Interactive Book Design as a Development Media Children's Fine Motor Skills at Nusa Ceria Islamic Kindergarten

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Abstract

Early Childhood Education (PAUD) in Indonesia is very crucial, in accordance with Law No. 20 of 2003 which stipulates early childhood as the period from birth to six years. At this stage, early childhood is a golden period, where the child's brain experiences rapid development to support the child's physical and mental development. However, research shows that children at the Nusa Ceria Islamic Kindergarten, Sumberrejo Village, Lumajang Regency, face difficulties in developing fine motor skills, such as delays in activities such as sticking paper or dry leaves. This difficulty is caused by learning methods that rely too much on basic learning. In addition, the lack of opportunities for environmental exploration and overly protective parenting patterns are also inhibiting factors. To overcome this problem, collaboration between educators and parents in providing stimulation through fun activities and creative media is needed. One proposed solution is the use of interactive books designed to improve children's fine motor, cognitive, language, and social skills as a whole. This book is expected to be an effective external impetus in supporting early childhood development.

1. Introduction

Legally, "early childhood" in Indonesia is a child from birth to six years old, according to Law No. 20 of 2003 concerning the National Education System, article 1 paragraph 14. Early Childhood Education is guidance from birth to six years to support the physical and mental development of children. (Asmara, nd, 2020). Early childhood education is very crucial because children are the future leaders of the nation and their quality will determine how this country built in the future [2]. The importance of early childhood lies in the ongoing development of the child's brain and is very sensitive to various environmental factors (Uce, 2017 in Cedrik Putra Kalmansur et al., 2023). Early childhood life is characterized by different characteristics. Children develop at different rates. Although some develop rapidly, there are also those who experience developmental decline. Because of these differences, children in general also need methods. This situation is

what makes the role of guardians and early childhood educators have to make decisions based on the needs, skills, and personalities of children (Sujarwo, 2010).

In their learning, early childhood faces many difficulties in learning, including the inability to sit still while studying, lack of independence in learning, and bad learning habits, such as only wanting to study in front of parents or teachers, among other issues. Bad learning habits in children can have a negative impact on the development of children's fine motor skills[4]. Even when early childhood still needs parental guidance, the majority of parents only offer training in the form of technological games on gadgets (Yonatia & Susanti, 2022 in Cedrik Putra Kalmansur et al., 2023). Playing with gadgets can also lead to addiction, which is harmful to children's psychological development (Anggraini, 2019 in Cedrik Putra Kalmansur et al., 2023).

According to Jumiarsih.C in [5] children's fine motor skills are abilities that include movements of certain body parts with small muscles, such as fingers and wrists. This point of view leads to the conclusion that fine motor skills involve movements that use certain body parts and small muscles such as fingers and wrists, and require good coordination between the eyes and hands.

The phenomenon that the author has found in the field is in Tk Islam Nusa Ceria, Sumberrejo Village, Lumajang Regency. According to one of the teachers from the interview results indicated that children in grade A kindergarten at the educational institution face difficulties in developing fine motor skills, for example some children show delays in doing activities such as sticking paper or dry leaves. In addition, the analysis shows that most of the learning methods applied are based on basic aspects, with an emphasis on the use of books and reading materials to improve memorization and reading skills. This phenomenon can affect the ability of children in Tk Islam Nusa Ceria to follow the education process and daily activities. Therefore, it is important to consider fine motor training as a support to improve children's abilities in terms of coordination and control of hand movements.

Regarding the problems mentioned earlier, concrete steps are needed to optimize children's fine motor skills, requiring collaboration between educators and parents to provide stimulation through fun activities. One effective method is to provide activities that stimulate children's small muscles using creative media that are interesting to children Maulaya in [6]. In designing this interactive book, it is made by presenting various activities that not only build children's fine motor skills, but also display visuals that attract attention and are easy for children to follow. In addition, the book is also designed to support children's cognitive, language, and social aspects, so that it becomes a comprehensive means for children's development in various aspects of their development.

