



Development of Busy Board Joyful Media Toward Implementation of the ECE Curriculum to Enhance Childrens' Independence Aged 4-5 Years

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ABSTRACT

This research aims to design and develop a busy board joyful media to enhance the independence of children aged 4-5 years. Conducted in two Early Childhood Education (ECE) institutions in Gowa Regency, this study involved 24 children and 4 teachers, employing a Research and Development (R&D) approach. Data collection utilized documentation and questionnaire instruments, while data analysis applied a descriptive quantitative approach using percentages and categories. The results of the media validity, practicality, and effectiveness tests were 83.34%, 84.58%, and 80.21%, respectively. The implementation of busy board joyful media in the curriculum can significantly improve the independence of children aged 4-5 years, particularly in the aspect of self-regulation. This study contributes to the existing body of knowledge by providing a media that supports the development of children's independence and self-regulation in an engaging and interactive manner.

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1. INTRODUCTION

Early childhood is a critical period of growth and development, characterized by unique individual differences, needs, and abilities. Fulfilling their fundamental needs and rights is essential for optimal development. This stage is considered crucial as it involves the formation of the child's initial connections and unity with others and the surrounding world, marking the first phase of interpreting, understanding, and comprehending their inner nature (Bonita et al., 2022).

Early Childhood Education (ECE) plays a vital role in child development, as it establishes the foundation for robust cognitive, social, and emotional skills. Nevertheless, a disparity persists in the independence skills of children in ECE. The scarcity of effective and engaging learning media is a contributing factor to this disparity. Consequently, this study aims to design and develop a busy board joyful media to enhance the independence of children aged 4-5 years in ECE. This research is imperative, as cultivating children's independence has a profound impact on their ability to self-regulate in the future and achieve long-term objectives, such as enhancing their academic and social skills.

According to the Finnish Early Childhood Education curriculum, teachers are responsible for educational management at the collective level as well as team command (Ahtiainen et al., 2021). The curriculum serves as a conceptual framework that structures and guides the educational system within an institution, thereby enabling the attainment of predetermined goals (Yafie et al., 2024). The curriculum places emphasis not solely on knowledge acquisition, but also on the cultivation of skills (Abdullah et al., 2025). The Indonesian education system has witnessed a series of curriculum reforms throughout its history, with the Merdeka Curriculum being the most recent and currently implemented framework. Pancasila Profile in the formulation of the Merdeka curriculum Learning contains 6 characters, namely Faith in God Almighty and noble character, Independence, Critical Thinking, Global Diversity, Mutual Cooperation, and Creativity, which must be applied in daily life (Wahyuningsih et al., 2024).

Anything that may be utilized to convey concepts or lesson content, pique children's interest, concentration, and cognitive capacities, and finally assist them in finishing assignments given by the teacher is considered learning (Maghfiroh & Dadan S, 2021). Children's motivation and interest in learning can be sparked by the usage of educational media, which facilitates the achievement of the intended learning objectives (Made et al., 2024).

In this kind of situation, teachers who realize early childhood development patterns and geared towards children method are better able to imagine fulfilling an established curriculum in a way that promotes children's growth and educational achievement (Whitlock et al., 2023). Skill and manners are vital in equipping children for school, and they are commonly learned by means of fun. Children who adjust successfully to the school setting are more inclined to participate in projects, follow directions, stay focused, and regulate emotions (Mosby & Mensinga, 2024).

The utilization of learning media supports teachers and enhances children's development, thereby rendering the learning process more effective, engaging, and comprehensible (Bachtiar et al., 2025). A busy board is described as an educational medium featuring various activities arranged on a board to maintain children's engagement with learning materials, and it can utilize different items based on the child's needs, allowing for individual or small group play and helping teachers choose items that support the development of children's independence (Zulkifly et al., 2019)

A busy board is a relatively large play tool that contains various everyday objects that are already familiar to children, such as electrical outlets, padlocks, zippers, and many more, making it useful for satisfying children's curiosity (Dimas *et al.*, 2022). This research was conducted considering that the early childhood period is the most important time for children in terms of hearing, seeing, receiving, and following everything that is shown, heard, and exemplified to them during early childhood (Robertus *et al.*, 2024). Developing independence can be achieved by improving the teaching and learning process, involving children in decision-making, and allowing children to explore (Sari & Rohman, 2022).

