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How Educational Flip Books and Learning Motivation Affect Early Reading Proficiency in First-Grade Kindergarteners

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ABSTRACT

Kindergarten provides early childhood education for children aged 0-6 years, aiming to develop their cognitive, social, and emotional skills through engaging and educational approaches, with a focus on language development and the use of innovative tools like flipbooks to enhance early reading skills, influenced by the child's learning motivation. This study aims to examine the effect of using educational game tools (APE) in the form of flipbooks and learning motivation on early reading skills in kindergarten class children. The research method used was a quasi-experiment with a nonequivalent control group design. The study involved two groups of kindergarten students: the experimental group using an APE flipbook and the control group using a conventional learning model. The results showed that using the APE flipbook significantly improved early reading skills compared to the conventional method. In addition, learning motivation was also found to have a significant effect on reading ability. The interaction between using the APE flipbook and learning motivation showed that combining both significantly affected children's reading ability. This study concludes that applying the APE flipbook and paying attention to students' learning motivation can improve the learning outcomes of kindergarten children who begin reading. This research concludes that the use of Flip Book educational games and learning motivation significantly and positively impact early reading comprehension skills of kindergarten students, both individually and in combination.

Keywords: *Childhood Education, Early Reading Proficiency, Flipbook, Motivation*

INTRODUCTION

Kindergarten is ideal for children aged 0-6 years before entering Elementary School. Children aged 4-6 years fall into the category of early childhood, experiencing significant cognitive development (Upadhyay et al., 2020), (Mason et al., 2021), (Kilag et al., 2022), (Hao et al., 2023), (Utami et al., 2023), (Nur Laela et al., 2023). Education in Kindergarten aims to stimulate children's intellectual, social, and emotional abilities through enjoyable and educational approaches (Zhang, 2019), and (P. Alot & Z. Andal Ed. D., 2023). Early childhood education aims to develop children's personalities through various activities that support their developmental aspects (Wahyuningtyas, 2019), and (Mavilidi et al., 2022). Games as educational media are crucial in learning (Subiyantoro & Musa, 2023, Ritonga et al., 2023). The educational tools must meet certain requirements and can be creatively made by teachers from available materials. Language development also becomes a primary focus as it is the main communication tool for children. Language development in early childhood includes

comprehension, vocabulary, sentence construction, and pronunciation (Ebert, 2020). Language skills need to be trained early so children can communicate effectively (Chairilsyah, 2022), and (Aris et al., 2023). This research shows that traditional methods of teaching early reading skills, such as worksheets and rote learning, are often not engaging enough to hold the attention of young children. These methods can sometimes fail to stimulate the children's intrinsic motivation for learning, which is crucial at this developmental stage. Research has shown that playful and interactive approaches can significantly enhance children's learning experiences and outcomes. It is also established that high learning motivation can positively impact academic performance across various subjects, including early reading. The research explains the impact of using an innovative educational tool, such as the APE Flip Book, on early reading skills in kindergarten children. While evidence suggests that interactive and playful learning tools can be beneficial, there is a lack of empirical studies investigating the APE Flip Book's effectiveness in this context (Septianto et al., 2022). Additionally, there is limited research on how different levels of learning motivation might interact with using such educational tools to influence early reading skills.

This research aims to address the lack of specific evidence on the combined effect of using the APE Flip Book and learning motivation on early reading skills. By exploring this gap, the study aims to clarify how innovative educational tools and intrinsic motivation work together to enhance early literacy. This is important because understanding these dynamics can help educators and parents adopt more effective teaching strategies that cater to the needs and preferences of young children. This study aims to determine the influence of the application of educational play tools, specifically flipbooks, and learning motivation on children's early reading skills at Kindergarten Taman Indria Sidodadi. Flipbook was chosen because it is easy to make and use (Kamil Budiarto, 2021). The flipbook makes the learning process more effective (Meisarah et al., 2023) and improves student learning outcomes (Abror et al., 2020).

