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DEVELOPMENT OF DISASTER MITIGATION LEARNING MODULES FOR FIRE FOR YOUNG CHILDREN

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ABSTRACT

This study aims to develop a fire disaster mitigation learning module to instill disaster responsiveness in early childhood. Disaster education from an early age is crucial for building preparedness and appropriate responses when facing emergency situations, yet limited media specifically discusses this in PAUD institutions. The research method used is Research and Development (R&D) with the ADDIE development model (Analysis, Design, Development, Implementation, and Evaluation). The subjects involved were children from TK Negeri 5 Pekanbaru, TK Khalifah, and TK Negeri Pembina 3. Data were analyzed using qualitative descriptive for feasibility and quantitative statistics (paired sample t-test) for effectiveness. Validation results from linguistic and PAUD experts showed the module is in the "Highly Feasible" category with scores of 80% and 86.36% respectively. Effectiveness testing showed a significant increase in children's understanding, with pre-test results moving from 40.07% (Not Yet Developed) to 75.07% (Developing as Expected) after intervention. This module contributes to providing a contextual and innovative learning media for teachers to build children's safety awareness.

Keywords: Learning Module; Mitigation; Fire; Early Childhood; ADDIE.

1. INTRODUCTION

Early childhood education is the main foundation in the formation of human character and basic knowledge. One aspect that is often overlooked but is very vital is safety education, particularly regarding disaster mitigation. Disaster mitigation is a series of efforts to reduce disaster risks, both through physical development and awareness and enhancement of the ability to face disaster threats. In Indonesia, fires are one of the disasters that often occur in residential areas and school buildings, but knowledge about how to save oneself from an early age is still very limited.

Based on the results of observations and initial interviews at Public Kindergarten 5 Pekanbaru, it was found that children still consider fire as an interesting object to play with without understanding the lurking dangers. The teachers at the school also stated that they do not yet have guidelines or special media that systematically teach fire mitigation. Until now, learning has only been conducted incidentally without a structured module. This is what constitutes the research gap: there is a lack of valid and effective learning media to teach fire mitigation to early childhood in the school environment.

The main goal of this research is to produce a product in the form of a learning module on fire disaster mitigation that is deemed feasible by experts and effective in increasing children's knowledge and skills in responding to fire hazards. With this module, it is hoped that children will not only recognize the dangers of fire but also know practical steps such as how to exit a smoke-filled room or how to contact emergency help.

2. METHODOLOGY

This research is a type of development research or Research and Development (R&D). The development model used is the ADDIE model, which consists of five systematic stages:

Figure 1.1 ADDIE Concept

1) Analysis: Conducting a needs analysis at the school, analyzing children's characteristics, and analyzing the materials needed for fire mitigation.
2) Design: Developing the module design, determining learning objectives, preparing assessment instruments, and selecting suitable illustrations for children.
3) Development: Realizing the design into a complete module product and conducting validation with language experts and early childhood education experts to obtain improvement eedback.
4) Implementation: Applying the module in the classroom learning process. The trial is conducted in three stages: individual test, small group test (TK Khalifah), and field/large group test (TK Negeri Pembina 3 and TK Negeri 5 Pekanbaru).
5) Evaluation: Analyzing the results of each stage to see the success of the product in achieving its objectives.Instrumen yang digunakan meliputi lembar validasi ahli, lembar observasi aktivitas anak, dan tes unjuk kerja (*pre-test* dan *post-test*). Teknik analisis data menggunakan analisis deskriptif untuk data kualitatif dan uji statistik *Paired Sample T-Test* untuk melihat signifikansi peningkatan pengetahuan anak sebelum dan sesudah menggunakan modul.

3. RESULTS

The development results show that this fire disaster mitigation module meets very good quality criteria. The expert validation process produced the following data:

- Language Expert Validation: Obtained a score of 80% with the category "Highly Eligible." Input from language experts includes simplifying sentence structures to make them easier to read for teachers and parents when accompanying children.
- Early Childhood Education Expert Validation: Obtained a score of 86.36% with the category "Highly Eligible." Early childhood education experts emphasized adding brighter illustrations to attract children's visual interest.

