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GAME MEDIA BASED ON LOCAL WISDOM TO IMPROVE PRIMARY SCHOOL STUDENTS' CRITICAL THINKING ABILITIES

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ABSTRACT

This research aims to analyze the effectiveness test of interactive *game media* using Educandy based on local wisdom to improve the critical thinking skills of class V students which include C4 (analyzing), C5 (concluding) and C6 (creating). The research method is *Research and Development (RnD)* with the ADDIE Model which consists of 5 stages, namely *Analysis, Design, Development, Implementation* and *Evaluation.* Data collection instruments are interviews, expert validation questionnaires, practitioner questionnaires, *pre-test* and *post-test questions,* teacher and student response questionnaires. Data analysis used *Paired sample T-Test* and *N-Gain tests* with the help of *SPSS* 26.00 software. The research data shows that the recapitulation of expert scores was 90.14% in the media, including the valid category, the expert practitioner results were 86.67%, including the very practical category, and the average teacher response score was 90%, while the students' results were 87.1. % which means very valid and interesting. The results *of the Paired Sample T-Test* and *N-Gain* different tests show a significance value of 0.00 or ≤ 0.05, which means there is a difference before and after the use of *game media.* So, it can be concluded that interactive *game media* uses Educandy based on local wisdom fulfills the categories of valid, practical and interesting to use in learning and is effective for improving the critical thinking skills of fifth grade elementary school students.

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1. INTRODUCTION

Education in Indonesia is very influential in the progress of the nation depending on the scope used. According to the SISDIKNAS Law No. 20 of 2003 (Nafisah et al., 2023) education is a conscious and planned effort to create an atmosphere and learning process in active learning for students to develop their potential, including religious, spiritual, self-control, personality, intelligence. , noble morals, and skills needed in himself and society.

Critical thinking ability is one of the skills that processes logical thinking. Siswono (Amir, 2015) states that critical thinking is one manifestation of high-level thinking. Because it requires several stages, which is the same as critical thinking skills which have several stages, namely formulating problems, giving arguments, deducing, inducing, evaluating, making decisions and determining actions (Hunaepi et al., 2020) . The results of the 2019 PISA (Program *for International Student Assessment*) survey showed that the average science performance ability of students in 2015 was 403 points, while in 2018 they only got 396

points. This shows that students' critical thinking abilities through science performance are relatively low (Tohir, 2019) . Based on interviews conducted at SDN 1 Karanganyar and SDN 1 Tamanan, there is a problem, namely the decline in students' critical thinking patterns caused by the effects of the Covid-19 pandemic so that students are not yet adaptive to the surrounding environment or in classroom learning, such as being less active and not focused. This affects the learning outcomes which are still below the KKM, namely 70 and feeling bored with studying. Students' critical thinking abilities can be simulated by learning based on local wisdom and combining it with advanced technological media such as *games.* Local wisdom becomes increasingly famous if it is applied in real life and is able to provide responses to changing times (Fajarini, 2014) . According to Suryani (Nabila et al., 2021) .

Media is a combination of several media such as video images, animation, graphics, sound and text. One of them is *games.* Santoso (Setyawan et al., 2019) states that *games* are media that are able to provide learning containing students' cognitive, social, emotional and physical development. One of these interactive *games* is Educandy. The learning activities above are included in the TPACK *(Technological Pedagogical and Content Knowledge) concept.* Suryawati, et al (Tamba, 2021) stated that TPACK consists of three main components, namely pedagogy, technology and content which can be used as a basis for self-development and learning innovation. Therefore, teachers must be able to follow developments in technology and information, especially digital-based learning, to determine effective strategies in education (Nugroho, 2021) . Based on the explanation above, the researcher tried to provide problem solving efforts through development research entitled "Development of Educandy Media Games Based on Local Wisdom to Improve Primary School Students' Critical Thinking Ability".

