

The influence of busy book media on the ability to recognize number concepts in 5-6 year old children at TK Islamiyah Pontianak Tenggara

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Abstract

This study was conducted to determine: The Influence of Busy Book Media on Number Concept Recognition Ability in 5-6 Year Old Children at TK Islamiyah Pontianak Tenggara. The technique used in this research was a quantitative approach with an experimental research method, specifically using a pre-experimental design known as one group pretest-posttest. The subjects of the study were all children in group B at TK Islamiyah Pontianak Tenggara, totaling 12 children. Sample selection was done using Purposive Sampling technique from the entire population, ensuring that the chosen sample met the predefined criteria to aid the research process. Data collection techniques included test, observation, and documentation processes. Descriptive data analysis was used to determine mean, median, mode, and standard deviation. Prerequisite tests conducted were normality test and hypothesis testing. The pretest results (before using the busy book) had an average score of 5.53, while the posttest results (after using the busy book) showed an average score of 9.20. Based on the significant level of 5% (2.106), the paired sample t-test analysis resulted in a calculated t-value (6.862) that was greater than the critical t-value (2.160), with a significance (2-tailed) of $0.000 < 0.05$. This indicates that the null hypothesis (H_0) was rejected and the alternative hypothesis (H_a) was accepted. Therefore, it can be concluded that there is an influence of using busy book media on the ability to recognize number concepts at TK Islamiyah Pontianak Tenggara.

Keywords: Busy Book, Number Concept, Early Childhood.

INTRODUCTION

Early childhood education is a process that occurs in the early stages of childhood, from birth to six years of age, aimed at fostering the physical and spiritual growth and development of children. It involves developing cognitive, language, physical motor, socio-emotional, religious and moral values, and artistic aspects. According to Syafi'I (in Ratnawati, Nur'Afita, et al., 2023), early childhood

education is an effort to encourage, guide, nurture, and provide learning to develop children's abilities and skills. (Ratnawati, Nur'Afita, et al., 2023). Installation of Religious Moderation in The Society 5.0 Era to Prevent Radicalism in Early Children in Kindergarten, Pangkah District. *Child Education Journal*, 5(2), 132-143.) One important aspect of development in kindergarten/early childhood education is cognitive development. Young children can demonstrate cognitive abilities by recognizing number concepts, counting, and understanding simple addition and subtraction. Therefore, basic mathematical skills should be stimulated and developed from an early age. According to Reza (in Sujiono 2020), cognitive development is a thinking process involving an individual's ability to connect, assess, and consider an event or incident. (REZA, n.d., M. The influence of Busy Book media on number concept recognition abilities in 4-5-year-old children at TK Nusantara Kasih, Gresik.)

According to the regulation of the Minister of Education and Culture of the Republic of Indonesia No. 137 of 2014 concerning national education standards, the ability to understand number concepts is explained as follows: children aged 5-6 years are capable of naming number symbols, counting objects, and matching numbers with number symbols. According to Priyati, n.d. (in Sudaryanti), numbers are abstract mathematical objects that cannot be defined, hence the need for symbols or signs to represent them. To express numbers, number symbols called digits are used. (Priyati, n.d., K. D. D. Improvement of number concept recognition abilities through picture stick games in 3-4-year old children at PPT Melati Dukuh Pakis Surabaya. *Jurnal Unesa*.)

Introducing numbers to young children is very important because numbers are the foundation of many other concepts they will learn in the future. Here are some reasons why introducing numbers at an early age is crucial: First, knowing numbers can make it easier for children to understand the basics of mathematics, such as addition, subtraction, and ordering, which are the first steps toward learning more complex mathematics. It can help in the cognitive development of children, enhance their counting skills, and prepare them for the next level of education. The purpose of children's ability to understand number concepts is to develop their reasoning, thinking, and problem-solving skills. This is because in daily life, children are directly involved in using number symbols (Syafitri et al., 2018). (Syafitri et al., 2018). Improvement of ability to recognize number symbols 1-10 through Counting Tree games in 4-5-year-old children at BKB PAUD Harapan Bangsa. *Jurnal Al-Azhar Indonesia Series Humanities*, 4(3), 193-205.)

