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The Effectiveness of Letters Bowling Games to Improve Early Literature Ability for Early Children

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Abstract: This study aimed to analyze the effectiveness of literacy learning media based on letter bowling games to improve the early literacy skills of children aged 5-6 years in Rembang. The research method used in this research is Research & Development, proposed by Borg and Gall with ten stages. The population in this study was group B kindergarten children; the samples in this study were group B children Kindergarten Pertiwi 2 Kaliapang Village, Kindergarten Pertiwi 1 Kaliapang Village and Kindergarten Pertiwi Sumbermulyo, all of which amounted to 45 children. Data collection techniques using observation, questionnaires, interviews, and documentation. Meanwhile, the data analysis used quantitative descriptive analysis, requirements test and t-test. As a result, the development of the letter bowling game is effectively used to improve the early literacy skills of children aged 5-6 years in the Rembang district with a t-test of 21.189 and a t-table of 4.381 or $21.189 > 4.381$. In contrast, the N-gain value is 71 in the practical category.

Keywords: Effectiveness, literacy, letter bowling game, early children

1. Introduction

Early literacy is the ability of every child to recognize the letters and sounds of language. Vowels and consonants are the first literacy process for children who have just entered kindergarten; vowels and consonants are also the basis for developing language skills (Nurjanah, Nurrohmah, & Zahro, 2018).

According to the Regulation of the Minister of Education and Culture of the Republic of Indonesia of 2014, Number 137 concerning the National Standards for Early Childhood Education, one of which describes the Standards for the Level of Child Development Achievement (STPPA) in the scope of language development, namely early literacy at the age of 5-6 years including 1) mentioning familiar symbols, 2) recognizing sounds the initial letter of the name of the object around him, 3) mentions groups of pictures of the same letter, 4) understands the relationship between sound and letter forms, 5) reads own name, 6) writes own name, and 7) understands the story and meaning of words.

Levy et al. (2006) explain that the literacy experience of children at preschool age is believed to form a strong foundation for reading development. Knowledge of the skills and attitudes of preschool-aged children, which is the initial basis for reading and writing, is called early literacy ability (Dini, 2022). According to Widayati, Safrina, & Supriyati, (2020), explaining the importance of early detection of early childhood literacy skills will provide information related to reading and writing difficulties. Hence, children's early literacy skills need to be detected early to give the stimulation with the best. Don't waste time playing with children because of the stimulus provided by playing. Children will get fun and information through children's play activities.

However, the reality on the ground, observations made by researchers at Kindergarten No. 2 Pertiwi, is that there is rigidity in teaching children's early literacy, thus creating a compulsion for children which should be done by playing while learning. Based on observations of 15 children, it was found that it was still difficult to distinguish the symbols of similar letters such as b and d, m and n. The researcher also saw that some children cried and did not want to learn. Some came out calling their mothers to be waited on. Research conducted by Juliandini, Rahman, & Respati (2020) shows that letter card games can improve early literacy skills to recognize letters. Children are invited to play letter cards, mention the notes on the cards, name pictures of objects and then name the first letters. Then another study conducted by Karima, Syafdaningsih, & Hasmalena (2019) said that the game tool could improve the early literacy of children aged 4-6 years by recognizing symbols, writing symbols, pronouncing the letters a-z, looking for animals that have the same letter and classifying focal letters along with consonants.

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Learning activities in early childhood education (PAUD) are dominated by fun and exciting activities for children. Fun learning is learning where interactions between teachers and students, the physical environment, and the atmosphere provide opportunities to create conditions conducive to learning (Masyah, Sumarsih, & Delrefi, 2017). Learning is done with fun, not forced, so the child will not feel burdened.'