1.1 Literature Review

The Importance of Early Childhood Education in Indonesia

Early Childhood Education (PAUD) is recognized as a critical phase in child development, as stipulated by Law No. 20 of 2003 in Indonesia. This law defines early childhood as the period from birth to six years, commonly referred to as the "golden period." During this stage, children experience rapid brain development, forming the foundation for their physical, cognitive, and emotional growth (Eva, 2020). Research underscores the significance of providing quality early education to maximize this potential, as delays during this phase may impede further developmental milestones.

Challenges in Fine Motor Skill Development

Studies conducted at institutions such as Nusa Ceria Islamic Kindergarten in Lumajang Regency highlight challenges faced by children in fine motor skill development. Delays in tasks like cutting, sticking, or folding are often linked to traditional teaching methods that overly emphasize rote learning while neglecting exploratory and interactive activities (Asmara, n.d.). Furthermore, the lack of environmental exploration opportunities and overprotective parenting styles further exacerbate these issues (Sujarwo, n.d.). These findings align with broader research indicating that hands-on, engaging activities are critical for fine motor skill development (Cllaudia et al., 2018).

Role of Interactive Media and Creative Activities

Interactive books and creative media are promising solutions for enhancing fine motor skills in young children. Kalmansur et al. (2023) emphasize the effectiveness of interactive storybooks in improving children's fine motor, cognitive, and social skills. Similarly, origami games and mosaic activities have been identified as engaging methods that not only improve fine motor skills but also stimulate creativity and problem-solving abilities (Cllaudia et al., 2018; Rezieka et al., 2021). These methods shift the focus from basic rote learning to an integrative approach that supports holistic development.

The Importance of Collaboration Between Educators and Parents

Addressing these challenges requires a collaborative effort between educators and parents. Mala and Sa'adah (2021) highlight the importance of parental guidance in fostering learning independence and development through structured activities like interactive book usage. Such collaborations can provide children with consistent stimulation both at school and home, ensuring an environment conducive to exploration and growth.

2. Research Methods

As a design approach, the author will apply the methoddesign thinking, which is an approach that focuses on creating solutions that start with understanding specific human-focused needs (Eva Y, 2020).

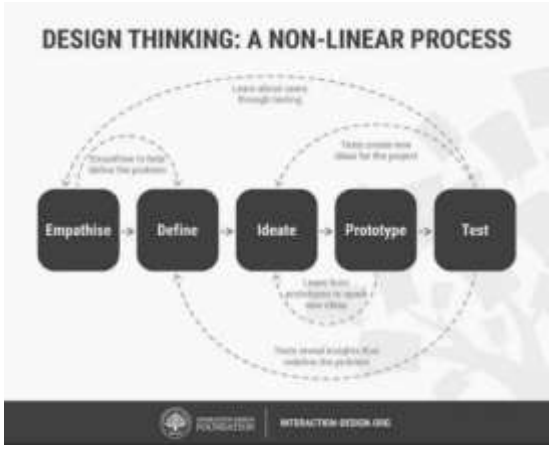

Fig. 1 Design thinking method Source: Eva (2020)

- a. Empathize

  At this stage, the author digs up data to find out and understand the problem by means of interviews, observations, and literature studies.
- b. Define

  At this stage, the author conducts data analysis using the Miles Huberman method which includes data reduction which involves classifying, directing, and discarding unnecessary data, data presentation which involves presenting the results of the data reduction that has been carried out, and drawing conclusions by compiling and analyzing the data and information that has been collected after going through the process of data simplification and presentation.
- c. Ideate

  In this stage, the author creates alternative solutions by exploring ideas. Next, the author compiles a moodboard and makes a rough sketch.
- d. Prototype

At this stage, the sketches produced at the ideate stage are digitized and then implemented into a real product in the form of an interactive book.

- e. Test

  Furthermore, in this stage, the testing process is carried out by involving three experts, namely a media expert validator, a material expert validator and an observation test.