The problem formulation covers three aspects: the influence of the application of educational play tools, specifically flip books, on early reading skills, the influence of learning motivation on early reading skills, and the interaction effect between the application of educational play tools, specifically flipbooks, and learning motivation on early reading skills of children. The independent variable in this study is the application of educational play tools, specifically flip books; the moderator variable is students' learning motivation, and the dependent variable is students' early reading skills. Operational definitions include educational play tools, specifically flip books, as a fun way of teaching early reading in Kindergarten; learning motivation as an internal drive to change behavior to meet needs; and early reading skills as fluent reading ability as a result of learning.

METHODS

The research design used by the researcher in this study is experimental. Experimental research is the most comprehensive quantitative method, meeting all requirements for testing causal relationships. Experimental research seeks to determine the effect of certain treatments on others under controlled conditions. Among the various types of experimental research, the researcher chose the Quasi-experimental design method. This method reveals causal relationships involving a control group and an experimental group (Pattison et al., 2019) (Mack et al., 2019). These two groups are not selected randomly but rather naturally (Schumacker & Holmes, 2022). The research design used is the Nonequivalent Control Group Design (Krishnan, 2019) (Siedlecki, 2020), where the experimental and control groups are not randomly chosen. Both groups undergo a pre-test. The groups receive different treatments, where the experimental group uses the Flip Book educational play tool (APE), and the control group uses a conventional learning model (using LKPD). This is followed by a post-test for each group with the research design as follows Table 1.

Table 1. *Quasi-Experimental Design Research Design*

Subject	Pre	Treatment	Post
Experimental Group	O1	X1	O2
Control Group	O3	X2	O4

Explanation:

O1: Pre-test (before treatment) in the experimental group
O2: Post-test (after treatment) in the experimental group
O3: Pre-test (before treatment) in the control group
O4: Post-test (after treatment) in the control group
X1: Implementation of learning with APE Flip Book
X2: Implementation of conventional learning (with LKPD)