One of the actions that are relevant to the recommendations above is through the use of letter bowling game products that have been carried out by researchers, namely the uniqueness of the bowling game tool is expected to provide opportunities for children to recognize the concept of letters quickly because children are also given the challenge of being able to find the initial card. The letters are the same on the dropped pins. The bowling game-based literacy learning media motivates children to be more enthusiastic in carrying out activities in recognizing the concept of letters, so the researchers hope that the product is feasible to be developed to increase the effectiveness of literacy games for children aged 5-6 years. Therefore, the researcher conducted a study entitled The Effectiveness of the Literacy Bowling Game to Improve Early Childhood Literacy Ability (5-6 years).

1.1 Conceptual Framework

This research begins with the problems in several early childhood education institutions 5-6 years old. Of course, there are always children with these characteristics. Most teachers in early childhood education institutions have not mastered literacy learning media. So many teachers do not know the problems that occur in literacy learning. What are the characteristics? How to teach early literacy to early childhood 5-6 years? The teacher's misunderstanding of literacy learning causes a mismatch between teaching methods and the characteristics of children aged 5-6. So there is no increase in the case of early literacy of children aged 5-6 years. Learning is not enjoyable; children aged 5-6 years become bored and avoid reading activities on the blackboard, which should be carried out with a playful approach.

From these problems, researchers want to develop exciting literacy learning media and the characteristics of children aged 5-6. First, the researcher makes a letter bowling product and then analyses the letter bowling product. After that, it was tested on children aged 5-6 years, then developed to increase early literacy for children aged 5-6. The conceptual framework shows in Figure 1.

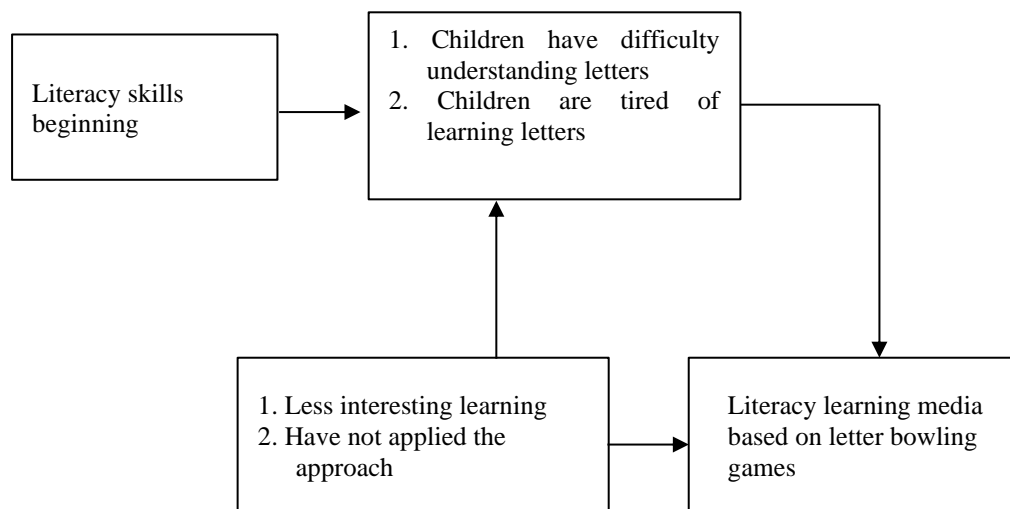


Fig. 1: Conceptual framework

1.2 Hypothesis

Based on the problems and discussion of the theory, the hypothesis in this research are:

- Development of literacy learning media based on letter bowling games can improve early literacy for children aged 5-6 in the Utari Group, Sarang District, Rembang Regency.
- Development of literacy learning media based on letter bowling games is effectively used to improve early literacy for children aged 5-6 years in the Utari Group, Sarang District, Rembang Regency.

1.3 Research Objectives

This study was conducted to analyze the effectiveness of literacy learning media based on letter bowling games to improve the early literacy skills of children aged 5-6 years.

2. Literature Review

In line with Donoghue et al. (2017), early childhood in the 0 to 8 year old range is considered to be in early childhood. young age group of people called early childhood are still growing and developing. Therefore, early childhood is a

human stage where children are developing their talents from the perspectives of religious values, cognitive, language, social emotional, art, gross motor, and fine motor so that they can become ready for the next level of schooling.