Clements et al., 2019 also stated, Contemporary research findings attest to the importance of early mathematical learning. They show that the understanding of complex mathematics and abstract reasoning develops much earlier than was once believed. Clements et al., 2019. Research commentary: Critiques of the common core in early math: A research-based response. *Journal for Research in Mathematics Education*, 50(1), 11-22.) it is important to create an environment in which children constantly come into contact with mathematics. This can be partially accomplished through the simple mathematics quiz game Watanabe, 2019. Watanabe, 2019. Effective Simple Mathematics Play at Home in Early Childhood: Promoting Both Non-Cognitive and Cognitive Skills in Early Childhood. *International Electronic Journal of Mathematics Education*, 14(2), 401-417.)

According to Runtukahu, 2014, the concept of numbers is part of children's daily activities. (Runtukahu, J. Tombokan dkk. 2014. *Pembelajaran Matematika Dasar bagi Anak Berkesulitan Belajar*. Jogjakarta: Ar-Ruzz Media.) Irianto (in Indri et al., 2022) states that science education in schools should cultivate the development of processes, concepts, and social issues within children. For instance, when people ask children about their age, the bus number they ride, the number of doors in their classroom, or their house number, it is not just about that. (Indri et al., 2022). Implementation of Guided Discovery Learning Model with Videos for Learning on Students' Science Learning Outcomes in Elementary School Students. *Child Education Journal*, 4(3), 224-236.)

When we instruct children to take three dolls, they need to understand what 'three' means in order to correctly pick up the dolls. The ability to understand numerical concepts is closely related

to analytical skills when faced with questions such as comparing the number of apples and balls to determine which is more or less. Introducing numerical concepts requires enjoyable learning methods to capture children's interest in working on them. According to Wasik (2008, h.392-393), the concept of numerical symbols involves numbers represented through numerical symbols. (Seefeldt, 2008). Pendidikan Anak Usia Dini (Menyiapkan Anak Usia Tiga, Empat, dan Lima Tahun Masuk Sekolah). Jakarta: PT Indeks.) In kindergarten settings, learning activities can influence children's ability to understand numerical symbol concepts. One effective method of teaching children numerical concepts is through enjoyable activities and play. These activities can engage children's attention and aid in their cognitive growth (Warmansyah et al., 2023). (Warmansyah et al., 2023). The Use of an Open-Ended Learning Approach on The Ability To Recognize The Concept of Numbers: Its Effectiveness for Children 4-5 Years Old. *Child Education Journal*, 5(2), 110-119.)

From the various enjoyable playing activities, one of them is learning through the use of media. In basic mathematics education for early childhood, one frequently used media is the Busy Book. It can be concluded that the purpose of using the Busy Book media is to make children feel happy, enthusiastic, and interested during the learning process, and to foster a spirit of learning in them. Based on the initial observations conducted at TK Islamiyah Pontianak Tenggara, it was found that most children can count or name numbers 1-10, but they have difficulty matching numeral symbols with numbers when asked. Most children are not fully proficient in recognizing numbers 1-10 and understanding number concepts, due to the monotonous use of learning media such as worksheets on plain paper stuck to a whiteboard, and learning to count by rote on the whiteboard and using their fingers. Thus, the number learning activities for children at TK Islamiyah Pontianak Tenggara are less effective and efficient, resulting in many children becoming unfocused and bored. The refore, innovation in the use of media is needed to enhance children's ability to understand number concepts.

This situation can be influenced by several factors, one of which may stem from external factors affecting children's low ability to understand number concepts, such as uninteresting learning methods where teachers merely deliver material posted on walls or whiteboards and then hand out worksheets, leading children to quickly become bored, less enthusiastic, less focused, and less motivated in their learning activities. Based on these discussions, it is hoped that the Busy Book media will have an impact on children's ability to understand number concepts. Addressing the issues observed at TK Islamiyah Pontianak Tenggara, the researcher conducted an experimental study titled "The Effect of Using Busy Book Media on the Ability to Understand Number Concepts in 5-6 Year Olds at TK Islamiyah Pontianak Tenggara.