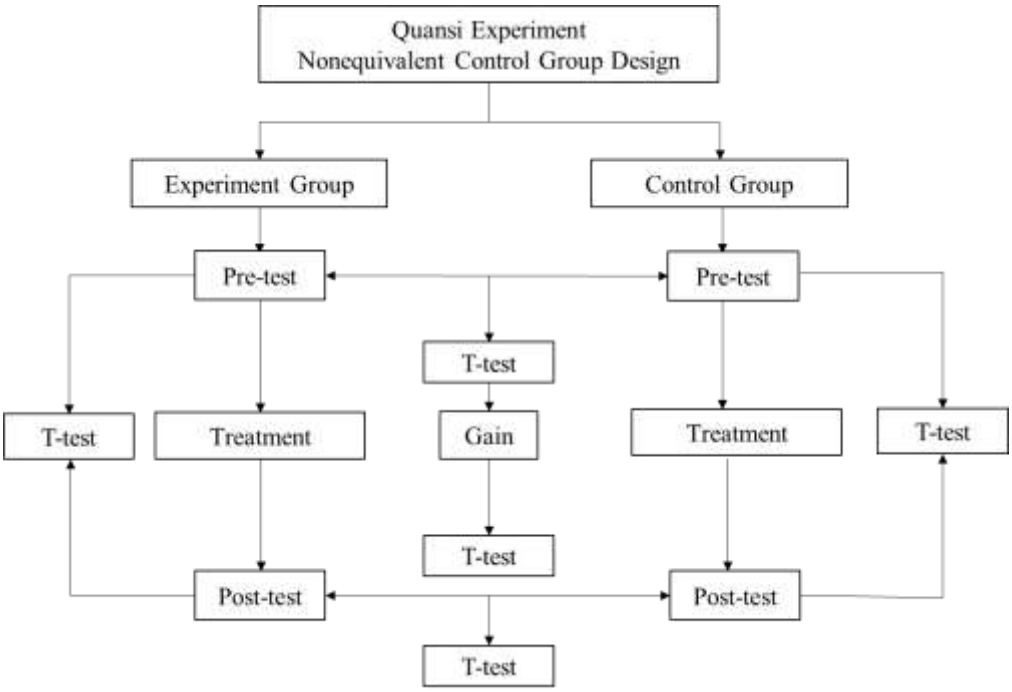

Figure 1. *Experimental Framework*

The quasi-experimental method begins with a pre-test in the treatment and control groups, followed by a t-test to ensure no significant differences exist. If none are found, learning according to each class model continues. A post-test is conducted after the treatment, followed by another t-test and the calculation of gain scores. The research population consists of students in Kindergarten A in two schools, with all students sampled as the number does not exceed 25. Data collection methods involve tests to measure early reading skills and student learning motivation using flip books. Data is analyzed through preparation, tabulation, and the application of statistical techniques to describe the researched problem. Pre-test and post-test data are used to evaluate student learning outcomes (Samuel et al., 2019), (Rabail Alam, 2019), (Fulton et al., 2021). Gain scores (actual gains) are calculated from the difference between pre-test and post-test scores, assuming that this difference represents the effect of the treatment provided. The formula used to calculate the gain value is as follows: G = $Sf - S$

Where G represents Gain, Sfrepresents the pre-test score, and Si represents the post-test score. After obtaining the pre-test and post-test scores from scoring results, the average increase in student learning outcomes is calculated using the N-Gain formula. This is done with the following formula.

$$g = \frac{\text{posttest score} - \text{pretest score}}{\text{ideal score} - \text{pretest score}}$$

Furthermore, the normalization of N-Gain attainment is classified into three categories, namely:

Table 2. *Quasi-Experimental Design Research Design*

Score Range	Classification
g > 0,70	High
0,30 ≥ (g) < 0,70	Medium
g < 0,30	Low

The two-way ANOVA test is a method used to evaluate differences between two separate groups to compare more than two means (Mishra et al., 2019) (Suyasa et al., 2021). This analysis is useful for testing the generalization of sample data to the population. ANOVA considers the total variance of the values, with the variance caused by treatment as the main source of difference and the variance between groups as the second source (Chen et al., 2022), (Arteaga et al., 2020), and (Curtis et al., 2022). This allows us to determine whether the differences between the means are significant or may be caused by sampling error.

RESULTS AND DISCUSSION

Results

In this study, there are two independent variables, the Learning Model and Learning Motivation, and the dependent variable is the early reading ability of Kindergarten A students. The research data can be grouped in Table 3.

Table 3. *Initial Reading Ability Results*

Aspec	Learning Motivation	Mean	Std Dev	N
APE Flip Book Experiment	High	95.78	4.65	18
	Low	84.00	6.93	3
	Total	94.10	6.40	21
LKPD Control	High	94.40	4.70	10
	Low	84.00	6.53	4
	Total	91.43	6.99	14
Total	High	95.29	4.63	28
	Low	84.00	6.11	7
	Total	93.03	6.68	35

Based on Table 3, the sample size is 35 children. Twenty-one students obtained an average score of 94.10 learning outcomes with the flip book method, while 14 students obtained an average score of 91.43 with the LKPD method. Before conducting a two-way ANOVA analysis,

the item analysis test, normality test, and homogeneity test were carried out. Each requirement was tested using a 5% significance level. There are 25 questions tested to find out the quality of the items tested; it is necessary to test the item analysis by testing the items' validity, testing the items' reliability, testing the items' level of difficulty, and testing the distinguishing power. The item validity test can be seen in Table 4.

Table 4. *Question Item Validity Test Results*

Cases	Value	%
Valid	35	100
Excluded	0	0
Total	35	100

Table 4 shows that the valid cases in this analysis are 35, representing 100% of the total cases processed. This indicates that all the collected case data were used in the analysis without being excluded. No cases were excluded from the analysis, indicated by a 0 in the number (N) column and 0% in the percentage (%) column. This means that there were no missing or incomplete data that required exclusion from the analysis. The total number of cases processed in the analysis was 35, representing 100% of the available data. The results of the item reliability test can be seen in Table 5.

