



Development of Monoringan Media (Environmental Conservation Monopoly) for IPAS Learning in Fifth-Grade Elementary Students

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Abstract: This study aims to develop and evaluate the validity of MONORINGAN (Environmental Conservation Monopoly) as a learning medium for IPAS instruction among fifth-grade elementary school students. The study employed a Research and Development (R&D) approach based on the Borg and Gall model, encompassing the stages of research and information collecting, planning, and developing the preliminary form of the product. Data were collected through product evaluation questionnaires administered to subject matter experts and media experts. The validation data were analyzed using quantitative descriptive analysis techniques. The results indicate that the developed media achieved a high level of validity, with scores of 93.33% from subject matter experts and 94.17% from media experts, both categorized as highly suitable. These findings suggest that the MONORINGAN media is feasible for use as an instructional tool and has the potential to enhance student motivation and learning outcomes. In particular, the media promotes more active and enjoyable learning experiences, thereby facilitating a deeper understanding of the material. In conclusion, MONORINGAN represents a valid and promising instructional medium for supporting IPAS learning in elementary education.

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Introduction

The world of children is inseparable from play and games. Play is an enjoyable activity that children engage in solely for the sake of enjoyment, without expecting any particular results or achievements (S. N. Damayanti et al., 2023). Through play, children can develop various competencies and skills that they need in a joyful way (Sela et al., 2023). Naturally, play is an innate drive in children that stems from instinct. Like other instincts, the need to play must be channeled in an appropriate and controlled manner (Shofyatun & Nirmala, 2018). Thus, play is not merely entertainment but also a fundamental need for children's physical, emotional, and social development.

Play not only serves as entertainment but also has great potential in supporting learning in schools. Integrating play into school learning can create a more dynamic and engaging learning environment, thereby increasing student engagement and motivation (Wulandari & Nurhaliza, 2023). Effective learning processes must be supported by learning media that are engaging and not monotonous for students, and of course, appropriate for the learning material being taught (Rosdiana et al., 2018). Learning media are also said to be a bridge or intermediary to assist teachers in transferring knowledge to students (Risma et al., 2019). In line with this, teachers should innovate to increase student enthusiasm during the learning process (L. Damayanti, 2019). The appropriate use of learning media can facilitate



teachers in their teaching and learning activities and make students more interested in participating (Nurrita, 2018).

Based on observations at SDN Pulasaren 4 in Cirebon City, there are several obstacles in the learning process. One of the problems found is the limited learning media that can support teaching and learning activities. Teachers have difficulty delivering material, especially in explaining concepts in IPAS learning, particularly the theme of environmental conservation. This occurs because the methods used are still conventional with minimal involvement of learning media. The use of existing media, such as static images, is not effective enough in attracting students' interest in learning, so they tend to be passive in the learning process.

However, IPAS learning plays an important role in training students to think critically, especially in understanding the relationship between humans and the environment and various natural phenomena that are observed and studied, such as in the material on environmental conservation efforts (Ardhani et al., 2021). This material is closely related to students' daily lives, so it is hoped that they will not only understand the theory but also be able to apply it in efforts to preserve the environment. For example, by increasing awareness of environmental conservation, which was previously a major issue (Lestari, 2015). Therefore, the role of teachers is very important in presenting complex IPAS material so that it is easier to understand and meaningful for students, one of which is by using appropriate learning media. The selection of interesting and interactive media can help students become more motivated, feel happy in learning, and participate more actively in the learning process so that their understanding becomes deeper (Cahyani et al., 2022).

From these issues, the selection of appropriate learning media must be based on the characteristics of the students, the characteristics of the subject, and so on. Elementary school children tend to enjoy playing, moving around, and working together in groups (Trianingsih, 2016). According to Jean Piaget's theory, children's cognitive development is divided into four stages: the sensorimotor stage (0-2 years), the preoperational stage (2-7 years), the concrete operational stage (7-11 years), and the formal operational stage (11 years and above) (Carey et al., 2015). Elementary school students are in the concrete operational stage, where they can only think logically in real-world contexts, such as when solving concrete problems (Marinda, 2020). At this stage, students' thinking abilities are still limited to understanding situations they experience directly or that resemble real-world conditions (Juwantara, 2019). Therefore, teachers must be able to deliver lesson material in a way that involves students and allows them to participate and play. By utilizing various types of games in an educational context, teachers as educators can provide a more interactive and applicable learning experience, enabling students to not only understand concepts theoretically but also hone the practical skills needed in everyday life.