The Social Learning Theory, which posits that individuals learn from one another through observation, imitation, and modeling. This allows someone to learn by observing the behavior, attitudes, and outcomes of others' behavior (Firmansyah & Saepuloh, 2022). Learning process in children requires efforts to enhance prosocial behavior, which is also related to children's independence (Wildawati. *et al.*, 2022). Children with good self-regulation skills can more easily transition from a less structured preschool environment to the expectations of formal school and are in a good position to take advantage of these learning opportunities (Muir *et al.*, 2024). In general, managing oneself training aims to improve kids' ability to keep an eye on and control their state of mind, habits, and thoughts so they can adjust and accomplish their objectives. Meanwhile, dysregulation includes the presence of increased negative emotions or challenges in emotion regulation (Pihlaja *et al.*, 2025).

They assist youngsters in meeting the growing requirements of school, that include goals for conduct interpersonal abilities, flexibility, pattern awareness, continuous focus, and emotional regulation (Grosse *et al.*, 2022). Research has shown that media development can enhance children's fine motor skills, supported by high validation scores from material, media, and educator experts (87.77%, 89.58%, and 98.07%) (Anugrah *et al.*, 2021). However, the study was limited by a small sample size of 8 out of 20 children due to the impact of COVID-19, and the media only focused on fine motor skills development. Another study developed a busy board medium focused specifically on enhancing children's critical thinking skills through STEAM concepts, showing high effectiveness with significant hypothesis testing results ($0.000 < 0.05$) (Ningsih & Farida, 2023). In contrast to the two previous studies, this research aims to develop Busy Board Joyful media to enhance the independence of 4-5 years-old children implemented in the PAUD curriculum, thereby complementing previous research and contributing to the development of children's abilities in a broader and more diverse manner.

Meanwhile, define independence as a child's ability to undertake fundamental everyday activities such as eating, dressing, putting on shoes, using the toilet, and cleaning up used toys. Independence is a child's attempt to develop moral principles and individuality, especially in carrying out activities and duties appropriate to their age. If a child is not taught independence at an early age, they will eventually be unable to address their own difficulties (Susilawati, 2024).

This study introduces a novel innovation, the busy board joyful media, which integrates the concept of independence with engaging and interactive activities. This innovation enhances children's independence through repeated practice and familiarization with the available items, facilitating their recognition, training, and development of independence. In contrast to early research, the busy board joyful media is a product developed from the busy board media specifically designed to emphasize the aspect of independence in children.

Providing a variety of engaging activities and using tools commonly found at home, satisfying children's curiosity, and introducing various functions of these items, Busy Board

Joyful allows children to learn independently, explore, and create according to their interests. This product supports children in honing their independence by stimulating them to take initiative, understand emotional regulation, and practice discipline.

2. METHODS

This study takes an R&D approach through the five stages of the ADDIE development model: analysis, design, development, implementation, and evaluation. The ADDIE model was chosen because it includes all of the procedures required for developing curriculum-related learning media. Following a structured process, each step is completed by analyzing based on preliminary observations, performing a needs analysis, designing the product, developing it in accordance with needs, putting it into limited trials, making revisions based on expert validators' suggestions, and evaluating the final product until it is ready for use.

The subjects of this study were children aged 4-5 years in group A of Al-Hadi Islamic School Kindergarten and Multazam Kindergarten, totaling 24 children. The study also included 4 teachers from the 2 related institutions. And also involves 2 validators as experts in early childhood education media materials. The methods of data collection used were questionnaires, observations, and documentation. Several validity tests were conducted to assess the feasibility of the busy board joyful media, such as validity test, practicality test, and effectiveness test.

The sample selection for this study focused on children aged 4-5 years, based on several key considerations. At this stage, children are typically enrolled in Group A of kindergarten, marking the beginning of their preschool education and social interactions with peers and teachers. Preliminary observations revealed that children in this age range are not yet encouraged to perform simple tasks independently, with parents and educators often providing assistance with tasks such as dressing, using utensils, and organizing toys. Given these factors, it is believed that children in this age range would benefit significantly from the use of busy board joyful media, which is expected to be more effective in promoting their cognitive and socio-emotional development.

