

Development of ESD Based Educational Media Using Educaplay to Enhance Students' Interest in Learning

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ABSTRACT

This study was motivated by students' low interest in learning and the need for interactive learning media integrating the principles of Education for Sustainable Development (ESD). It aimed to develop an ESD-based learning media using Educaplay to improve the learning interest of fifth-grade elementary school students. This study employed the Research and Development (R&D) method using the ADDIE model. The participants consisted of one media expert, two content experts, one language expert, a teacher, and fifth-grade students at SD Negeri Cicadas 03, Bogor Regency. Data were collected through interviews, observations, and questionnaires and analyzed using descriptive quantitative techniques and the Rasch model. Research findings show that the learning media received an average validation percentage of 96.9% from experts, which is categorized as very good. The practicality test results showed a percentage of 96.25% from the teachers and 92.75% from the students, which is considered very practical. The Rasch model analysis (stacking process) shows an increase in the Person Mean Measure from 0.75 logit to 1.16 logit, and an increase in Person Reliability from 0.52 to 0.69, indicating that students demonstrated higher levels of learning interest after using the developed media and provided more consistent response patterns. Therefore, the educational media using Educaplay based on ESD is considered very suitable, very practical, and effective in increasing students' learning interest.

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1. INTRODUCTION

Education plays a key role in building good, high-quality people. Resources are not only used to produce individuals who are academically skilled but also to have strong character to face global challenges (Baidarova & Semigina, 2026; Nurramadhani et al., 2025). To achieve these educational goals, learning serves as the primary process through which knowledge, skills, and character are developed. Learning is an important part of education that includes different activities to help students gain knowledge, develop skills, and change their behavior through experiences, observations, and interactions with the social environment (Futri et al., 2026). In today's educational context, learning is expected not only to develop students' cognitive abilities but also to strengthen their practical skills needed for the future. Therefore, teachers need to facilitate the development of essential competencies, such as higher-order thinking skills and questioning skills, to prepare students for future challenges (Nurramadhani et al., 2020). Learning should be achieved in the best possible way by designing and carrying it out effectively with the help of several supporting components. Meaningful learning is also influenced by a teacher's ability to choose and develop appropriate media that meet the needs of students (Patras et al., 2019). One supporting component that can be used to create an effective learning process is the use of teaching materials. The use of learning media is now more effective, which can be seen from the advancements in technology in the education field that support the delivery of material to students (Arofa et al., 2025).

Media is basically part of the learning system (Nurhidayati et al., 2023). Learning media serves as a learning resource (Juhaeni et al., 2020). Learning media can also be called teaching aids that help in the learning process and provide a visual experience to students (Silahuddin, 2022). Good learning media should match the learning goals, be practical, and flexible (Dina et al., 2025). Learning media can be divided into three types: audio media, visual media, and audiovisual media (Arief, 2021). Using digital media allows for more context to be included. Visual and multisensory learning can greatly improve students' understanding of concepts, understanding and facilitate learner-centered education (Supratman et al., 2025). Well-designed multimedia learning

This can help improve understanding and remember information better, especially when learning something that's not very concrete. One effective medium to use is Educaplay, which is a website-based platform that offers interactive games for learning. Using Educaplay as a learning medium can support the creation of a visual and interactive learning process (Permatasari et al., 2025). Educaplay was selected as the learning medium based on pedagogical considerations that align with the developmental characteristics of fifth-grade elementary school students. According to Piaget's theory of cognitive development, children aged approximately 10–11 years are in the concrete operational stage, during which they learn more effectively through concrete experiences, visual representations, and interactive learning activities. Therefore, Educaplay provides an appropriate learning environment by integrating visual, auditory, and interactive elements that support students' conceptual understanding.

In addition, Educaplay incorporates play-based learning through game-like activities that promote active participation and create an enjoyable learning experience. Its multimedia features help maintain students' attention, increase learning motivation, and encourage meaningful engagement with the learning content. These characteristics make Educaplay a suitable learning medium for fostering learning interest among fifth-grade elementary school students.