2. RESEARCH METHODS

This type of research is *Research and Development* (RnD), namely research used to produce a particular product. The product developed is *game media* using the ADDIE method with 5 stages, namely: (1) *Analysis;* (2) *Design* ; (3) Development (*Development*); (4) *Implementation* ; (5) Evaluation Stage *(* Sugiyono, 2017). This research uses data collection instruments in the form of interviews, questionnaires (experts, practitioners, student responses, teacher responses), *pre-test* and *post-test questions.* Data from experts such as material experts, media experts and language experts as validators are used to test the suitability of the media that has been developed based on the suitability of the material and the effectiveness of the media. The following percentages are used as groupings for validator test assessment criteria as follows.

Table 1. Validator Test Assessment Criteria

No	Presentation	Information
	76 – 100%	Very Valid
	51 – 75%	Valid
	26 – 50%	Invalid
	0 – 25%	Very Invalid

Validity tests are used to measure the level of truth of an instrument and reliability tests are used to determine the validity of a data collection instrument (Arikunto, 2013). The test was carried out on the *Pretest* and *Posttest questions* totaling 15 questions for class V students totaling 32 students. The validity and reliability tests are shown in the following table.

Table 2. Validity Test Results

Question	*r* table	*r* count	Category
1.	0.349	0.382	Valid
2.	0.349	0.371	Valid
3.	0.349	0.433	Valid
4.	0.349	0.562	Valid
5.	0.349	0.593	Valid
6.	0.349	0.527	Valid
7.	0.349	0.565	Valid
8.	0.349	0.489	Valid

Question	*r* table	*r* count	Category
9.	0.349	0.485	Valid
10.	0.349	0.351	Valid
11.	0.349	0.624	Valid
12.	0.349	0.476	Valid
13.	0.349	0.495	Valid
14.	0.349	0.446	Valid
15.	0.349	0.385	Valid

The 15 item questions were declared valid, because *r* was calculated more than *r* table, namely 0.349 so that each question is worth ≥ *r* table. The results of the reliability test using *Cronbach's alpha technique* so that it can be seen whether an instrument *is reliable or not.* The following is a table of reliability test results which obtained *a Cronbach's alpha value* of 0.763 ≥ 0.7 with a significance value of 5%. So, the instrument test is valid and *reliable* for the question items, so it can be used to measure data in data collection.