Table 5. *Item Reliability Test Results*

Statistic	Value
Cronbach's Alpha	.524
Number of Items	25

The Cronbach's Alpha value obtained is .524. Cronbach's Alpha is a measure of an instrument's reliability or internal consistency. Cronbach's Alpha values range from 0 to 1, where higher values indicate better internal consistency. A value of .524 indicates that the instrument has insufficient internal consistency. This value is below the general threshold and is often considered adequate (usually 0.7). The results of the level of difficulty test can be seen in Table 6.

Table 6. *Item difficulty test results*

Conclusion	Value
Total number of questions	25
Average Mean	0.91

Table 6 presents the conclusions from the analysis conducted on the research instrument consisting of 25 questions. Based on the analysis results, the average value (Mean) of the responses to all questions is 0.91. This average value provides an overview of the tendency of respondents to answer questions using the research instrument. This average, close to 1, shows that overall, respondents gave answers that tended to be high on the scale used in this study. Thus, this table concludes that the instrument consisting of 25 questions has an average

response value of 0.91, which can be used as an indicator of the general tendency of the respondents. A rubric for determining the difficulty level was created as in Table 7 to make it easier to summarize the test results in Table 6.

Table 7. *Determination of Level of Difficulty*

Range Mean	Classification
0,00 - 0,20	Difficult
0,21 - 0,70	Medium
0,71 - 1,00	Easy

When viewed from the rubric for determining the average difficulty level of the results in Table 6, it can be concluded that each is classified as easy, for the results of the distinguishing power test can be seen in Table 8.

Table 8*. Distinguishing Power Test Results*

Pearson Correlation	Sig. (2-tailed)	N
1	0	35

A rubric, like the one in Table 9, is made to make it easier to summarize the results in Table 8.

Table 9. *Determination of Distinguishing Power*

Range	Classification
0.40 – 1.00	Good questions
0.30 – 0.39	Questions accepted and corrected
0.20 – 0.29	Question fixed
0.00 – 0.19	Question rejected

Then, to conclude the results of this study, the normality test, homogeneity test, and two-way ANOVA test were carried out. The results of the normality test can be seen in Table 10.

Table 10. *Normality Test Results*

N	Mean	Std. Deviation	Most Extreme Differences Absolute	Most Extreme Differences Positive	Most Extreme Differences Negative	Test Statistic	Asymp. Sig. (2-tailed)
35	0	5.41123947	0.136	0.088	-0.136	0.136	0.101

Table 10 presents the statistical test results of a dataset with a sample size (N) of 35. The analysis shows that the mean value of the data is 0 with a standard deviation (Std. Deviation) of 5.41123947. To further understand the distribution of the data, the table also includes the largest extreme value of the absolute difference (Most Extreme Differences Absolute), which is recorded at 0.136. The largest extreme value of positive differences (Most Extreme Differences Positive) is 0.088, while the largest extreme value of negative differences (Most Extreme Differences Negative) is -0.136. The test statistic obtained is 0.136 with an

asymptotic significance level (Asymp. Sig. (2-tailed)) of 0.101. This indicates that the test result is not significant at the conventional level (i.e., α = 0.05), which means there is insufficient evidence to reject the null hypothesis in the context of the test conducted. The results of the homogeneity test can be seen in Table 11.

Table 11. *Hemogenicity Test Results*

	Levene Statistic	**df1**	**df2**	**Sig.**
Based on Mean	0.064	1	33	0.802
Based on Median	0.015	1	33	0.902
Based on Median and with adjusted df	0.015	1	32.942	0.902
Based on trimmed mean	0.023	1	33	0.882

Levene's test results in Table 11 show that there is no significant difference in the variance between the two groups based on the various calculation methods. This test is conducted to ensure that the variances between the groups are equal, which is an important assumption in various statistical analyses such as ANOVA. Based on the mean, the Levene's statistic was 0.064 with a significance value of 0.802. This value is well above 0.05, indicating that there is no significant difference in variance between the two groups. Based on the median, Levene's statistic was 0.015, with a significance value of 0.902. This also indicates that the variances between the two groups are not significantly different. When the medians were calculated with adjusted degrees of freedom, the results remained consistent with a Levene statistic of 0.015 and a significance value of 0.902, indicating no significant difference in variance. Finally, based on the trimmed mean, the Levene statistic was 0.023 with a significance value of 0.882, also indicating that the variance between the two groups was not significantly different. Overall, all calculation methods showed consistent results: there was no significant difference in variance between the two groups, so the assumption of equal variance was met. The results of the ANOVA test can be seen in Table 12.