Effective learning should include the cultural and environmental context of the students to make it more meaningful (Patras et al., 2024). This agrees with the opinion who say that learning social science should help students understand social phenomena happening in their surroundings, so the concepts they learn are not too abstract (Husnah et al., 2023). Besides supporting visual and interactive learning, using teaching media should also focus on delivering content that is relevant to the challenges of today' life. One approach that can be intergrated into learning is Education for Sustainable Development (ESD), which focuses on building knowledge, skills, values, and attitudes towards sustainability among students (Permana et al., 2023). So, ESD plays an important role in preparing students to become responsible and caring agents of change for the environment and society (Rohmah and Lestari 2024). Using interactive learning media to apply ESD is expected to help students develop a greater interest in learning. This is important because low interest in learning can be caused by students relying too much on their parents or others, which can lead to a lack of motivation to study.

Learning interest is connected to a student's enjoyment and attraction towards learning activities (Rahmasari, 2023). Next, learning interest helps increase students' attention, activity, and participation during learning (Faisah et al., 2023). Therefore, media that presents material in a visual, contextual, and interactive way can help foster students' interest in learning. Students' learning interest is influenced by both internal and external factors (Muliani and Arusman, 2022). Internal factors come from inside the student, such as attention, attitude, talent, and ability. Meanwhile, external factors include the learning environment, facilities, and support from parents. Interest helps students feel happy and more involved in an activity. On the other hand, low interest can cause students to just finish tasks without fully using their abilities (Nurjanah and Alani, 2025). A student's interest in learning plays a big role in how successful they are in the teaching and learning process (Andira et al., 2022). Although previous studies have highlighted the importance of learning interest and the potential of interactive digital media in supporting student engagement, limited research has examined the development of ESD-integrated Educaplay learning media for elementary school students. Most existing studies have focused on the effectiveness of Educaplay as an assessment or game-based learning tool, while its integration with Education for Sustainable Development (ESD) concepts to foster learning interest in elementary social science learning remains underexplored. Therefore, this study aims to develop an ESD-based Educaplay learning medium on the topic Economic Conditions in My Region and examine its validity, practicality, and effectiveness in improving fifth-grade students' learning interest.

2. METHODS

This study uses the Research and Development (R&D) method to create a learning media using Educaplay based on Education for Sustainable Development (ESD) for the topic of Economic Conditions in My Area. The process of developing media uses the ADDIE model, which includes the stages of analysis, design, development, implementation, and evaluation. The media is evaluated based on its suitability, practicality, and effectiveness in increasing students' interest in learning. Research data was collected through classroom observation, teacher interviews, expert validation questionnaires, teacher and student response questionnaires, and learning interest questionnaires given before and after using the media, see **Table 1** and **Table 2**. Qualitative data such as observations, interviews, comments, and

suggestions are used as a basis for improving the product. Meanwhile, quantitative data was analyzed using descriptive percentages and the Rasch Model with the help of the Ministep application to compare the results of students' learning interest before and after using the media.

Table 1. Teacher Interviews

No.	Question
1.	What difficulties are experienced by students and teachers during the learning process?
2.	What factors cause these difficulties during the learning process?
3.	What types of learning media are currently used by students during the learning process?
4.	What difficulties do teachers face in developing learning media?
5.	What types of learning media are needed by students during the learning process?
6.	How is students' understanding of current technological developments?
7.	What challenges are commonly encountered when using learning media?
8.	What are the classroom teacher's opinions regarding the development of learning media using applications for the Merdeka Curriculum?

Table 2. Expert Validation Questionnaires

Validator	Aspect	Indicator
Contain Expert	Alignment of	The content reflects the principles of Education for Sustainable Development (ESD), integrating environmental, social, and economic aspects, and is relevant to sustainability issues.
	content with ESD principles. Linking the local	The content connects local economic conditions with the concept of sustainability through contextual examples and the relationship between economic activities and the environment.
	Contain Expert economy to	The content encourages responsibility, environmental awareness, and concrete actions to protect and preserve the environment.
Media Expert	Text design	The font type, font size, text color, and layout are appropriate, clear, and easy to read.
	Images design	The images are clear, relevant to the content, and visually attractive.
	Media usability	The media is easy to access and use, has an attractive interface, functions effectively, and promotes student engagement during learning.
Language Expert	Language clarity	The language is simple, unambiguous, and the information is presented clearly.
	Communicativeness	The language is engaging, easy to understand, and appropriate to students' level of development.
	Language conventions	The language follows proper spelling, punctuation, diction, and sentence structure.

2.1 Research Subject and Location

The participants in this study were 26 fifth-grade students and a fifth-grade teacher from SD Negeri Cicadas 03, Bogor, Indonesia. The teacher evaluated the practicality of the developed learning media, while experts in material, media, and language assessed its validity. The fifth-grade students were selected because they had learned the IPAS topic Economic Conditions in My Region, which integrates Education for Sustainable Development (ESD) concepts.