Table 3. Reliability Test Results

Cronbach's Alpha	*N of Items*
,763	15

3. RESULTS AND DISCUSSION

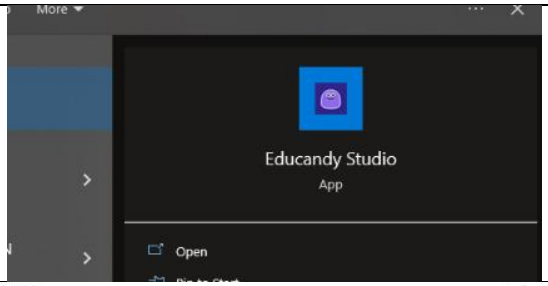
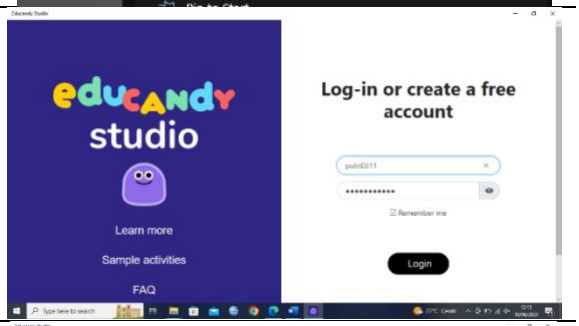
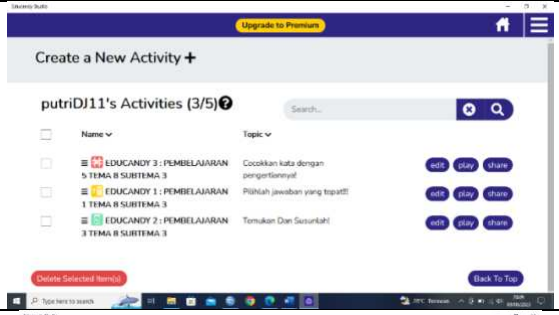
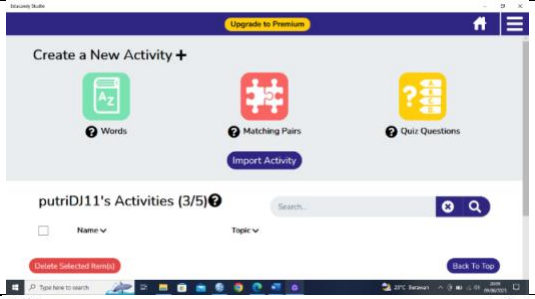
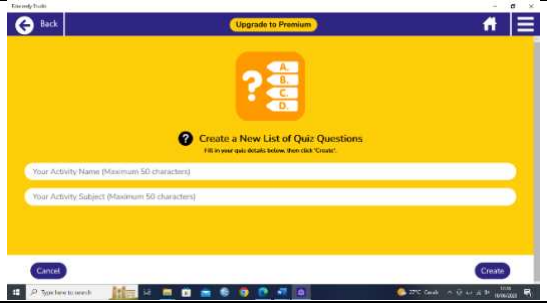
game media using Educandy which contains thematic material on theme 8, subtheme 3, environmental conservation efforts based on Trenggalek local wisdom, namely Nyadran Dam Bagong, has the objectives of (1) knowing the condition of students' critical thinking abilities, (2) attracting students' interest in learning and curiosity. be more active in learning, and (3) introduce Trenggalek culture to increase learning knowledge of their living environment. *The game* is carried out after *the Pre-test* and before *the Post-test* so that the improvement in critical thinking skills can be measured which is stimulated through the effectiveness of the Educandy *game media.*

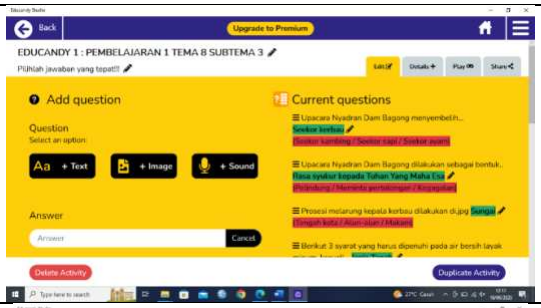
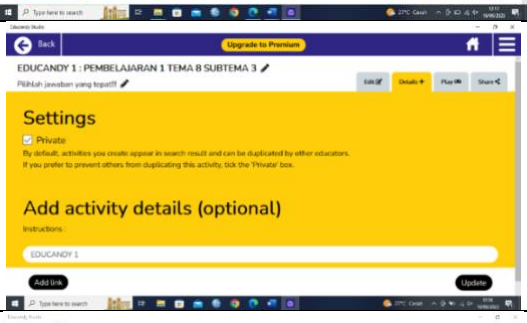
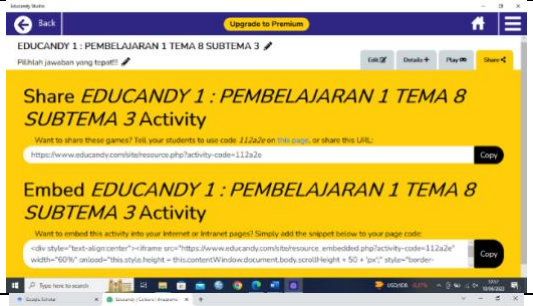
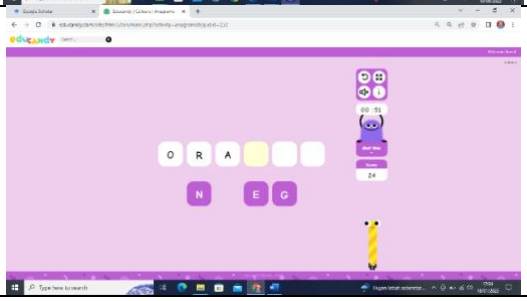
Local wisdom has the ability to develop students' potential through regional cultural values in learning. Local wisdom that is integrated into learning media can preserve regional cultural potential so that local wisdom values are maintained in the modern era which continues to develop (Nugroho et al., 2021) . The Educandy *game* contains a local wisdom base, namely the Nyadran Dam Bagong Ceremony combined with theme 8, subtheme 3 about environmental conservation efforts which are internalized in the form of quiz questions, word matching and random words. Students access *the game* by opening the official Educandy *website* using a laptop device and then entering the code given by the teacher. Students can start the game anywhere at any time, *the score* and *best time* for playing *the game* are listed on the media.