The validity test was conducted by validators who have expertise in the field of Early Childhood Education (ECE). The practicality test was conducted based on the Teacher Activity Observation Sheet, while the effectiveness test was assessed through the Teacher Response Questionnaire and child observation results from 2 locations.

$$\begin{aligned} \text{Interval} &= \frac{(\text{Max Score} - \text{Min Score})}{\text{Number of Category}} \\ \text{Interval} &= \frac{(100\% - 0\%)}{4} \\ &= \frac{100\%}{4} \\ &= 25\% \end{aligned}$$

After applying the interval formula, it is then categorized to demonstrate validity in the **Table 1** below.

Table 1. Criteria for assessing the result of the total validity test

Interval	Category
0,00 - 24,99 %	Not Valid, Not Effective, Not Practical, Strongly Disagree
25,00 - 49,99 %	Less Valid, Less Effective, Less Practical, Disagree
50,00 - 74,99 %	Valid, Effective, Practical, Agree
75,00 - 100 %	Very Valid, Very Effective, Very Practical, Strongly Agree

3. RESULTS AND DISCUSSION

3.1. Result of analyze needs

The initial observation revealed that 8 of the 12 children exhibited difficulties with independence. The absence of specialized media for fostering children's independence was identified as a contributing factor. Teachers only provided instructions on forming independent characters without directly involving and providing real experiences.

The results of the needs analysis showed that the majority of teachers strongly agree with the development of busy board joyful media to enhance the independence of children aged 4-5 years. This finding is consistent with social learning theory (Firmansyah & Saepuloh, 2022) which states that individuals learn from others through observation, imitation, and modeling. The busy board joyful media facilitates children's learning of independence through observation, imitation, and repeated habit formation, enabling children to develop their ability to be independent. Children will more easily remember and internalize independent behaviors through repeated imitation and modeling.

Thus, the development of busy board joyful media can help children develop the independence needed to face future challenges, as emphasized by (Bonita *et al.*, 2022). that the early stages of childhood are crucial in shaping children's character and abilities, and children aged 4-5 years fall within this critical stage. The findings of this study support the idea that the use of specialized media can enhance children's independence and highlight the importance of providing children with opportunities for direct experience and hands-on learning. These results can be seen in **Table 2**, which presents a summary of the teacher needs analysis results.

Table 2. Results of Teacher Needs Analysis

No	Respondent	Score	Percentage	Mean
1.	FA	44	91,67%	
2.	NE	43	89,58%	
3.	NU	45	93,75%	93,48%
4.	NI	47	97,92%	

Based on the table above, a high level of agreement among the four teacher respondents is evident, with an average percentage of 93.48%. Specifically, NI demonstrated a highly positive perspective with a percentage of 97.92%, indicating that NI has a very high level of confidence in the development of this media and its potential to enhance the quality of independent learning. Meanwhile, teachers FA, NE, and NU also showed strong agreement, albeit with slightly lower percentages of 91.67%, 89.58%, and 93.92%, respectively. Despite the minor differences in percentages, the four respondents overall exhibited a positive and strongly agreeable view towards the development of this media, recognizing its potential to enhance the quality of independent learning.

3.2 Media Design

The final design of the busy board joyful media was developed based on insights from professional validators and previous studies, one of which noted that a drawback of the produced media is its excessive size and weight, making it difficult for children to lift (Ningsih & Farida, 2023). Another study pointed out that the developed media has a limitation, as it can only accommodate two children at a time, and suggested using colors that promote joy during play to align with the name "busy board joyful" (Ita et al., 2022).

The researcher utilizes this media to recognize, teach, and develop children's independent habits in order to fulfill their research goals. Each item generated is tied to children's developmental milestones. The media is formed by combining different colors and activities. Unlike prior media, the items shown are more similar to the genuine objects, such as the door handle item, which is intended to mimic a door so that youngsters can understand the notion. There's also a click buckle that looks like a life jacket, a bag that teaches children how to use a zipper, and a clock that children can play with while learning about time.

The busy board joyful media is also meant to be simpler because to its huge size, but it can be folded to meet the demands of the user, allowing 2-4 children to utilize it at the same time. The design of the media is illustrated in **Figures 1** below, which provide a visual representation of the media's layout and features.