2.3 Research Procedures

This research process uses the ADDIE model, which has five steps, see **Figure 1**: analysis, design, development, implementation, and evaluation. During the analysis phase, the researcher observed the learning process, interviewed the class teachers, and analyzed the students' needs, the characteristics of the material, and the learning objectives. The result of this stage is used as a basis for determining the specifications of the learning media that will be developed. During the design phase, the researcher prepared the learning media plan, the content on local economic conditions, integration of ESD values, and the research instruments. The development process involves creating the media using Educaplay, and then the media is validated by experts in content, media, and language. After getting feedback from experts, the media was revised and tested in a limited way to check its practicality based on responses from teachers and students. The implementation process is carried out by applying learning media in the social science studies for grade V students. At this stage, students' interest in learning is measured using a survey before and after using the media. Next, the evaluation process is done formatively at each stage of development and summatively at the end of the product to assess the suitability, practicality, and effectiveness of the learning media created.

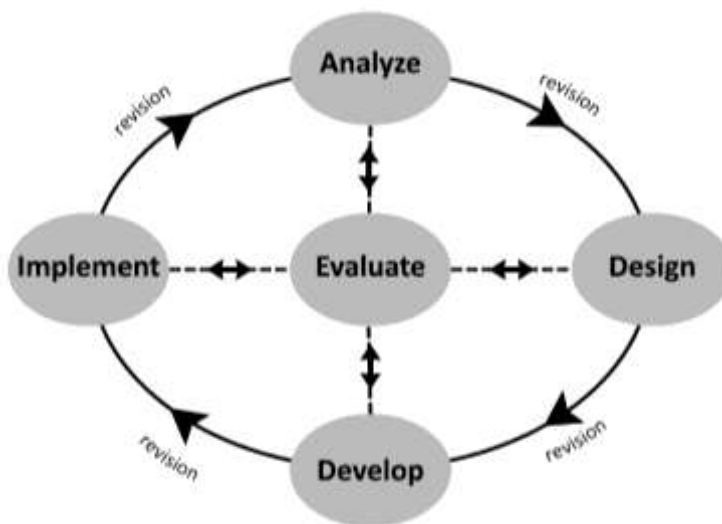


Figure 1. The ADDIE Development Model

2.4. Data Collection Techniques

Data were collected through observations, interviews, questionnaires, and documentation. Observations and interviews were conducted during the analysis stage to

identify learning conditions, media needs, and student characteristics, while documentation supported the development and implementation process. The research instruments included expert validation sheets to assess the validity of the media, teacher and student questionnaires to evaluate its practicality, and a learning interest questionnaire administered before and after the implementation, shown in **Figure 2**. All questionnaires used a four-point Likert scale.

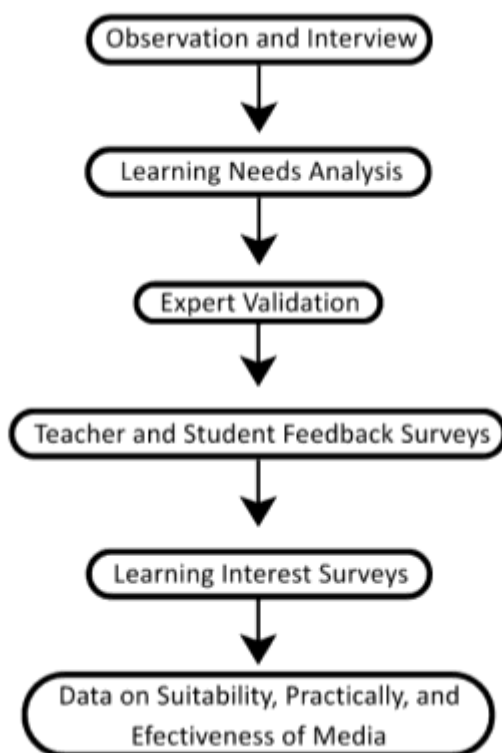


Figure 2. Data Collection Techniques

2.5. Data Analysis Techniques

The data in this study were analyzed using both qualitative and quantitative approaches. Qualitative data were obtained from observations, interviews, and feedback provided by expert validators and the classroom teacher, then analyzed through data reduction, data presentation, and conclusion drawing to support the revision and improvement of the learning media. Quantitative data were collected from expert validation sheets, teacher and student response questionnaires, and students' learning interest questionnaires. The validation and response data were analyzed using descriptive percentages to determine the feasibility and practicality of the developed media, while students' learning interest data were analyzed using the Rasch Model with the Ministeps application by comparing the pretest and posttest person mean measure values (Stacking process). An increase in the posttest person mean measure indicated an improvement in students' learning interest after using the ESD-based Educaplay learning media.

