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Environment-Based Physical Education: Implementation of Used Goods as an Educational Game Media for Children

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ABSTRACT

Objective: *This research aims to develop and implement educational game media from used goods in learning environment-based physical education for early childhood.* ***Method:*** *The approach used is Research and Development (R&D) with the ADDIE development model consisting of five stages: analysis, design, development, implementation, and evaluation. The research subjects involved 20 teachers from KB Kindergarten Aisyiyah Wonocolo Sepanjang.* ***Result:*** *The results of the analysis show that there is a need for teachers for physical learning media that is innovative, economical, and environmentally friendly. At the stage of development, game media from used items such as plastic bottles, cardboard, and raffia rope were validated by media experts and physical education experts with results that were very feasible to use. Media implementation is carried out through direct learning with children and evaluation is carried out through observation and questionnaires to teachers. The results show that educational game media from used goods is able to improve children's gross motor skills, motivate involvement in physical activities, and instill the value of environmental concern.* ***Novelty:*** *Thus, used goods-based educational game media can be an alternative to integrative and contextual physical education learning solutions for early childhood while supporting character learning and environmental awareness from an early age.*

INTRODUCTION

Physical education has an important role in shaping children's physical, mental, and social development. Through structured physical activities, children can develop basic motor skills, coordination, as well as discipline and sportsmanship. In the context of early childhood and elementary school education, physical activities also function as a fun and meaningful learning medium. Therefore, innovations in physical education media and learning methods are needed to increase children's effectiveness and involvement in the learning process [1], [2].

On the other hand, environmental issues and household waste management are global challenges that require solutions from various sectors, including education. One of the approaches that is now being developed is from Abswoude et al. environment-based learning, where students are invited to learn through hands-on experience related to environmental conservation. In this context, the use of used goods as a learning medium is a concrete step to instill the values of caring for the environment from an early age [3].

Various previous studies have shown that educational game media is able to increase children's participation and motivation in physical education learning. However, most of the media used is still based on new materials and requires additional

costs in procurement. In fact, around children there are many used items that can be modified into educational play tools, such as plastic bottles, cardboard, bottle caps, and used cans, which have the potential to be used in various creative physical activities [4].

The state of the art in this field can be seen from several studies that have developed environment-based educational games such as circuit game models from used bottles to train agility or balance games from cardboard and raffia ropes. However, there are still limited studies that specifically integrate the concept of physical education and environmental education simultaneously, especially through the implementation of game media from used goods. This shows that there is room for innovation in the development of holistic and contextual learning approaches[5], [6].

The novelty of this research lies in the integration between physical education and environmental education in a practical and applicable way, namely through the implementation of used goods as an educational game medium. This approach not only supports the achievement of children's physical competencies but also builds environmental awareness and creativity. Children are not only objects of learning but also actively involved in designing and using toys that they make themselves from used items[7], [8], [9].

This research also carries the spirit of contextual teaching and learning that connects children's real experiences with subject matter. When children use tools from used items in physical games they not only learn movement but also values, responsibilities, and creative ways of thinking. This is in line with the principle of Freedom of Learning which encourages independence and experiential learning[10], [11].

The purpose of this study is to implement the use of used goods as an educational game medium in children's physical education learning, as well as to examine its effectiveness in increasing physical activity and environmental awareness. This research also aims to develop a used object-based physical game model that can be applied by teachers in schools easily, cheaply, and environmentally friendly.

Thus, this research is expected to contribute to the development of physical education that not only focuses on the physical aspect, but also instills the values of sustainability and concern for the environment. The results of this study can be an alternative learning solution that is contextual, economical, and educational for schools at various levels, especially in physical education and children's sports learning.

RESEARCH METHOD

This research uses a Research and Development (R&D) approach with the main goal of developing used goods-based educational game media in physical education learning that at the same time instills the values of environmental concern in children [12]. The development model used in this study is the ADDIE (Analysis, Design, Development, Implementation, and Evaluation) model which is considered relevant for designing, testing, and perfecting innovative and applicable learning products [13].

The ADDIE model consists of five stages that are mutually sustainable, namely:

1. Analysis

At this stage, an analysis of the needs for physical education learning media that utilizes used goods is carried out. Data was collected through observation, interviews, and literature studies to identify the needs of teachers and children in the physical learning process as well as the potential for used goods available in the surrounding environment.

2. Based

On the results of the analysis, the researcher compiled the design of educational game tools from used items including planning the form of the game, the type of tool, the motor goals to be achieved and the design of the guide for its use by the teacher. This design also contains indicators of the success of the media in increasing children's involvement in learning.