Early childhood is currently associated with happiness, enjoyment, fun, and excitement. Frequently hear the phrase "Golden Age" at the moment, is the period of development when a child's brain is already developing, when changes occur quickly in all areas—physical, motor, verbal, cognitive, emotional, social, religious, and moral growth (Daelmans et al., 2017; Woodhead, 2005; Johnson et al., 1987). One of the areas of child growth that needs to be fostered the best is literature ability. Literature ability is a tool for thinking, expressing oneself, and communicating. In the framework of information, concept, and problem-solving formation, language abilities are crucial can comprehend how sentiments and thoughts are communicated both orally and nonverbally.

Early literacy refers to a child's capacity to read, write, and count. Early reading skills are acquired and developed at home and in the community. Early childhood reading in the digital age deserves careful consideration. A literacy culture in children from an early age would develop critical thinking skills in children and prepare children for entering the world of school. "Literacy culture has a big role in training children's basic skills to read, write, and tell stories,"

Therefore, with human language, one can connect and communicate with others through speech, writing, symbols, body language, and other means (Meisel, 2003). After that, human language is capable of understanding the self, others, and the natural world, the architect, and can present himself as an intelligent being.

The use of learning media is crucial to the process. find out how to instruct. It can grab pupils' interest through media. when learning (Azizah et al., 2022). To do that, teachers must produce media learning that is inventive, creative, and diverse to make the procedure It will be really enjoyable to learn.

The tools that instructors employ to introduce letters Picture books, posters, and language books all aid in the language development of 3–4 year olds. Children do not seem to be engaged in these media when engaging in language-learning activities, according to the research (Zubaedah, 2019). Due to the fact that kids can only follow adult directions educator. It will be a bit challenging to keep kids motivated in the learning process and their language development will not develop as well as it could.

Basically, bowling is a sport that is typically played by sportsman. The bowling game modification turns a sport into a simple and enjoyable early childhood game that involves using a ball to knock down bowling pins and bowling pin media. A colourful plastic media pin bowling ball that measures roughly 17 cm, or almost similar to a tube. Every bowling pin has letters attached to it that, when sorted, will form words.

Children are requested to roll the ball to knock everything off the prepared bowling pin before moving forward to arrange the letters on the pin bowling into a word. Game objective This is a word introduction for kids between the ages of 5 and 6.

3. Methodology

The research used is Research and Development or research and development methods. This method is used to produce specific products and test the effectiveness of these products. The research method, according to Sugiyono (2017), states that Educational R&D is based on an industrial development research model, where research results are used to design new products and procedures and are then systematically tested in the field, evaluated and refined until they meet specific criteria, namely effectiveness, quality, and meet the standards.

Marcus et al. (2013) explained that research and development methods are methods used to produce new product plans, test the effectiveness of existing products, develop and create new products, and test the efficacy of these products. Penuel et al. (2011) defines R&D simply as method research that is deliberate, systematic and aims to seek findings to formulate, improve, develop, produce, and test the effectiveness of products, models, methods, and service procedures, of course, which is superior, new, effective, efficient, productive and meaningful.

Based on this definition, development research is product-oriented research. The products developed are in the form of media, teaching materials, strategies or learning methods. For example, this research develops early literacy learning products based on letter bowling games. The learning procedure used in this study adapts the development procedure set by Borg and Gall. This procedure was chosen because it has detailed steps. The research and development steps are as follows:

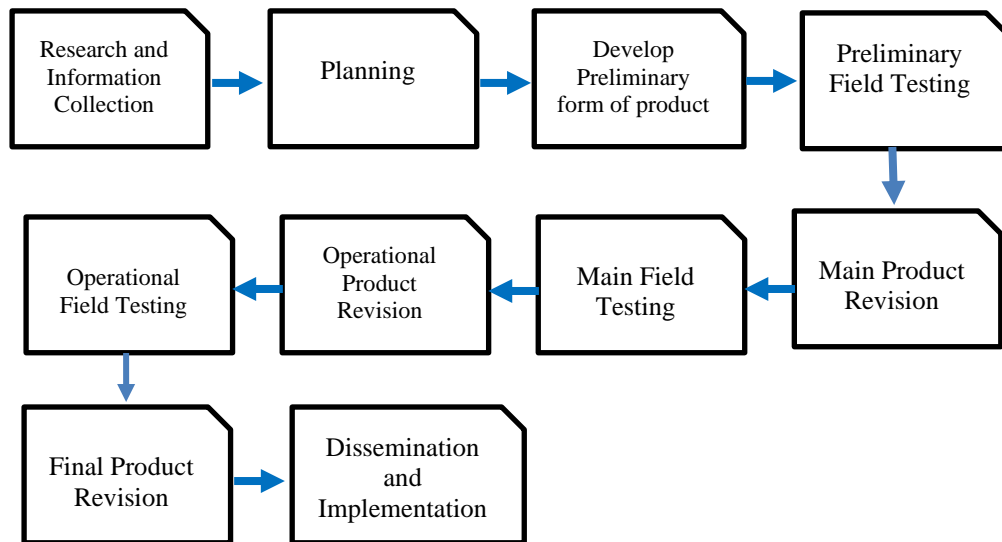


Fig. 2. Model development procedure

The population framework of this research consists of 3 kindergartens, which are forty-five children (45) class B Gugus Utari Sarang Rembang. To conduct the research, the permit has been approved by the principal of the Pertiwi 2 Kindergarten in Kalipang Sarng Rembang Village.

4. Findings and Discussion

The following are the results of data collection in determining scientific knowledge and analyzing the effectiveness of literacy learning media based on letter bowling games in group B kindergarten.

4.1 T-test

The t-test is used for hypothesis testing. Hypothesis testing with the help of SPSS is an independent sample t-test. independent sample t-test. Used to test the significance of the average fine of the two groups. This test is also used to test the effect on the dependent variable. The results of the t-test for the hypothesis are show in Table 2.

Table 2: Statistical limited trial group t-test

SD		N	Mean	Std Deviation	Std Error Mean
Mark Observation	Class Experiment	10	90.20	3.084	975
	Control Class	10	48	3.393	1.073

Based on Table 2, it is known that

- a) For the control group there are 10 children and the experimental group 10 children
- b) The average value of the children's post test results or the average of the inquiryexperimental group was 90.20 and the control group was 48.20
- c) Descriptive statistics show that there is a difference in the average post-test results of children between the control group and the experimental group.

Furthermore, to prove whether the difference is significant or not, it is necessary to interpret the second table, namely the independent sample test. The results of the independent sample test are in Table 3.

Based on the table above, it is known that:

- a) Value of Sig. (2-tailed) of $000 < 0.05$
- b) The t-count value is 28.967 and the t-table value with $df=18$ is 2.17788, then the t-count value $>$ t table ($28.967 > 2.1788$)
- c) The decision is that H_0 is rejected and H_a is accepted because of $Sig.(2-tailed) < 0.05$. And t count $>$ t tabl
- d) This means that there is a significant increase in the early literacy ability of children aged 5-6 years in the Utari Group, Sarang District, Rembang Regency after using the letter bowling game media.

Table 3: Independent samples test

		Levee's Test for Equality of Variances		t-test for Equality of Means						
		f	Sig	T	df	Sig. (2-tailed)	Mean Difference	Std. Error	95% Confidence Interval of the Difference Lower Upper	
Observation	Equal Variances Assumed	.037	.849	28.967	18	.000	42.000	1.450	38.954	45.046
	Not Equal Variances Assumed			28.967	17.839	.000	42.000	1.450	38.952	45.048

4.2 N-Gain Test

Normalized Gain test (N-Gain) was conducted to determine the increase in the early literacy ability of kindergarten children after being given treatment. According to Fadaei (2019) the Gain normality test is a test that can provide an overview of the increase in learning outcomes scores between before and after the application of a treatment. Normalized gain or used with N-Gain is a comparison of the actual Gain score with the score maximum gain.