In this research, the ADDIE method was used. The initial stage is an analysis of needs. Based on the results of interviews with class V teachers at SDN 1 Karanganyar and SDN 1 Tamanan, the media used by teachers in learning was only worksheet books using the lecture method. Before the existence of interactive *game media* using Educandy based on local wisdom, students were unfocused, lazy, bored and less active in previous learning.

Based on the data obtained, the researcher designed a solution to this problem by developing interactive *game media* using Educandy based on local wisdom, the Nyadran Dam Bagong Ceremony with theme 8, subtheme 3, efforts to preserve the learning environment for the even semester of 2022/2023. The second stage, namely design *, researchers draw up a media development plan starting by creating an interactive game* media framework, namely Educandy. The following displays interactive *games* using Educandy that have been developed.

Table 4. Educandy *Game Display*

No.	Information	Appearance
1.	Educandy application specifically for editors	
2.	Login page	
3.	Homepage	
4.	Choice of criteria or type of *game*	
5.	Display after selecting *game criteria*	

No.	Information	Appearance
6.	The setting format creates questions along with answer keys on the "edit" slide	
7.	"Details" slideshow format for *link privacy settings*	
8.	*"Play"* slideshow to start the game via the studio application	
9.	*Share"* slideshow for sharing game *link access*	
10.	One form of play	

In table 4 above is a product in the form of interactive *game media* using Educandy based on local wisdom which before implementation needs to be validated by experts, namely media experts, material experts and language experts. The results of the expert assessments as validators have been summarized as in the following table.

Table 5. Results of Recapitulation of Expert Values

No	Expert Data	Presentation	Information
1.	Media Expert	81.25%	Very Valid
2.	Materials Expert	96.67%	Very Valid
3.	Linguist	92.5%	Very Valid
	Average	90.14%	Very Valid

Based on the table above, the score for media experts is 81.25%, material experts 96.67%, and language experts 92.5%, indicating that interactive *game media* using Educandy based on local wisdom to improve critical thinking skills gets an average of 90.14%. Based on this average percentage, the interactive *game media* using Educandy that has been developed is included in the "Very Valid" category and is suitable for use.

In the third stage, namely the development of *interactive game* media which was assessed by expert practitioners in a questionnaire resulting in a score of 86.67% which was declared "Very Practical" then in the form of comments and suggestions for improvement as a form of evaluation. The fourth stage is implementation, *namely* trials carried out on a small scale with 9 students and a field scale with 32 students. To determine interest in media, a student response questionnaire was given, the average result of which was 87.1%, which means it was interesting. Then the increase in critical thinking skills is assessed through the average results *of the Pretest,* namely 62.4 and *Posttest,* namely 79.9. It can be concluded that the *Post test* score is higher than the *Pretest score.* Finally, the evaluation stage *calculates* the *paired sample T-test* and *N-Gain,* shown in the following table.