MATERIALS AND METHOD

2.1 Materials

Based on the formulation of the research problem, this study employs a quantitative approach using Sugiyono, 2013, which states, "experimental research method can be defined as a research method used to prove the influence of certain treatments on others under controlled conditions. The research method used by the researcher is a pre-experimental research design" (p.107). The research design employed is a one-group pretest-posttest design, where the treatment is administered before and after the experiment. The treatment administered before the experiment is called the pretest, while the treatment after the experiment is called the posttest. The results from the pretest and posttest can be compared to identify the effect of the treatment. If the difference between the pretest and posttest is significant, it can be concluded that this difference is caused by the treatment given, as explained by Arikunto (2013, p.124). (Agustianti et al., 2022). Metode Penelitian Kuantitatif dan Kualitatif. Tohar media.)

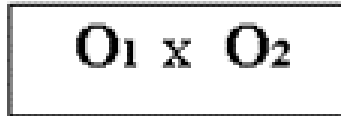


Figure 1. Research Pattern One Group Pretest-Posttest Design method.

This research was conducted at TK Islamiyah Pontianak Tenggara, Pontianak Tenggara District. The population consisted of all children aged 5–6 years old. The sampling technique used was purposive sampling. Sampling techniques or often referred to as research sampling techniques refer to how to determine and take samples (Susanto, 2011). In the field of research, the term "sampling" refers to the procedure for selecting individuals who will participate (for example, by being supervised/observed or questioned) in a particular study (Fraenkel et al., 1993). Arikunto (2010: 176) states that "sampling must be carried out in such a way that a sample (example) is obtained that can truly function as an example, or can describe the actual state of the population. (Agustianti et al., 2022). Quantitative and Qualitative Research Methods. Tohar media.) The sample comprised 15 children selected based on predetermined criteria aligned with the research objectives.

This research has several differences from the previous study titled "The Influence of Busy Book Media on Early Childhood Counting Ability at Fadhilah Amal 3 Kindergarten in Padang." The differences lie in the Y variable of the research. The reason the researcher chose to study a different variable from the previous research is that the issues at the research location are different from those in the previous study. Additionally, the research location is different because the selected location meets the established research criteria. The research indicators are also different because the issues being studied differ from those in the previous research, leading the researcher to use different indicators. The final difference is the research design; the previous study used a quasi-experimental design, while this study employs a one-group pretest-posttest design. The reason for this is that the sample size used in this study differs from that of the previous research.

2.2 Data collection procedures

Data collection instruments used in this study were assessment sheets containing checklist items composed of assessment indicators, where children's achievements were evaluated using numerical scores: 1 (BB), 2 (MB), 3 (BSH), 4 (BSB). After conducting technical tests, the next step is to carry out observation act Kuantitatif, 2016), observation is a complex process, consisting of various biological and psychological processes. Two of the most important processes are observation and memory. (Sudaryono, 2016). Metode Penelitian Pendidikan. Dalam Sudaryono (Eds.), Metode Penelitian Pendidikan (h.121–141). Jakarta : PRENADAMEDIA GROUP.)

The researcher used observation techniques to record the activities of students during the learning activities using the Busy Book media. The method involves ticking () each aspect that the child is able to perform. During the observation process, the researcher also collected several documents during the research activities, including learning scenarios, photos, and videos taken during the research process.

2.3 Data analysis procedures

The data analysis technique used in this research uses descriptive data analysis techniques by conducting a pretest and posttest using busy book media first using the help of LKA media, then the test results are compared with the difference between the two average scores, so that a paired T-test can be carried out (Paired Sample T-Test). But before that, do a normality test first. The purpose of the normality test is to check and determine whether the data distribution in this study is normally distributed or not. In this research, SPSS version 22 software was used to process and analyze the

data. Before carrying out data analysis, it is necessary to ensure that the data obtained is normally distributed and homogeneous. If so, then the data can be tested using the t-test analysis technique to determine the effect of Busy Book media on the ability to recognize number concepts in children aged 5-6 years at the Islamiyah Kindergarten in Southeast Pontianak.