3. Result and Discussion

Before identifying a problem, a process of understanding the problem in depth is required.(empathize), which requires information gathering through interviews, observations and literature studies. This stage is intended to gain an understanding of the needs and difficulties faced by children in the educational institution.

- Interview Results
- Observation Results
- Literature Study

Stage(define)is the process of determining or finding problems based on the results of data collection. The data that has been obtained is then reduced. The data reduction process is carried out by sorting out some information that is needed and not needed.

Based on the problems described, it can be concluded that there are two main problems faced by children at TK Islam Nusa Ceria. The emergence of these problems needs to be solved. (idea)so that children can develop their fine motor skills optimally.

Book Media Concept

The main media of this design is an interactive book entitled "A Day with Marvin and Mika" with a size of 25x25 cm for the book content and 30x30 cm for the cover. This book tells the daily activities of Marvin and Mika, two boy and girl characters, from morning to night. The goal is to provide a fun learning experience for children through stories.

In addition to the story, this book offers various games to train fine motor skills, such as mazes, puzzles, dot to dot, shape creations, and matching shapes. Each page is equipped with attractive illustrations that match the story to facilitate understanding and increase child involvement. This book uses the wipe and clean concept that can be used repeatedly and is accompanied by bonus markers and plasticine to support children's creativity and interest in learning.

- **Material**

This interactive book uses 310 gsm art paper for the contents of the book pages, which are laminated glossy. The cover of the book uses a hard cover that has also been laminated glossy to protect the entire contents of the book.

- **Layout**

Good layouting can help attract children's attention, make it easier for children to read and understand information, and create a fun experience for children. For that, the layout in this interactive book contains:

a) Cover page

The cover page is the first page that a child will see. Therefore, the cover page must be attractive and catch the child's attention.

b) Marvin & Mika Character Introduction Page

The page contains an introduction to two characters, namely Marvin and Mika, who will guide the course of the book's story.

c) Pages of the Teacher and Parent Assistance Guidebook

The parent and teacher support guide pages contain instructions on how to use interactive books and tips for accompanying children when using books.

d) Assessment Criteria Page

A page that helps teachers or parents to directly assess children's activities or actions using several criteria that have been presented.

e) Assessment Indicator Page

A page that presents indicators of children's achievements in training their fine motor skills, from those that are not yet developed to those that are very well developed.

f) Table of Contents Page

A page that can provide an overview of how much content there is in the book and what topics will be discussed, making it easier for users to view and use the book properly.

g) Interactive Pages

Interactive pages are pages that allow children to interact with the book. These pages can be designed using interesting images and illustrations, as well as interactive elements that children can play with.

h) Closing Page

The final page is designed with attractive images and concise text.

- **Color**

The use of color in this interactive book combines warm and bright colors to create a cheerful and fun atmosphere. Warm colors such as yellow, red, and orange increase children's cheerfulness and enthusiasm. Meanwhile, soft and smooth light colors, such as cotton or white clouds in the summer sky, provide a calming effect.

- **Typography**

The fonts used in this children's book are Atma and Poppins, both of which are sans serifs that create a relaxed and informal impression. This font choice reflects the cheerful character of children but is still easy to read. The Atma font is chosen for the main content which includes images and stories, while Poppins is used for additional information to keep it clear and easy to read.

Illustration

In this process the author takes reference from one of the illustrations. will be created, namely two characters in this interactive book. First, the author looks for a reference that is not far to be able to represent the two characters, namely Marvin and Mika. Each character gives a different impression and nature to each. For Marvin is a smart and creative boy, 5 years old with short hair and wide eyes. While Mika is a girl who is just as smart and creative as Marvin, 4 years old.