Table 12*. Anova Test Results*

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	9371.632[a]	3	3123.877	196.227	.000
Intercept	120329.306	1	120329.306	7558.510	.000
Learning Motivation	1232.524	1	1232.524	77.421	.000
Learning Model	5098.509	1	5098.509	320.264	.000
Learning Motivation * Learning Model	1059.351	1	1059.351	63.728	.043
Error	493.511	31	15.920		
Total	243568.000	35			
Corrected Total	9865.143	34			

The test results in Table 12 show the significant influence of several factors on learning outcomes. This analysis involves the variables "Learning Motivation" and "Learning Model" and the interaction between the two. Firstly, the overall corrected model shows significant results with an F value of 196.227 and a significance value of 0.000. This indicates that the variables tested together contribute significantly to learning outcomes. Second, the intercept value is highly significant, with an F value of 7558.510 and a significance of 0.000. This indicates that the overall average learning outcomes are different from zero. Third, the variable "Learning Motivation" has a significant influence on learning outcomes, with an F value of 77.421 and a significance of 0.000. This indicates that the higher the learning motivation, the better the learning outcomes are achieved. Fourth, the "Learning Model" also shows a very significant influence with an F value of 320.264 and a significance of 0.000. This means that the learning model applied has a major impact on student learning outcomes. Furthermore, the interaction between "Learning Motivation" and "Learning Model" is also significant, with an F value of 63.728 and a significance of 0.043. This shows that the effect of learning motivation on learning outcomes is influenced by the learning model used. In addition, the remaining variance not explained by the model is reflected in the error value with a sum of squares of 493.511 and a mean square of 15.920, indicating the variation in the data that cannot be explained by the variables tested. Overall, the results of this analysis emphasize that learning motivation, the learning model, and the interaction between the two play an important role in determining learning outcomes. The learning model shows the strongest effect, followed by learning motivation and the interaction between the two. The very low significance value reinforces the importance of these factors in influencing student learning outcomes.

Discussion

The importance of item quality in educational evaluation cannot be ignored. To ensure that the items used in the evaluation are appropriate, fair, and effective, various tests are needed to assess the quality of the items. These tests include validity tests, reliability tests, difficulty tests, and differentiator tests. First, the item validity test is used to assess the extent to which the item measures what should be measured. Validity is the main indicator that the question is relevant to the purpose of measurement. Valid question items will produce accurate information about the ability or knowledge being tested, thus providing an accurate picture of the ability of students. Validity is the most important aspect in the development of measuring instruments because, without validity, the measurement results have no clear meaning. In this study, the overall data analyzed showed perfect integrity and validity, without any data missing or excluded from the analysis, as in Table 4.

Furthermore, the item reliability test measures the consistency of the results obtained from the items when tested on different occasions. High reliability indicates that the item can be relied upon to provide a stable and accurate evaluation. High reliability indicates that the measuring instrument produces consistent scores, which is important to ensure that the assessment is not affected by irrelevant outside factors (Scholtes et al., 2011). This Cronbach's Alpha value indicates a moderate level of reliability, which means that the research instrument has a sufficient level of internal consistency, although there may still be room for improvement. In the context of reliability analysis, Cronbach's Alpha values below 0.7 are usually considered inadequate, so further evaluation of the items is necessary. The item difficulty test measures how difficult or easy an item is for respondents. A well-recognized level of difficulty helps construct items that have a balanced distribution of difficulty. This is important to ensure that questions can distinguish well between learners who understand the material well and those who do not. Questions that are too easy or too difficult will not be effective in accurately assessing participants' abilities. Good questions should have a balanced level of difficulty (Cheng et al., 2021) to avoid ceiling (questions too easy) or floor (questions