3. Development

At this stage, the prototype of educational game media from used goods according to the design that has been designed is carried out. The prototype is then validated by physical education experts and learning media experts to obtain input and improvements.

4. Implementation

The game media that has been validated is then tested on a limited basis in children's physical education classes. This implementation stage also involves teachers as media users to find out the ease of use and involvement of children when playing using these media.

5. Evaluation

Evaluation is carried out formative and summative. Formative evaluations are carried out during the development and trial process for product improvement. Summative evaluation was carried out to assess the effectiveness of media in increasing physical activity and environmental awareness of children. The data collection technique at this stage uses observation, questionnaires, and documentation.

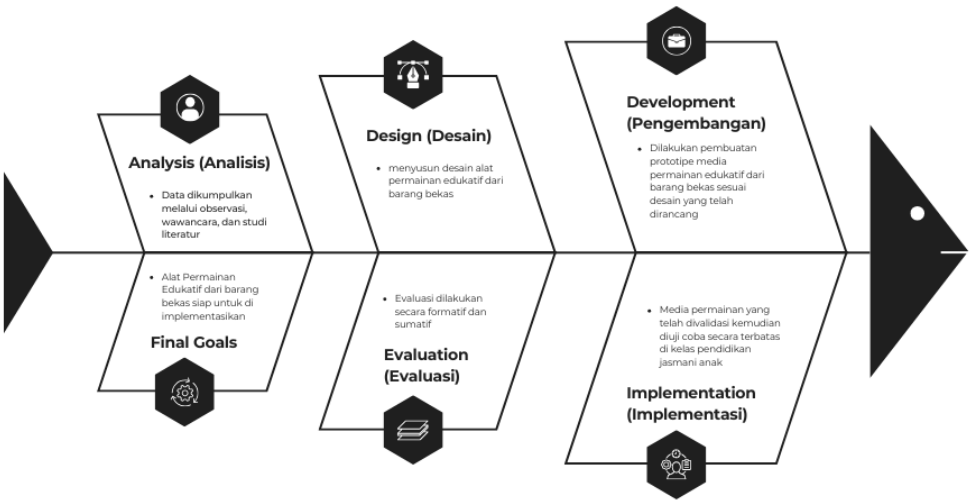

Figure 1. ADDIE Model.

ADDIE's approach allows the development process to be carried out in a structured and flexible manner so that the products produced can be adapted to real needs in the field. This method also provides a space for continuous evaluation to ensure the effectiveness and relevance of the product in improving the quality of learning.

RESULTS AND DISCUSSION

Results

Research Stages and Implementation Results

1. Analysis Stage

In the initial stage, observations and interviews were carried out with 20 teachers of Aisyiyah Wonocolo Along Kindergarten to identify physical learning needs and the potential use of used goods. The results of the analysis show that most teachers do not have a structured environment-based physical game media. Teachers also stated that limited funds and facilities are obstacles in providing educational game tools that are interesting and educational. However, they are very open to the idea of using second-hand goods that are cheap, easy to get, and environmentally friendly.

2. Design Stage

Based on the results of the analysis, the researcher designed 5 types of educational physical game media from used goods. Each is designed to train gross motor skills such as jumping, throwing, and body balancing. The design also includes media usage guidelines, learning objectives, as well as aspects of instilled environmental values such as recycling awareness and concern for cleanliness.

3. Development Stage

The game's prototype was developed using used items such as plastic bottles, cardboard, milk cans, and raffia ropes. The media was then validated by two experts, namely:

a. Media experts: Assess design feasibility and material safety.
b. Physical education experts: Assessing the suitability of media for early childhood physical learning goals.

Table 1. Validation of media experts and physical education experts.

No	Aspects Assessed	Media Member (Max Score 5)	PJOK Members (Max Score 5)	Average Score	Category
1	Suitability of the design of the game tool with the purpose	4.7	4.9	4.8	Excellent
2	Safety of using the tool for early childhood	4.5	4.6	4.55	Good
3	Strength and durability of materials (used goods)	4.3	4.4	4.35	Good
4	Media creativity and innovation	4.8	4.7	4.75	Excellent

No	Aspects Assessed	Media Member (Max Score 5)	PJOK Members (Max Score 5)	Average Score	Category
5	Media facilities used by teachers and children	4.6	4.8	4.7	Excellent
6	The relationship between media and the value of environmental education	4.7	4.5	4.6	Excellent
7	Clarity of media usage instructions	4.5	4.6	4.55	Good

The validation results showed that the media was classified as very feasible with minor revisions to the strengthening of the media structure and variations of game instructions.