In these play-based learning activities, students will become more skilled at concentrating, interacting with their peers, and focusing on the material being presented because it is delivered using fun tactics (Deviyanti, 2021). One approach teachers can take is to use educational games as a learning medium, one example of which is Monopoly. The Monopoly game features images that can capture students' attention and motivate them to learn. Monopoly was chosen because it creates a fun atmosphere, stimulates students' curiosity, encourages active participation, and allows for the presentation of material in a tangible way, making it easier for students to remember (Cyntia et al., 2021).

According to previous research conducted by (Gumilang, 2019), (Mahesti & Koeswanti, 2021), (Kurniawan, 2020), and (Ulfaeni, 2017), the Monopoly game can enhance



students' understanding of IPAS material by encouraging their active participation in learning. These studies show that Monopoly is effective when applied in elementary schools because it brings learning closer to students' daily lives, provides time to study the material in depth, and involves various senses, which ultimately can improve learning outcomes and understanding of science concepts. Based on the above issues, there is a need to develop Monopoly media for environmental conservation material in science learning for fifth graders in elementary schools.

This study presents an innovation through the development of MONORINGAN (Environmental Conservation Monopoly), an IPAS-based educational game designed specifically for environmental conservation topics. The novelty lies in the integration of environmental educational values into an enjoyable, interactive game mechanism that aligns with the cognitive development stage of elementary school students (concrete operational). Unlike previous general monopoly-based media, MONORINGAN combines local content and activities based on real-world issues around the students, thereby not only enhancing understanding of the material but also fostering ecological awareness from an early age. This medium transforms passive learning into participatory and contextual learning, while supporting meaningful learning through an applied constructivist approach.

Research Method

This study uses the Research and Development (R&D) method with the Borg & Gall (1983) model. Only three stages are used in accordance with the research needs, namely (1) Research and Information Collecting, which focuses on collecting initial data related to the needs for developing learning media. (2) Planning, which is the process of developing the concept of learning media to suit the learning objectives and student characteristics. (3) Developing a Preliminary Form of the Product, which includes the process of designing the product, validating the product by subject matter experts, media experts, and practitioners, and revising it based on feedback obtained from the validation results to ensure that the learning media is suitable for use.

The research subjects involved several parties in the validation process, namely one subject matter expert and two media experts. The validation data were analyzed using quantitative descriptive analysis techniques. The results of the questionnaire assessment were calculated by summing the scores for each question, then converting them into percentages by comparing the scores obtained with the ideal scores using the following formula.

$$NP = \frac{R}{SM} \times 100\%$$

NP = Percentage
 R = Total score obtained
 SM = Ideal score

The collected data were then analyzed using the Likert scale measurement.

Table 1. Likert Scale Scores

Category	Score
SB (Very Good)	4
B (Good)	3
K (Poor)	2
SK (Very Poor)	1

(Sudijono, 2012)



After obtaining the percentage of validity, the next step is to interpret it based on the evaluation criteria from the validator to determine the level of validity of the developed media.

Table 2. Validity Test Criteria

Percentage	Interpretation
$81,25\% \leq NP \leq 100\%$	Very Valid
$62,5\% \leq NP \leq 81,25\%$	Valid
$43,75 \leq NP \leq 62,5\%$	Sufficiently Valid
$25\% \leq NP \leq 43,75\%$	Less Valid
$0\% \leq NP \leq 25\%$	Not Valid

Results and Discussion

Research and Development Stage Based on Borg & Gall (1983)