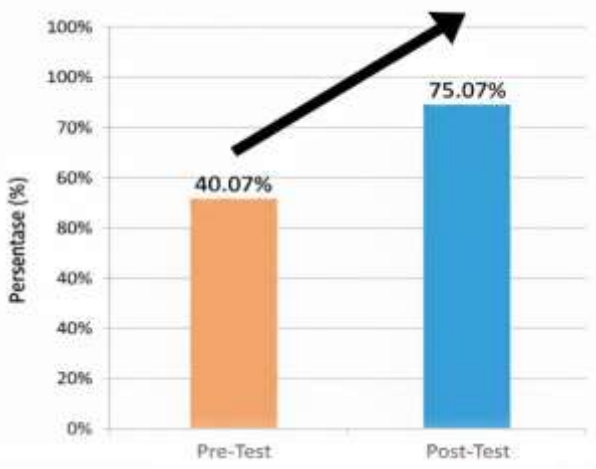

Figure 2.2 Comparison Diagram of Pre-Test and Post-Test Results

At the implementation stage, the effectiveness of the module was measured by comparing the results before and after the intervention. In a field test at TK Negeri 5 Pekanbaru, the average pre-test score of the children was 40.07%, which generally means that the children were in the Not Yet Developed (BB) category. They did not know what to do if they saw a large fire. After being given lessons using the module over several sessions, a post-test was conducted which resulted in an average score of 75.07%. This score places the children in the Developing as Expected (BSH) category.

Table 1 Results of Paired Sample Test

Paired Samples Statistics

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Pretest	19.2333	30	2.78770	.50896
	Posttest	36.0333	30	2.35597	.43014

Paired Samples Correlations

		N	Correlation	Significance One-Sided p	Significance Two-Sided p
Pair 1	Pretest & Posttest	30	.041	.415	.831

Paired Samples Test

		Paired Differences					t	df	Significance One-Sided p	Significance Two-Sided p
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper				
Pair 1	Pretest - Posttest	-16.80000	3.57578	.65285	-18.13522	-15.46478	-25.734	29	<.001	<.001

Based on the results of the statistical test, a significance value (2-tailed) of 0.001 (< 0.05) was obtained, indicating a very significant difference between before and after using the module. The children are now able to practice crawling under smoke and understand the importance of moving to the assembly point.

4. DISCUSSION

The success of the development of this module is supported by the presentation of contextual material. The module is designed not only to contain text, but is dominated by instructional images that depict real situations. This aligns with Piaget's cognitive development theory, which states that early childhood is at the pre-operational stage, where they more easily absorb information through visual symbols and concrete experiences.

The increase in scores from 40.07% to 75.07% proves that this module is able to bridge communication barriers between teachers and children in delivering material considered "heavy" such as disaster mitigation. The use of storytelling and simulation methods guided by the module makes the learning atmosphere enjoyable and not frightening for children. Compared to previous studies, this module has an advantage in terms of practicality. The module provides step-by-step guidance for teachers so that any educator can deliver the material with the same standard. The implication of this study is the importance for early childhood education institutions to start having learning media that specifically address personal safety, so that schools are not only places for academic learning but also safe places that equip children with survival skills.

5. CONCLUSIONS

Based on the entire series of development research that has been conducted, it can be concluded that the Fire Disaster Mitigation Learning Module for Early Childhood has been successfully developed with very feasible quality. Theoretically, this module has been validated by experts with very satisfactory results, and practically, this module has proven effective in increasing children's preparedness in facing fire threats.

The recommendation given is that early childhood educators can use this module as a permanent reference in safety learning themes or firefighter professions. For future researchers, it is suggested to develop other supporting media such as animated videos or interactive applications integrated with the material in this module to enrich the children's learning experience.

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