RESULT AND DISCUSSION

Result

This research was conducted to investigate the effect of learning activities using a busy book media on the ability to recognize number concepts in children, specifically those aged 5-6 years old at TK Islamiyah Pontianak Tenggara. In this study, the researcher acted as the investigator while the implementation was carried out by the teacher.

The results of this research, which involved several stages conducted over 4 sessions, included a Pretest stage to assess the initial ability of children to recognize number concepts before the intervention. This was conducted on the first day of the study using the assistance of LKA media as follows:



Figure 2. Pretest Activity

In the picture, it can be seen that the teacher is explaining the material and how to solve problems using LKA as a media that children use in their daily activities at school with the theme of fruits. After explaining, the teacher distributes LKA to each child to be completed for a pretest score that will be analyzed by the researcher. On the second day of the study, the research continues with the activity of giving the first treatment or intervention to the children using a busy book with the theme of fruits for the activities on the second day as follows:



Figure 3. First Treatment Activity

In the picture, it can be seen that the teacher first explains the material contained in the media and how to use the busy book media. Then, the teacher calls and supervises each child one by one to come forward and use or play with the busy book media, assisted by the researcher to monitor the children's activities to ensure that the learning process runs as effectively as possible.

For the research on the third day of activities, the procedure remains the same, which is the second treatment using the busy book media with the theme of vegetables. The activities on the third day are as follows:



Figure 4. Second Treatment Activity

The fourth day carried out the Posttest activity or final assessment of children's ability to recognize number concepts using LKA media. The activity conducted was the same as during the pretest assessment on the first day of the study. For the posttest activity, it was as follows:



Figure 5. Posttest Activity

From the activities above, it can be seen that the children are working on an LKA (Lembar Kerja Alat) containing several questions or inquiries related to their ability to understand numerical concepts. Each child is formed into 3 groups to ensure a conducive problem-solving process. The results of the data obtained from the pretest and posttest activities are presented in the following table:

Table 1. Comparison Of Pretest And Posttest

No	Child Initials	Pretest	Posttest
1	JS	3	6
2	AS	5	9
3	EL	4	9
4	GA	4	8
5	FA	7	11
6	NA	6	10
7	ES	5	9
8	DA	7	10
9	FN	8	11
10	SF	7	11
11	ZA	6	9
12	RF	6	10
13	SG	3	7
14	NN	5	9
15	UM	7	9

The results of the descriptive data test for initial scores (pretest) before using the busy book media are as follows :

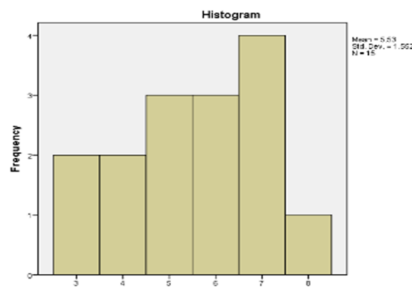


Figure 6. Pretest Histogram

From the diagram above, it can be seen that the ability to understand number concepts before using the busy book media was still low. The results of the last test after (Posttest) using the busy book media in learning are as follows :

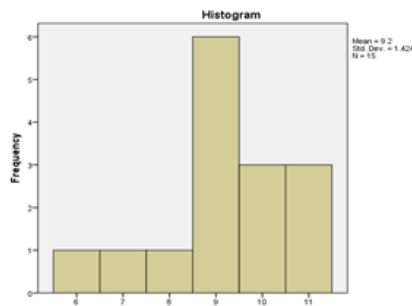


Figure 7. Posttest Histogram

Based on the diagram, it can be seen that the results of number concept recognition abilities from the posttest after using the busy book media show changes compared to the pretest results before using the busy book media. The comparison between Pretest and Posttest scores indicates

that children's ability to recognize number concepts has significantly improved after implementing the busy book media in learning, with an average Posttest score of 9.20 compared to an average Pretest score of 5.53. Following descriptive data analysis, normality tests were conducted using IBM SPSS 22 as follows: [details of the normality test procedure :

Table 2. Normality Test

	Kolmogorov-Smirnova			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
pretest	.161	15	.200*	.934	15	.308
posttest	.244	15	.016	.900	15	.097

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

From the data in the table, the results of the normality test using the One Sample Shapiro Wilk Test indicate that the Sig. value for Pretest is 0.308 and for Posttest is 0.097. Referring to the predetermined decision-making criteria, it can be concluded that the data are normally distributed because the significance values of 0.308 and 0.097 > 0.05. Therefore, it can be inferred that the residuals of the data are normally distributed.

