variables.

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