Table 6. *Paired Sample T-test*

Paired Samples Test									
		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	Pretest – Posttest	-16,209	5,918	1,046	-18,343	-14,075	-15,493	31	,000

Based on table 6 above, the sig value is known. (2- *tailed*) has a value of 0.000 which means ≤ 0.05. If mark sig ≤ 0.05, so Ha accepted And Ho rejected and if sig value ≥ 0.05 then Ha $_{is}$ rejected and Ho accepted. The following is the formulation of the statistical hypothesis from this research .

H_o : Media is not effective in improving the critical thinking skills of fifth grade school students Base.

H_a : Media is effective in improving the critical thinking skills of fifth grade elementary school students.

Table 7. Average *N-Gain Results and N-Gain* Score Categories

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
N-Gain	32	.26	.59	.4555	.09262
Valid N (Listwise)	32				

N-Gain Score Categories

Average	Criteria
g ≥ 0.7	Tall
0.3 ≤ g ≤0.7	Currently
0 ≤ g ≤0.3	Low

Based on table 7, it shows that the average *N-gain* obtained is 0.4555 which is included in the "medium" category because the value is more than 0.3 and less than 0.7 shown in table 8. Strengthening the results of the discussion of this research is in line with (Nurhikmah et al., 2023) that the application of the Educandy *game media* provides meaningful learning so that students are able to apply positive habits, obey regulations, be punctual and orderly in doing things in the surrounding environment.

The media used by researchers, namely interactive *game media* using Educandy with the TPACK concept based on local wisdom, has its own reasons for being used in learning. Learning media is a link between information and messages that aims to provide instruction to the recipient and from the source.

Learning media with technology can be used as a solution to improve elementary school students' critical thinking skills. The questions contained come from material on theme 8, subtheme 3, environmental conservation efforts based on local wisdom. Local wisdom has the attraction of being used as content in student learning, so that through interactive *game media* using Educandy With the TPACK concept based on local wisdom, students can solve problems they face with critical thinking skills. Several studies have shown that the application of *games* , one of which is Educandy, in learning can improve critical thinking skills, the results of research conducted by Abdur Rasyid, et al in 2019 entitled "Development of Learning Media Assisted by Android Games to Improve Students' Critical Thinking Abilities" the results of which received a response positive attitude from students and able to improve critical thinking skills. The research results show that the resulting media is very valid and practical media. Another research conducted by Aisyah Nurhikmah, et al in 2023 entitled "Development of Learning Media Through Educandy *Games* "To Improve Student Learning Character in Elementary Schools" that the application of this media can influence the formation of student character. The use of the Educandy *game* provides meaningful learning with several advantages so that students get used to implementing positive habits, obeying rules, punctuality and orderly doing things in the surrounding environment .

game media using Educandy based on local wisdom to improve the critical thinking skills of fifth grade elementary school students as a renewal variation in learning. Research carried out at SDN 1 Karanganyar and SDN 1 Tamanan showed that interactive *game media* used Educandy with the TPACK concept based on local wisdom, it is interesting, interactive and fun to apply in the classroom learning process. The impact of using TPACK Educandy *game media* based on local wisdom is that students' interest in learning increases so that their critical thinking abilities also increase.

4. CONCLUSION

From the results of the research that has been carried out, it is concluded that the initial learning conditions using Educandy interactive *game media* are more effective for students' needs in improving their critical thinking skills. The results of the effectiveness and different media tests based on the *paired sample t-test* obtained a result of 0.000, so $_{Ha}$ accepted And Ho rejected, which means that the media is effective in improving the critical thinking skills of fifth grade elementary school students. Meanwhile, the *N-gain test* shows an average value of 0.4555, so it is in the "medium" category in terms of its effectiveness. Educandy's *game* media design is structured with several components, namely material, application and technology. The material was taken from thematic class V theme 8 subtheme 3 regarding environmental conservation efforts combined with the local wisdom base of Nyadran Dam Bagong, Trenggalek Regency. Implementation is carried out on small scale and field tests, before carrying out *the post test.* Through student and teacher response questionnaires, the Educandy *game media* was declared interesting and very practical from practitioner questionnaires for use in learning.

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