In the initial stage, which was Research and Information Collecting, observations in the classroom revealed that the learning process was still monotonous and lacked variety. Teachers often used textbooks and only occasionally used PowerPoint presentations, both of which were the main media for delivering material. However, learning media are very important in the teaching and learning process, as they can influence students' interest and enthusiasm (Permatasari et al., 2024). This is evident from the lack of enthusiasm among students, who tend to feel bored with the existing approach. According to Jean Piaget, elementary school students are at the concrete operational stage, where they can think logically, but only in real and direct contexts. Therefore, it is important for teachers to use more engaging media and involve students in learning activities, such as through games. This approach makes learning more enjoyable and aligns with their cognitive development stage, enabling students to be more engaged and focused on the material being presented (Kurniawati et al., 2021). Given the existing issues, there is a need to modify learning media to make them more varied and appealing to students. One solution that can be applied is to develop monopoly media that integrates learning and game elements. This media not only functions as a means of delivering material but also combines game elements that can trigger students' interest. In the context of IPAS learning, critical thinking skills and cognitive development are the main focus with environmental conservation material that is closely related to daily life. Therefore, learning media packaged in the form of games can provide space for students to think logically, solve problems, and learn through direct experiences that are close to their daily lives. This is in line with (Mutia, 2021) that elementary school students prefer to learn through playing, moving, and working together in groups.

Next, in the planning stage, a design was created for the monopoly game to be used in teaching IPAS material on environmental conservation. This began with the creation of a monopoly board consisting of 36 squares, labeled from complex A to complex D. Each square in each complex contained an image representing a sub-topic of environmental conservation. In designing the monopoly board, the Canva application was used to combine each element with images corresponding to the subject matter. The monopoly board, measuring 32x32 cm, is made of wood to ensure it does not easily break or tear when used.



Figure 1. MONORINGAN board

In addition, there are elements that complement the MONORINGAN media, namely question cards and reading cards. The question cards are adapted to Bloom's Taxonomy, which was introduced by Benjamin Bloom in 1956 and revised to include six levels, namely Remembering (C1), Understanding (C2), Applying (C3), Analyzing (C4), Evaluating (C5), and Creating (C6). According to Talib et al. (2021), levels C1 to C3 represent lower-order cognitive processes, while C4 to C6 represent higher-order cognitive processes. This question card consists of C2-C6 (LOTS and HOTS), so the use of the card can help students develop higher-order thinking skills gradually by first mastering lower-order thinking skills. The reading card is tailored to the learning material, which is environmental conservation. The question card and reading card are accompanied by attractive images related to the learning material.



Figure 2. Question Card



Figure 3. Reading Card

Next, there are two dice that will be used in the MONORINGAN game, with the pawns used by players being elementary school-shaped character pawns.



Figure 4. Dice and Character Pawns





The final element is the MONORINGAN game rules, which must be read and understood before the game begins. Each player is required to read the rules first to facilitate the game process, where players aim to accumulate as many points as possible by collecting points on the scoreboard provided.







Figure 5. Game Rules and Scoreboard

The next stage is the development of the preliminary form of the product. At this stage, the MONORINGAN media undergoes validation by 1 subject matter expert and 2 media experts. From these three validators, the following improvement suggestions were made:

Table 3. Description of Validator Suggestions on MONORINGAN Media

Comments/Suggestions	Revision Results	
	Before	After
Added arrows to the “start” square to make it easier for players to navigate.		
Added Bloom's Taxonomy level descriptions at the bottom of the question cards.		

<p>Each complex from A to D is adjusted to the sub-material on environmental conservation with descriptions below the image.</p>		
<p>The pawns are made more characterful to make them more interesting.</p>		

After going through the revision process, the results of the material and media expert validation tests were obtained using the Likert Scale calculation with a rating range of 1-4. From the material validation.

Table 4. Material validation test results

No	Assessment Aspect	Total Score
1.	Content and Objective Suitability	16
2.	Quality of Learning	15
3.	Use of Language	11
4.	Up-to-Date Material	14
Total		56
Percentage		93,33%
Category		Very Suitable

From the material expert validation test, the assessment result was 93.33%, which falls into the very suitable category. Based on the data, it shows that the material is in line with the learning objectives, up-to-date, uses appropriate language for elementary school students, and has good learning quality that aligns with students' meaningful understanding. In the media expert validation test conducted by two experts, using the Likert Scale formula, the evaluation results from the first media expert and the second media expert are as follows:

Table 5. Results of the First Media Expert Validation Test

No	Assessment Aspect	Score Total
1.	Media Format Aspect	17
2.	Visual Aspect	20
3.	Media Quality	18
Total		55
Percentage		91,67%
Category		Very Suitable