3. RESULTS AND DISCUSSION

The learning media were developed using the ADDIE model, which consists of five stages: Analysis, Design, Development, Implementation, and Evaluation. During the analysis stage, observations and interviews were conducted to identify students' learning needs, classroom

conditions, and challenges in learning IPAS. The design stage involved preparing learning objectives, storyboards, learning materials, and selecting Educaplay activities appropriate for fifth-grade students. In the development stage, the media were created by integrating Education for Sustainable Development (ESD) concepts into the topic Economic Conditions in My Region. The selected ESD concepts, including responsible consumption, environmental conservation, and sustainable economic activities, were embedded in interactive learning tasks and contextual examples. The media were then validated by experts in content, media, and language before being revised. Finally, the media were implemented in a fifth-grade classroom and evaluated based on their validity, practicality, and effectiveness in improving students' learning interest.

3.1. Development and Feasibility of Instructional Media

The ESD-based Educaplay learning media were developed using the ADDIE model and focused on the IPAS topic Economic Conditions in My Region. ESD concepts were integrated by connecting economic activities with sustainability values, including responsible consumption, environmental conservation, and social responsibility. For example, from **Figure 3** students learned about sustainable farming practices, environmentally friendly transportation, and wise consumption through contextual examples and interactive learning activities.

These sustainability values were embedded in Educaplay through visual explanations, map-based exploration, quizzes, and educational games. Students were encouraged to analyze the relationship between production, distribution, and consumption activities and their environmental and social impacts, enabling them to understand that economic activities should support sustainable development while meeting community needs.



Figure 3. Learning Materials Using Educaplay

The media's suitability is evaluated by one media expert, two content experts, and one language expert. The validation results show that the media received a score of 97.7% from

media experts, 92.5% from material I experts, 97.5% from material II experts, and 100% from language experts. The overall average is 96.9% with a category of very good. The results show that the media is appropriate in terms of appearance, content, language use, and the integration of ESD values. This finding aligns with [Safitri et al. \(2025\)](#), who stated that the ESD approach can help make economic activities learning more comprehensive and provide more meaningful learning experiences.

3.2. The Practicality of Learning Media

A small-scale test was conducted involving two teachers and four students. The teacher's response results show a practicality percentage of 96.25%, while the students' responses during the wide-scale implementation phase achieved a percentage of 87.5%. The results show that the learning media using Educaplay based on ESD is very practical and easy to use in IPAS learning. The practicality of the media is supported by an attractive design, clear presentation of material, and interactive activities that students can access. This aligns with the opinion of [Anwar & Jasiah \(2024\)](#), who believe that Educaplay can create a more enjoyable and effective learning experience because students actively participate in the learning process. In addition, [Permatasari et al. \(2025\)](#) explain that visual and interactive learning media can improve students' concentration, participation, and enthusiasm for learning.

3.3. Students' Interest in Learning Improvement

The increase in students' interest in learning was analyzed using the Rasch Model with the assistance of the Ministeps application by comparing pretest and posttest results (**Figure 4**). The Person Mean Measure increased from 0.75 logits on the pretest to 1.16 logits on the posttest, representing an increase of 0.41 logits. In addition, the Person Reliability score increased from 0.52 to 0.69, while the Separation score increased from 1.05 to 1.50. These results indicate that after using the ESD-based Educaplay learning medium, students responded more positively and consistently to indicators of learning interest.