Figure 1. Busy board joyful media in a prone position and angled position

3.3 Media validity test result

The results of the validity test of the Busy Board Joyful media, as evaluated by Validator 1 and Validator 2 as media experts, are presented in Tables 3 and 4 below:

Table 3. Expert Validation of the Busy Board Joyful Media Development Validator 1

No	Evaluation Framework	Rating Scale			
		1	2	3	4
1.	Objective To promote the independence of children aged 4-5 years			✓	
2.	Validity Standards				
	a. Relevance: The media aligns with the needs and interests of children			✓	
	b. Quality: The media demonstrates good quality and usability			✓	
	c. Presentation: The media features an engaging and visually appealing design.			✓	
3.	Contextual Framework:				
	a. Consistent with independence-related learning objectives, as outlined in the Merdeka curriculum's Independent dimension (P5)			✓	
	b. Accurate representation of independence concepts within the PAUD curriculum implementation			✓	
	Total			18	
	Score Ideal			24	
	%			75%	

The results of the media validity test conducted by Validator 1 indicate an empirical score of 18, corresponding to a percentage of 75% in the very valid category. This suggests that the busy board joyful media aligns with the intended media concept, with recommended improvements made to specific components. The validity test results from Validator 2 are presented in **Table 4** below:

Table 4. Expert Validation of the Busy Board Joyful Media Development Validator 2

No	Evaluation Framework	Rating Scale			
		1	2	3	4
1.	Objective To promote the independence of children aged 4-5 years				✓
2.	Validity Standards				
	a. Relevance: The media aligns with the needs and interests of children				✓
	b. Quality: The media demonstrates good quality and usability				✓
	c. Presentation: The media features an engaging and visually appealing design.				✓
3.	Contextual Framework:				
	a. Consistent with independence-related learning objectives, as outlined in the Merdeka curriculum's Independent dimension (P5)				✓
	b. Accurate representation of independence concepts within the PAUD curriculum implementation				✓
	Total			22	
	Score Ideal			24	
	%			91,67%	

The results of the media validity test conducted by Validator 2 indicate an empirical score of 22, corresponding to a percentage of 91,67% in the very valid category. This suggests that the busy board joyful media aligns with the intended media concept, with recommended improvements made to specific components. Following the receipt of validation results from both experts, a combined validation was performed to determine the validation score of media development, utilizing the combined validation formula.

$$\begin{aligned} \text{Combined validation} &= \frac{(V1+V2)}{2} \\ &= \frac{(75\%+91,67\%)}{2} \\ &= \frac{166,67\%}{2} \\ &= 83,34\% \end{aligned}$$

The expert validation results indicated that the media achieved a total validity percentage of 83.34%, categorizing it as very valid.

3.4 Practicality test result

The practicality data of the Busy Board Joyful media were collected from teacher responses, which are summarized in **Table 5**.

Table 5. The results of the practicality test were obtained from the teacher response questionnaire.

No	Respondent	Score	Percentage	Mean
1.	FA	52	86,67%	
2.	NE	51	85%	84,58%
3.	NU	50	83,33%	
4.	NI	50	83,33%	

Based on the table above, of the media practicality analysis show that all four teacher respondents have a positive view of the practicality of the media in supporting independent learning. Based on the table above, the percentage of media practicality among the 4 teacher respondents is as follows: Teacher FA (86.67%), Teacher NE (85%), Teacher NU (83.33%), and Teacher NI (83.33%). With an average percentage of media practicality of 84.58%, it can be concluded that the media is very practical in supporting independent learning practices. Teacher FA with a percentage of 86.67% indicates that he is very satisfied with the practicality of the media in supporting independent learning. He may feel that the media is very easy to use and effective in enhancing student independence. Teacher NE with a percentage of 85% also shows strong agreement about the practicality of the media, which indicates that he believes the media can help students learn independently more effectively.