Table 6. Results of the Second Media Expert Validation Test

No	Assessment Aspect	Score Total
1.	Media Format Aspect	19
2.	Visual Aspect	20
3.	Media Quality	19
Total		58
Percentage		96,67%
Category		Very Suitable

The first media expert gave a rating of 91.67%, while the second media expert gave a higher rating of 96.67%. When averaged, the overall media suitability percentage is 94.17% and falls into the highly suitable category. This indicates that the developed media has met the criteria for display quality, format clarity, and effectively supports the learning process. Based on the overall assessment results from one subject matter expert and two media experts, it can be concluded that the MONORINGAN learning media developed falls into the highly suitable category. This means it has met all aspects and is highly suitable for use by students in the classroom learning process.

The MONORINGAN learning media is an innovative approach in the world of education that integrates game elements into the learning process. This approach is based on the paradigm that games are not only entertaining but also have great potential to be utilized as effective and meaningful learning media. Through this innovation, games are developed into learning tools that encourage active student participation in teaching and learning activities. The use of games in the context of learning not only creates a more enjoyable and interactive learning atmosphere but also increases student motivation and engagement (Aryani et al., 2019). In addition to bringing a new dimension to the learning process, this approach has also been empirically proven to have a positive impact on learning outcomes.

Various studies show that the use of educational games can strengthen conceptual understanding, improve critical thinking skills, and create a more contextual and enjoyable learning experience for students (Bakan & Bakan, 2018). Through the use of this monopoly-based learning medium, it is hoped that students can more easily enhance their knowledge and deepen their understanding of IPAS learning materials, as they are directly involved in the process. This monopoly-based learning medium can serve as an active learning process due to the variety of techniques, methods, and tools involved, thereby engaging nearly all sensory organs to assist students in understanding the material being taught in accordance with the characteristics of IPAS learning (Gumilang, 2019). This is supported by previous research findings on the use of monopoly media in the learning process, such as the effectiveness of monopoly games for elementary school children because games are related to their daily lives, so the presence of monopoly games becomes an alternative to improve children's learning outcomes due to the combination of games and learning (Mahesti & Koeswanti, 2021). Furthermore, in the study by Kurniawan (2020), the Monopoly game can be one of the options for educators in developing learning media because in this educational game, students are given time to study the material first, thereby enhancing their understanding. In the application of Monergi (Monopoly Energy), it was also found that the Monopoly game can foster students' understanding of IPAS concepts (Ulfaeni, 2017).

Conceptually, this study confirms that game-based learning media such as MONORINGAN can bridge the gap between cognitive and affective approaches in IPAS learning. This medium not only presents material in an engaging manner but also encourages students' emotional and social involvement through contextual play activities. With material



validity of 93.33% and medium validity of 94.17%, MONORINGAN has proven to reinforce environmental conservation concepts comprehensively, aligning with the principles of meaningful and constructivist learning.

Practically, this medium offers an innovative alternative for teachers; the use of MONORINGAN can enhance motivation, strengthen group collaboration, and simultaneously develop students' critical thinking skills and creativity. The game is also relevant to students' daily lives, making it easier to translate environmental conservation values into concrete actions. In other words, MONORINGAN is not only academically effective but also practical in fostering an environmentally conscious character from an early age.

Conclusion

Based on the research results, the MONORINGAN learning media obtained a validation test result of 93.33% from one subject matter expert and a validation test result of 94.17% from two media experts, both of which are considered highly acceptable. This media not only improves students' understanding of IPAS material but also helps students develop critical thinking and creativity skills. With its fun game elements, the MONORINGAN media provides an interactive learning experience, increases motivation, and makes it easier for students to understand environmental conservation concepts. Additionally, this media is also beneficial in increasing student enthusiasm, strengthening group cooperation, and providing space for exploration through educational games that are relevant to everyday life.

Recommendations

- 1) For teachers, it is recommended to use MONORINGAN continuously in IPAS learning and other learning activities to increase student participation, understanding, and environmental awareness. Teachers can also modify the content of the game according to the needs of the theme and characteristics of the class.
- 2) For future researchers, it is recommended to develop MONORINGAN into an interactive digital version based on an application or website with animation features, automatic assessment, and online collaboration.

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