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Fig. 2 Moodboardillustration

Source: Author's Documentation

Fig. 3 Line art Marvin and Mika

Source: Author's Documentation

Fig. 4 Results by Marvin and Mika

Source: Author's Documentation

Fig. 5 Results Final Book

Source: Author's Documentation

The supporting media of the interactive book entitled "A Day with Marvin and Mika" is designed to enrich the learning experience of early childhood. This book carries the concept of wipe and clean, allowing children to write, draw, and practice with erasable markers, so that the pages of the book can be used repeatedly. Bonus erasable markers and plasticine provide additional media for creative activities, such as making shapes from the stories in the book, so that children can delve deeper into the material being studied. To complement this book, other supporting media include canvas bags, sticker packs, tumbler bottles, pencil cases, pins and key chains. All of these supporting media are designed to encourage involvement and creativity, making the learning process more fun and interactive for early childhood who are still in school.

The trial was conducted on two types of validators involved. The results of the validity test by the validator and the observation test of the questionnaire were obtained according to [9] obtained by calculating the total score and then calculating the percentage of each aspect with the following formula:

$$x_i = \frac{\sum S}{S_{max}} x\ 100\ \%$$

Information:

ΣS : Total score

Smax : Maximum score

Xi : Percentage value of the feasibility of each aspect

First, the media validator was conducted by Mr. AR Prasetyo M. Pd who is an expert in design, illustration, visual and learning to evaluate the suitability of the book with the design objectives. The assessment was conducted using 20 questions covering three main aspects, namely media, attractiveness, and suitability. With the description of the percentage value results from the questions can be seen in the following table:

Table 4.1 Media Validation Test Result Data

Aspect	Percentage (%)
Media Aspects	72%
Aspects of Attraction	74%
Suitability Aspect	80%
Average	75.3%

Based on table 4.1, it can be concluded that from the data from the media validation test results, it has an average percentage of 75.3% with a category that is valid / feasible with improvements.

Second, the material validator was carried out by Mrs. Wiwik Hariyati who is a Teacher directly related to the Writing subject to assess the suitability of the material, learning, and learning objectives that are appropriate for children. By using an assessment of 20 questions with the main aspects of introduction, content, and evaluation. Information regarding the percentage value of the questions can be seen in the following table:

Table 4.2 Material Validation Test Result Data

Aspect	Percentage (%)
Introduction	68%
Contents	80%
Evaluation	80%

Average	76%

Based on table 4.2, it can be concluded that based on the results of the validation test, the material has an average percentage of 76%, which is included in the valid or feasible category with improvement.

Third, an observation test was also carried out by Mrs. Wiwik Hariyati to observechildren's responses and involvement related to children's activities in using interactive books, and recording the development of children's fine motor skills. By using an assessment of 10 questions and several aspects and indicators of achievement. From the answers with a score of 4 points as many as 8 and a score of 3 points as many as 2 which are then added up and divided by the maximum score, so that a percentage of 70% is obtained for valid / feasible criteria with improvements.

4. Conclusions

Based on the writing and design of the results of this interactive book, it was then tested by two experts as validators, namely media validators and material validators and observation tests. Based on the results of the validation test that has been carried out by the media validator with an average percentage obtained of 75.3% for the valid / feasible category with improvements. Meanwhile, the results of the material validation test also showed positive results, with an average percentage of 76% which is included in the valid / feasible category with improvements. As well as the results of the observation test with an indication of a percentage of 70% for the valid / feasible criteria with improvements. Thus, this interactive book has been proven valid and feasible to be used as a medium for developing children's fine motor skills, providing significant benefits in the context of early childhood education and according to needs.

Although this interactive book has successfully achieved the design objectives well, there are several aspects that need to be refined and developed. Relatedly, the scope of the material discussed in this interactive book also needs to be expanded. Currently, the existing material already covers several important aspects in the development of children's fine motor skills, but there is still room for further development to be more relevant in accordance with the times. Such as by dividing the series of package books with different materials.

The next suggestion is to pay attention to the ergonomics of using books for kindergarten children so that they are not too heavy. The design of the book should consider the comfort and ease of use by children, including the size, weight, and materials used. In the next Writing, it is recommended to explore the use of technology in interactive books. For example, adding audio-visual features, such as animation, sound, and more dynamic activities, which can attract children's interest and make the learning process more fun.

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