TABLE 3.1 pretest 5.x10x									
ZOU765NS.TXT Jun 10 2026 13:33									
INPUT: 26 PERSON 13 ITEM REPORTED: 26 PERSON 13 ITEM 4 CATS MINISTEP 5.11.0.0									
SUMMARY OF 26 MEASURED PERSON									
	TOTAL	COUNT	MEASURE	MODEL	INFIT	OUTFIT			
	SCORE			S.E.	MNSQ	ZSTD	MNSQ	ZSTD	
MEAN	38.6	13.0	.75	.44	.95	-.11	.97	-.05	
SEM	.7	.0	.14	.01	.20	.20	.09	.19	
P.S.D	3.6	.0	.69	.04	.42	.99	.43	.97	
S.S.D	3.7	.0	.78	.05	.43	1.01	.44	.99	
MAX.	40.0	13.0	2.17	.52	1.96	2.12	2.03	2.06	
MIN.	29.0	13.0	-.76	.36	.42	-1.68	.39	-1.01	
REAL RMSE	.48	TRUE SD	.50	SEPARATION	1.05	PERSON RELIABILITY	.52		
MODEL RMSE	.44	TRUE SD	.53	SEPARATION	1.10	PERSON RELIABILITY	.59		
S.E. OF PERSON MEAN	.14								
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99									
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .58 SEM = 2.48									
STANDARDIZED (50 ITEM) RELIABILITY = .84									

TABLE 3.1 posttest 5.x10x									
ZOU578NS.TXT Jun 10 2026 14:39									
INPUT: 26 PERSON 13 ITEM REPORTED: 26 PERSON 13 ITEM 4 CATS MINISTEP 5.11.0.0									
SUMMARY OF 26 MEASURED PERSON									
	TOTAL	COUNT	MEASURE	MODEL	INFIT	OUTFIT			
	SCORE			S.E.	MNSQ	ZSTD	MNSQ	ZSTD	
MEAN	40.5	13.0	1.16	.48	.90	-.21	.92	-.19	
SEM	.8	.0	.16	.01	.10	.22	.10	.22	
P.S.D	4.0	.0	.91	.06	.48	1.10	.52	1.09	
S.S.D	4.1	.0	.93	.06	.49	1.12	.53	1.11	
MAX.	48.0	13.0	3.23	.62	2.33	3.05	2.41	2.82	
MIN.	31.0	13.0	-.52	.36	.26	-2.11	.25	-2.10	
REAL RMSE	.50	TRUE SD	.76	SEPARATION	1.50	PERSON RELIABILITY	.69		
MODEL RMSE	.48	TRUE SD	.77	SEPARATION	1.08	PERSON RELIABILITY	.72		
S.E. OF PERSON MEAN	.18								
PERSON RAW SCORE-TO-MEASURE CORRELATION = .99									
CRONBACH ALPHA (KR-20) PERSON RAW SCORE "TEST" RELIABILITY = .68 SEM = 2.26									
STANDARDIZED (50 ITEM) RELIABILITY = .93									

Figure 4. Rasch Model Result for Pretest and Posttest

The increase in learning interest matches what [Amalia et al. \(2024\)](#) said, which is that learning media can raise interest and enthusiasm for learning, boost motivation, and create more engaging learning experiences. During the learning process, students showed enthusiasm when accessing the material, playing educational games, and answering quizzes on Educaplay. This finding also aligns with [Nurjannah et al. \(2020\)](#), who explained that using learning media can increase students' interest in learning because the learning process becomes more enjoyable and less boring.

Besides the interactivity of the media, integrating ESD also helps increase learning interest because the material is connected to economic, environmental, and daily life activities of the

students. Contextual learning helps students understand the material more easily and shows they feel happy, attentive, and interested in the learning process. This indicator aligns with [Daniyati et al. \(2023\)](#)'s view on learning interest, which is shown through feelings of enjoyment, attention, active participation, and students' enthusiasm. These findings are further supported by the Rasch analysis presented in the Wright Map (**Figure 5**)