N-Gain in this study will show whether there is an increase in the early literacy of kindergarten children aged 5-6 years in the Utari Group, Srang District, Rembang Regency by using literacy learning media based on the letter bowling game, the results of the Gain test in each class are show in Table 4.

Table 4. N-Gain test results limited trial

No.	Grade	Experiment Class	Control Class
1.	N-Gain	0.8092	0.2319
2.	Criteria	High	Low
3.	N-Gain %	80.9243	23.1980
4.	Interpretation	effective	Not effective

Based on these data, the calculation results are the normalized Gain value or N-Gain of 0.8092 is interpreted in the high category in the range of $g > 0.7$. This means that there is an increase in the early literacy of children in the high category. The value of N-Gain % is 80.9243 which is in the effective category. This means that the use of literacy learning media based on letter bowling games is effectively used to improve early literacy skills of children aged 5-6 years in the Utari Group, Sarang District, Rembang Regency.

The description of the data is an analysis of observational data conducted by researchers on the use of learning media for the letter bowling game. The data was obtained from observations made before using the letter bowling media (pre-test) and data observations when using bowling learning media (post-test). Pre-test and post-test scores were obtained from the control group and the experimental group. The control group was children in Kindergarten Pertiwi 2, Kalipang Village and the experimental group was Kindergarten Pertiwi 1, Kalipang Village, each group of 15 children as a sample. The following are the pre-test and post-test scores for the control group and the experimental group as initial data.

Table 5: Description of limited trial data

	Control Class Pre-test	Experimental Class Pre-test	Control Class Post-test	Experimental Class Post-test
N Valid	10	10	10	10
Mean	47.40	48.20	50.70	90.20
Median	47.00	48.50	60.00	89.50
Std Deviatton	3.204	3.393	4.347	3.084
Variance	10.267	11.511	18.900	9.511
Range	10	11	12	10
Minimum	43	44	53	85
Maximum	53	55	65	95
Sum	474	482	597	902

The results of data analysis from the data description in Table 5 are:

- a) The average pre-test score for the control class was 47.40, the highest score was 53, the lowest score was 43, the experimental class average was 48.20, the highest score was 55, the lowest score was 44
- b) The average control class post test score 50.70, the highest score was 65, the lowest score was 53. The experimental class averaged 90.20, the highest score was 95, the lowest score was 85.
- c) Descriptive table based on data shows that the average score of children in the pre-test in the control group and in the experimental group has almost the same ability and nothing stands out. In addition, the average value in the control class and experimental class is still below 60 .

5. Conclusions and Recommendations

Based on the results of the effectiveness test, the responses of children and teachers are very effective towards the letter bowling game. The result of the t-test is that the t-count is 21.189 while the t-table is 4.381 or $21.189 > 4.381$. While the N-Gain value is 71 in the effective category. Based on the results of t arithmetic $>$ t-table.

The bowling game used in this study is a common bowling game that has been changed to make it engaging and enjoyable for kids. The goal of bowling games is to maximise the development of children's word recognition abilities. The bowling pins used in this game are composed of kid-safe, vibrant plastic. When the various letters on each bowling pin are arranged, a meaningful word will result. According to research by Permata & Rakhmawati (2018), customised bowling games are an efficient way for kids between the ages of 5 and 6 to learn how to recognise words.

Based on the research's findings, this bowling learning medium is an educational game tool that is used as a learning medium. It has educational value, is entertaining for kids, and is especially well suited for use with kids between the ages of 3 and 4 because it can help kids in general develop in all areas especially in literature ability since it can be seen that kids are skilled at making up stories about the things they see and hear in their daily lives.

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