After conducting the prerequisite test for normality, the next step is hypothesis testing. The hypothesis test performed in this study is a parametric statistical test, specifically the paired sample t-test. The results of the paired sample t-test are presented as follows:

Table 3. Paired Sample T-Test

		Mean	Std. Deviation	Std. Error Mean	Paired Differences		t	df	Sig. (2-tailed)
					95% Confidence Interval of the Difference				
					Lower	Upper			
pair 1	pretest - posttest	-3.667	.724	.187	-4.067	3.266	-	14	.000
						19.621			

According to the decision-making results of the tcount value with the ttable, if the t-value > t-table, then H0 is rejected and Ha is accepted, and if the tcount < ttable, then H0 is accepted and Ha is rejected. From the results in the table above regarding the paired sample t-test, it shows a significant difference between the pre-test and post-test results of using the busy book media. Thus, it can be concluded that the analysis of the t-test (Paired Sample T-Test) yielded a t-value of 6.862 > 2.160 and a sig. (2-tailed) of 0.000 < 0.05, meaning H0 is rejected and Ha is accepted. Therefore, it can be concluded that there is an influence of the busy book media on the ability to understand number concepts at TK Islamiyah Pontianak Tenggara.

Discussion

Based on the research findings, it was found that the use of busy book media significantly influences the ability of 5-6 year old children to understand numerical concepts. The research results indicate that the use of busy book media in the learning process results in a significant difference between pretest and posttest scores, showing that busy book media has a tangible impact on children's ability to understand numerical concepts. Furthermore, the results of the paired sample t-test analysis showed that t-count (6.862) > t-table (2.160) and the significance (2-tailed) was 0.000 < 0.05, indicating that H0 is rejected and Ha is accepted. Therefore, it can be concluded that there is an influence of busy book media on the ability to recognize numerical concepts at the Islamic Kindergarten of Pontianak Tenggara.

The use of busy book learning media can affect children's ability to understand numerical concepts. To enhance this ability, appropriate media and methods are necessary. If children learn

counting in a simple yet effective manner, consistently in a conducive and enjoyable environment, their brains will be trained to continue developing. Thus, children can master and enjoy activities related to understanding numerical concepts.

Gerlach et al., 1980 stated A medium, conceived in any person, material or event that establish condition which enable the learner to acquire knowledge, skill, and attitude. (Gerlach et al., 1980). *Teaching and Media A Systematic Approach*. New Jersey: Englewood Cliff Printice Hall.) According to Kemp dan Smellie (in Ona Sanya, 2014, h.137) Instructional media also make use of the power of pictures, words, and sounds to compel attention, to help an audience understand ideas and acquire information too complex for verbal explanation alone, and to help overcome the limitations of time, size, and space. In this way, learning media can limit the limitations of time, size and space. (Onasanya, 2004). *Selection And Utilization Of Instructional Media For Effective Practicing Teacing*. The Journal Of Studies In Education, Volume Number 2) that occur in the learning process. Long, B., et all. stated Improvements in children's ability to include diagnostic visual information via recognizable object parts in their drawings, and these developmental changes were not reducible to either increased effort or better visuomotor abilities (2024). (Long et al., 2024). Parallel developmental changes in children's production and recognition of line drawings of visual concepts. *Nature Communications*, 15(1), 1191.)