Meanwhile, Teacher NU and Teacher NI with a percentage of 83.33% also show strong agreement about the practicality of the media, although with a slightly lower percentage. However overall, they believe that the media can help enhance student independence. Overall, this finding indicates that the media is very effective in supporting independent learning practices in the context of curriculum implementation. The positive views of the four teacher respondents about the practicality of the media show that the media can be a very useful tool in enhancing children's independence. Thus, it can be concluded that the development of the media is very beneficial in enhancing children's independence.

3.5 Effectiveness test result

The effectiveness of the media was evaluated through observational assessments of children's independence with limited trials, using a checklist assessment sheet whose indicators were aligned with the independence dimension specified in the Merdeka Curriculum for the Pancasila Student Profile Strengthening Project (P5). The dimensions of independence in self-regulation taken included: emotional regulation, developing self-control and discipline, and demonstrating initiative and working independently. These three assessment indicators were further divided into 12 points, with each item having 4 assessment statements. The results of this evaluation are presented in **Table 6** below.

Table 6. Result of the analysis of the observation instrument checklist

Assessment aspect of independent dimension		Number of children	
		Not yet emerged	emerged
Emotion regulation	Understanding Self-Emotions	1	23
	Able to express emotions naturally	3	21
	Knowing the Causes of Emotions	7	17
	Showing patience while waiting for one's turn	3	21
	Doing simple tasks under adult supervision	1	23
Develop self-control and discipline	Taking the initiative to choose the desired activity	-	24
	Creating new ways to play or use toys	21	3
	Taking the initiative to express an opinion when seeing a new toy	17	7
	Organizing oneself to complete tasks thoroughly	-	24
Show initiative and work independently	Following instructions well	2	22
	Following the agreed-upon rules	2	22
	Maintaining the cleanliness and tidiness of items after use	-	24
Total		57	231
%		19,79%	80,21%

Based on the table above, data were obtained from the observation checklist of children's independence, which revealed two categories: 19.79% of children fell into the 'not yet emerged' category, and 80.21% of children fell into the 'emerged' category. The assessment was conducted on 24 children as samples. After obtaining the results of the validity test, practicality test, and effectiveness test, a feasibility test was conducted by summing up all the previous test results, yielding a final result with a percentage of 82.71% in the 'very feasible' category. This indicates that the Busy Board Joyful media is effective in enhancing children's independence

Documentation of the children using the Busy Board media can be seen in **Figures 2 and 3** below:



Figure 2. Media is used at Tk Al-Hadi Islamic School



Figure 3. Media is used at di Tk Multazam

3.6 Benefits and limitations of the busy board joyful media

This media has the following benefits: it is easy to use in a variety of locations, measuring 60x40 when unfolded and just 30x40 when folded, it uses strong and durable materials, and it offers children the chance to explore each item at random. Furthermore, this media has a QR Code that leads to an animated video about sub-elements including initiative, discipline, and emotion control. so that teacher can see the movie together using smartphone technology. In addition, a user guide is included with the busy board joyful media to help teachers or parents who want to utilize it. Along with its benefits, this media's disadvantage is that, in comparison to other media, it is more costly to utilize high-quality, durable materials.

4. CONCLUSION

The conclusion of this study is that the joyful busy board media exhibits extremely high validity (83.34%), practicality (84.58%), and effectiveness (80.21%). Furthermore, the media is also deemed highly feasible (82.71%) in the media feasibility test. The findings of this study can serve as a reference for kindergarten teachers, parents, educational institutions, and

other researchers seeking to develop creative and engaging learning materials. Moreover, the development of the joyful busy board media can enhance the independence of children aged 4-5 years. The utilization of this media can be tailored to meet the individual needs of children, thereby increasing its effectiveness. Additionally, teachers can gain new insights into the development of interactive and engaging learning media.

However, this study has several limitations. Firstly, the sample size was limited to a specific group of kindergarten children, which may not be representative of the larger population. Secondly, the study only focused on the development of the joyful busy board media for children aged 4-5 years, and did not explore its potential applications for other age groups. Future research should aim to address these limitations by expanding the sample size and exploring the effectiveness of the joyful busy board media in different age groups and educational settings. Furthermore, future studies could also investigate the long-term effects of using the joyful busy board media on children's independence and learning outcomes.

5. AUTHORS' NOTE

The authors declare that there is no conflict of interest regarding the publication of this article. Authors confirmed that the paper was free of plagiarism.

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