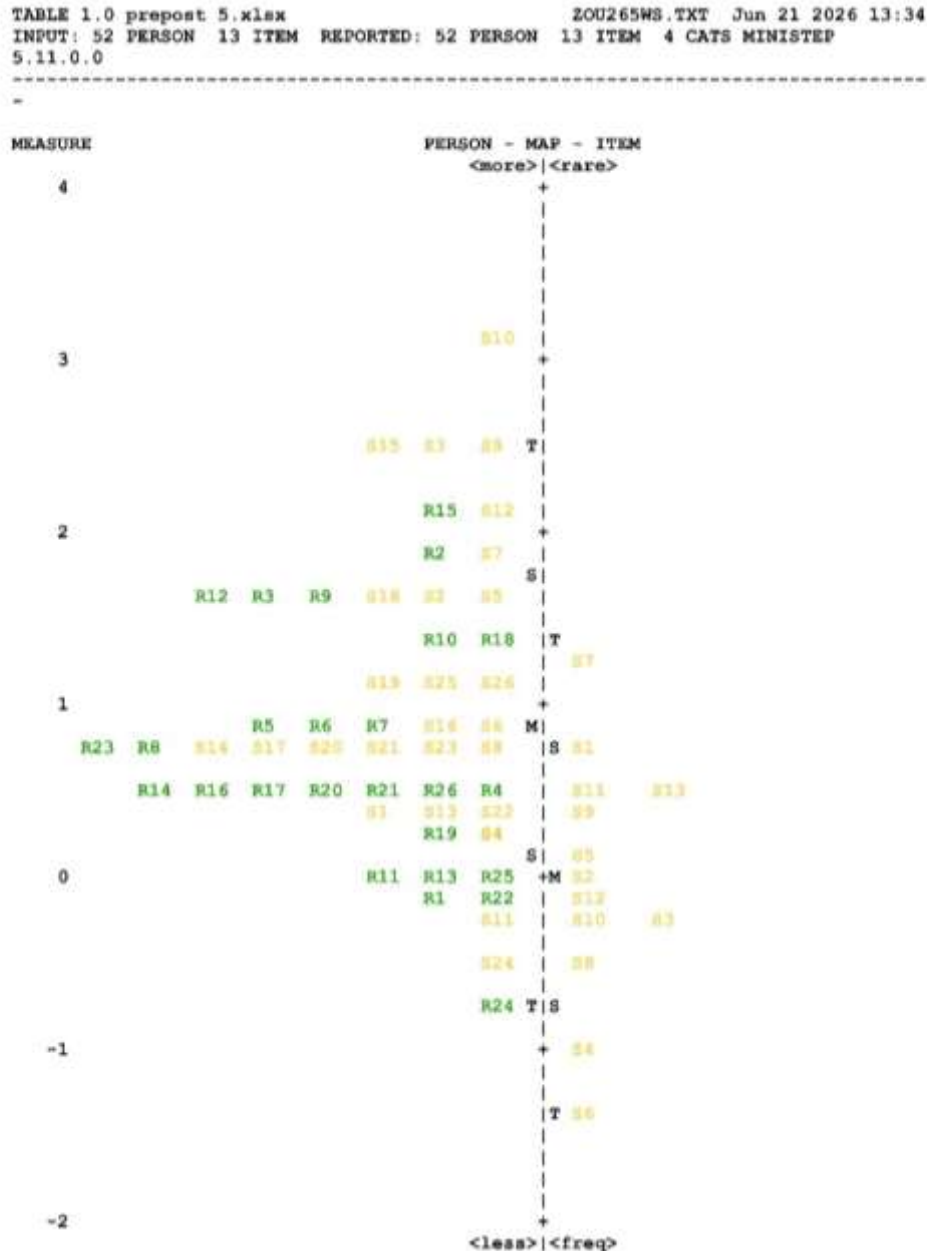


Figure 5. Wright Map: Increasing Students' Interest in Learning

The Wright Map shows that most posttest respondents (coded **S**) were located at higher logit positions than pretest respondents (coded **R**). While most pretest respondents were distributed between 0 and +1 logits, posttest respondents were concentrated between +1 and +3 logits, indicating that students demonstrated higher levels of learning interest after using the ESD-based Educaplay learning media. This finding is supported by the increase in

the Person Mean Measure from 0.75 to 1.16 logits, suggesting that the developed media was effective in enhancing students' learning interest.

4. CONCLUSION

This study developed an Education for Sustainable Development (ESD)-based Educaplay learning media for the fifth-grade IPAS topic Economic Conditions in My Region. The developed media achieved an average expert validation score of 96.9%, indicating that it was highly valid. The practicality evaluation also showed positive results, with scores of 96.25% from teachers and 92.75% from students, demonstrating that the media was highly practical and easy to use in classroom learning. Furthermore, the Rasch analysis revealed an increase in the Person Mean Measure from 0.75 logits in the pretest to 1.16 logits in the posttest, indicating an improvement in students' learning interest after using the developed media. Therefore, the ESD-based Educaplay learning media is considered valid, practical, and effective in enhancing fifth-grade students' learning interest in the topic Economic Conditions in My Region.

5. AUTHORS' NOTE

The author declares that there are no conflicts of interest in the preparation and publication of this article. The author also confirms that this article is an original work, free from plagiarism, and that all sources used have been cited in accordance with academic standards.

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