4. Implementation Stage

The limited trial was carried out at KB Kindergarten Aisyiyah Wonocolo Along with the use of game media for 2 weeks (4 meetings). Teachers are given short training to understand the use of the tool and then they practice the activities with the children directly. Observations were carried out to assess children's involvement, ease of use of media, and teachers' responses.

5. Evaluation Stage

The evaluation was carried out using a closed questionnaire and was open to teachers after implementation. The aspects evaluated include:

a. Ease of media creation
b. Benefits for children
c. Children's interest in media
d. Planting environmental value, and
e. The suitability of media with physical learning.

The following is a table of the results of the implementation evaluation based on the responses of 20 teachers:

Table 2. Evaluation Results.

No	Aspects Assessed	Score Maximum	Score Average	Category
1	Ease of Media Creation	5	4.6	Excellent
2	Benefits for Children's Motor Skills	5	4.8	Excellent
3	Children's Interest and Enthusiasm for Media	5	4.7	Excellent
4	Instilling the Value of Environmental Concern	5	4.5	Good
5	Media Compatibility with PJOK Objectives	5	4.7	Excellent

Discussion

The results of the study show that the use of used goods as an educational game medium in physical education learning has great potential to be applied to children, especially in KB Kindergarten Aisyiyah Wonocolo Sepanjang. The involvement of 20 teachers in the implementation process reinforces the evidence that this approach is not only practical and economical but also able to increase teachers' creativity in crafting fun and meaningful physical learning.

From the analysis stage, it was identified that most teachers experienced obstacles in presenting attractive physical game tools due to budget and facility limitations. When introduced to the concept of using used goods, the teacher showed high enthusiasm. This shows that the environment-based approach has its own appeal for educators because it is in line with the principles of continuous education and the values of independence.

In the development stage of validation results, two experts showed that educational game media from used goods was considered very feasible to use. Aspects such as design creativity, security, and environmental values earned high scores from validators. This indicates that the media developed is not only visually appealing but also appropriate to the child's needs and safe to use in physical activities [14].

Implementation in the field shows that children are very enthusiastic when using used toys. Physical activities become more interactive because children are actively involved in physical activities while learning to recognize used objects that can be reused. Teachers also reported that the use of this media made it easier for them to manage the classroom and foster children's enthusiasm for learning naturally.

The results of the evaluation of 20 teachers showed that the average score of all aspects assessed was in the very good category. Especially in the aspect of improving gross motor skills and children's interest in learning. This confirms that the developed media is not only relevant to physical learning purposes but also effective in fostering environmental awareness through a play approach [15].

Instilling educational values such as concern for waste, recycling, and reuse of used goods can be conveyed contextually through physical activities. Children not only move physically but also learn to interpret objects around them. This is a form of holistic learning that integrates cognitive, affective, and psychomotor aspects while being in line with the goals of early childhood education.

Overall, this study proves that the integration of physical education and environmental education through the game media from used goods is an innovative and effective approach. Teachers can adapt this model flexibly according to the context and conditions of their respective schools. In addition to supporting physical learning goals, this approach also strengthens the mission of character education and love of the environment from an early age.

CONCLUSION

Fundamental Finding : This study proves that the environment-based physical education approach through the use of used goods as an educational game medium is

very effective and applicable to be applied at the early childhood education level. The results of the needs analysis show that teachers need alternative learning media that is cheap and easy to make and still interesting and educational for children. Through the development stages of the ADDIE model, the designed game media has been validated as a safe, creative, and in accordance with physical learning goals. The implementation of educational game media from used items at KB Kindergarten Aisyiyah Wonocolo Along involved 20 teachers who gave very positive responses to the ease of use, motor benefits, and its impact on children's learning interests. The evaluation carried out shows that this media is able to increase children's physical activity while instilling the values of concern for the environment. Thus, this approach not only supports children's gross motor development but also strengthens character learning through fun and meaningful activities. **Implication :** Overall, educational game media from used goods is feasible to be developed and recommended as an alternative to physical education learning innovations in the PAUD and elementary school environment. **Limitation :** This research contributes to the development of an integrative, economical, and supportive learning model that supports the creation of a child-friendly and environmentally friendly learning environment, although the study is limited to a single institution and a relatively small group of teacher participants. **Future Research :** Future studies are encouraged to involve a wider range of early childhood education institutions and stakeholders, and to explore the long-term impacts of using used goods-based educational media on children's environmental awareness and physical development.

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