According to Renew in Susanto (in Rahmadani, 2021), developing children's numerical concept abilities requires an effective method. This effective method involves using enjoyable games, a joyful learning atmosphere, and engaging learning approaches. (Rahmadani, Rizka, et al., 2021). *Pengembangan Media Busy Book Untuk Meningkatkan Kemampuan Pemecahan Masalah Anak Usia Dini*. *Jurnal Ilmiah Mahapeserta didik Pendidikan Anak Usia Dini*, 6(2)). A comfortable and pleasant environment can help children creatively learn numbers through games based on specific stages. One of the media used in early childhood mathematics education is the busy book. A busy book is a flannel cloth book with bright colors containing games that can enhance cognitive abilities, particularly numeracy skills, in children (Amaris et al., 2018). (Putri et al., 2021). *Implementasi Media Pembelajaran Busy Book Untuk Meningkatkan Kognitif Anak Usia Dini dalam Mengenal Konsep Bilangan Dikelompok A RA Insan Mubarak*. *AL IHSAN: Jurnal Pendidikan Islam Anak Usia Dini*, 1(2), 055-065.) It also includes early counting activities for young children, such as recognizing numbers 1-10, matching number symbols with objects up to 10. Moreover, the busy book features positive daily activities and introduces self-learning lessons from an early age (Sari, 2019). (Sari, Tungga Purnama. 2019. *Pemanfaatan Media Bussy Binder untuk Meningkatkan Kemampuan Berhitung Permulaan Anak Usia Dini Kelompok B di TK Pancasila 1 Karangpilang Surabaya*. *Jurnal Pendidikan Islam* , Volume 11.)

According to some experts above, it can be concluded that the use of busy book media is one good stimulation in improving children's ability to understand number concepts. It can be seen that there are several factors that can cause score differences between the ability to understand number concepts before using busy book media compared to the ability to understand number concepts after using busy book media, where the score of understanding number concepts after using busy book media is higher compared to before using busy book media.

CONCLUCION

Based on the results and discussion, it can be concluded overall that the use of busy book media influences the ability of 5-6 year-old children to understand numerical concepts. Specifically, the conclusions drawn are as follows:

Before implementing busy book media in teaching, it was found that the ability to understand numerical concepts among 5-6 year-old children at TK Islamiyah Pontianak Tenggara ranged from undeveloped to starting to develop, indicating that many children had not yet reached the expected level of understanding. The average score obtained by the children was 5.53. After the

implementation of busy book media, it was observed that the ability of 5–6 year-old children at TK Islamiyah Pontianak Tenggara to understand numerical concepts improved significantly. The children's abilities were categorized as developing as expected, and in some cases, developing very well, with an average score of 9.20. These results demonstrate a significant influence of busy book media on enhancing children's understanding of numerical concepts.

This research found a significant effect of busy book media on the ability of 5–6 year-old children at TK Islamiyah Pontianak Tenggara to understand numerical concepts. Hypothesis testing using a paired sample t-test showed that the calculated t-value (6.967) exceeded the critical t-value (2.160). Additionally, the significance value (2-tailed) was $0.000 < 0.05$. Therefore, the null hypothesis (H_0) was rejected, and the alternative hypothesis (H_a) was accepted. This indicates that the use of busy book media has a significant effect on children's ability to understand numerical concepts.

The researchers express their gratitude to all parties who have participated and contributed to this research, especially to TK Islamiyah Pontianak Tenggara for allowing and assisting the researchers in gathering data and providing information to complete this research. We also acknowledge that there are still many shortcomings in our research, thus this study is encouraged to be further developed.

AUTHOR CONTRIBUTION STATEMENT

M.S.S diagnosed the issue and scrutinized the theoretical and policy aspects, H. assessed theoretical framework, A.A evaluated the research methodologies. All authors made contributions to the writing of this article.

DECLARATION

The authors of this study certify that they have NO affiliations with or involvement in any organization or entity with any financial interest (such as honoraria; educational grants; participation in speakers' bureaus; membership, employment, consultancies, stock ownership, or other equity interest; and expert testimony or patent-licensing arrangements), or non-financial interest (such as personal or professional relationships, affiliations, knowledge or beliefs) in the subject matter or materials discussed in this manuscript.

DATA AVAILABILITY

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