too difficult) effects. In this study, it shows that when connected between Table 6 and Table 7, all questions fall into the category of easy questions. Finally, the discriminating power test measures the ability of a question item to distinguish between students who have high and low abilities. Questions with good differentiating power will be more effective in identifying differences in the level of understanding or ability of students (Prayetno et al., 2023). High differentiating power indicates that the question can clearly distinguish between participants who master the material and those who do not so that the evaluation results become more meaningful (Taboada & Guthrie, 2006). This study shows that there is a perfect and highly significant linear relationship between the two variables, providing high confidence in the interpretation of this data, as in Table 8.

Then, to conclude the research results, a normality test, homogeneity test, and ANOVA test must be conducted. Overall, the results of the normality test in this study suggest that there are no significant differences in the datasets analyzed. This conclusion is important for considering the next steps in the research or more in-depth data analysis to get more comprehensive results. The results of the homogeneity test showed that there was no significant difference in the variance and indicated that the variance between the two groups was not significantly different. The results of the ANOVA test show the significant influence of several factors on learning outcomes. This analysis involved the variables "Learning Motivation" and "Learning Model" and the interaction between the two. First, the overall corrected model showed significant results with an F value of 196.227 and a significance value of 0.000. This indicates that the variables tested jointly contributed significantly to learning outcomes. This result is in line with research showing that various educational factors often collectively contribute to student learning outcomes. Second, the intercept value is highly significant, with an F value of 7558.510 and a significance of 0.000. This indicates that the overall average learning outcomes are different from zero. A significant intercept indicates that there are basic differences in learning outcomes that are not related to the independent variables tested. Third, the variable "Learning Motivation" has a significant influence on learning outcomes, with an F value of 77.421 and a significance of 0.000. This indicates that the higher the learning motivation, the better the learning outcomes are achieved. Previous research also indicates that learning motivation is a strong predictor of academic success, as more motivated students tend to perform better. Fourth, the "Learning Model" also shows a highly significant effect with an F value of 320.264 and a significance of 0.000. This means that the learning model applied has a major impact on student learning outcomes. Effective learning models have long been known to improve students' understanding and retention of learning materials (Ferla et al., 2009), (Nurhidayat et al., 2023). Furthermore, the interaction between "Learning Motivation" and "Learning Model" is also significant, with an F value of 63.728 and a significance of 0.043. This shows that the effect of learning motivation on learning outcomes is influenced by the learning model used. This interaction confirms that the combination of learning approaches and student motivation can create synergies that significantly improve learning outcomes (Kadir et al., 2020), (Arisetiyana et al., 2020). In addition, the remaining variance not explained by the model is reflected in the error values with a sum of squares of 493,511 and a mean square of 15,920, indicating the variation in the data that cannot be explained by the variables tested. This suggests that although the model is robust, there are still other unmeasured factors that affect learning outcomes.

CONCLUSION

This research successfully addresses all identified issues based on the collected and analyzed data and the hypotheses formulated in the previous chapters. The hypotheses were tested, leading to the following conclusions: 1) ANOVA results show that the use of Flip Book educational games significantly affects the early reading comprehension skills of kindergarten

students at Kindergarten Taman Indria Sidodadi, Kecamatan Taman, Kabupaten Sidoarjo. 2) ANOVA results also indicate that learning motivation significantly impacts these students' early reading comprehension skills. 3) Additionally, the combined use of Flip Book educational games and learning motivation significantly influence early reading comprehension skills. The APE Flip Book method is recommended for students with low motivation, as it can stimulate their desire to learn and improve their early reading skills. Given the interaction between students' learning motivation and applying the APE Flip Book learning model, teachers should pay attention to students' motivation to enhance their learning performance. Teachers are encouraged to select and use appropriate learning models to foster students' motivation and improve learning outcomes.

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