



Development Of Folklore-Based Big Book Media To Improve Knowledge Of Balanced Nutrition In Children Aged 5-6 Years

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Abstract

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Early childhood nutrition education is crucial for preventing stunting, but existing learning materials often lack cultural resonance for children. This study aims to develop and evaluate the effectiveness of Big Book media that integrates Bengkulu folklore to improve children aged 5-6 years' knowledge of balanced nutrition. The method uses a research and Development (R&D) approach, combining the ADDIE model with a quasi-experimental design and a pretest-posttest control group. This study involved 30 students in the PAUD Lab School at the University of Bengkulu. Participants were randomly assigned to an intervention group that used a folklore-based Big Book and a control group that used conventional methods. Data analysis menggunakan uji-t independen dan effect size Cohen's d. The results of the expert validation confirm a very high media feasibility (average score: 4.60/5.00). The intervention resulted in a significantly higher increase in nutritional knowledge (mean gain: 39.34) than the control group (mean gain: 14.33), with a statistically significant difference ($p < 0.001$). This intervention showed a very strong effect size (Cohen's $d = 3.56$). In addition, qualitative data indicated that the structure of the cultural narrative significantly increased student engagement and facilitated concept retention. The Big Book conclusion, grounded in folklore, is an effective and culturally responsive educational tool. These findings suggest that harmonising local wisdom with health literacy can significantly improve learning outcomes in early childhood nutrition education and provide a model for stunting-prevention programs.

Keyword: Big book, folktales, local wisdom, balanced nutrition knowledge, early childhood education, nutrition intervention

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INTRODUCTION

Optimal nutrition at an early age is a crucial foundation for children's physical, cognitive, and socio-emotional growth that will determine their quality of life in the future, in Indonesia with chronic nutritional challenges such as stunting still a major concern, with a prevalence of 21.6% according to a recent survey, indicating that intervention efforts need to continue to be carried out strategically and innovative ([Ministry of Health, 2022](#)). The impact of stunting is long-term, inhibiting not only physical development but also cognitive function and learning capacity, ultimately affecting economic productivity ([Black et al., 2017](#); [Victora et al., 2021](#)). Therefore, education-based interventions integrated into the Early Childhood Education (ECD) system are recognised as effective preventive strategies, as ECD serves as the first structured environment for forming habits and basic knowledge, including an understanding of the principles of balanced nutrition.

The effectiveness of nutrition education in early childhood largely depends on the alignment between pedagogical methods and children's cognitive development. Referring to Jean Piaget's theory of cognitive development, children aged 5-6 years are in the transition phase from pre-operational to concrete operational ([Piaget & Inhelder, 1969](#); [Santrock, 2018](#)). In this phase, children's cognitive structures are still centered and strongly tied to Real perceptual experiences, so they have limitations in processing abstract concepts such as the definition of balanced nutrition without the help of concrete visual representations ([Slavin, 2018](#)). Several previous studies have shown that interactive and visual educational media can improve children's nutritional knowledge. For example, education using game-based books has been shown to be effective in increasing knowledge about vegetables and fruits ([Ferwanda & Muniroh, 2017](#)).

Nutritional education Media has been widely discussed in recent literature reviews, which indicate a bias toward focusing on primary school-age targets. Mayoritas intervensi media interaktif, seperti pop-up book([Eka Daryati & Sadiana, 2025](#); [Nurahmadi & Dalimunthe, 2024](#); [Permatasari, 2025](#)), video animasi ([Haredika et al., 2024](#)), and simulation games [Fitriyanti et al \(2021\)](#) proved effective when applied to elementary school students with well-established literacy skills. In contrast, studies specifically exploring media Development for preschool-aged children (5-6 years) are still relatively limited. In fact, the characteristics of brief early childhood attention demand different visual strategies, such as large-scale images and minimal text, that conventional media have not fully accommodated.

The literature shows a bias toward research at the primary school level, leaving a significant gap in the development of Specific Early Childhood media, particularly those capable of integrating local culture to foster emotional closeness. The Big Book is a strategic intervention. Its visually

accentuated format, with minimal text, pedagogically addresses these needs, transforming literacy activities into dynamic, participatory group interactions (Neumann et al., 2019). This medium serves as a visual scaffolding that helps children construct new understandings more easily (Gunning, 2019). However, the use of Big books specifically for balanced nutrition literacy, especially those integrated with local wisdom, is still very rarely researched, creating gaps in the literature.

Folklore, as a cultural wealth of the archipelago, has great educational potential but has not been fully utilized. Folklore offers a familiar narrative structure, characters close to nature, and living values that can serve as a framework for inserting health messages (Sari et al., 2021). The integration of nutritional messages into folklore can make learning more meaningful and contextual, because children can associate new information with familiar stories and cultural values (Mustika, 2025; Rahim et al., 2022). This kind of culture-based approach not only transfers knowledge but also strengthens cultural identity and local pride (Yulianti & Dewi, 2023). The synthesis of media and big books, which has proven effective for conveying local folklore on nutrition education, has not been studied, particularly in Bengkulu, which has a wealth of distinctive folklore.

Based on the identified gap, the study proposes three layers of novelty. First, product innovation involves developing prototypes of Big Book media that creatively adapt Bengkulu folklore to convey the principles of balanced nutrition. Second, contextual innovation through the systematic integration of Bengkulu local wisdom into the early childhood nutrition literacy curriculum. Third, methodological innovation through the design of structured intervention programs that measure the effectiveness of media not only at the cognitive (knowledge) level but also on the learning process and user responses in real early childhood education settings.

This study addresses the need for nutritional education solutions that are evidence-based and appropriate to the local context, supporting national efforts to reduce stunting (Rachmi et al., 2023). This research has practically produced ready-made learning media that can serve as a model for early childhood teachers in delivering nutrition education in an interesting and culturally meaningful way, overcoming the limitations of the media that have existed (Wulandari & Maulida, 2022). This research not only addresses an academic gap but also offers a practical contribution to improving the quality of early childhood nutrition education.

This study aims primarily to develop and evaluate the effectiveness of Big Book media based on Bengkulu folklore for improving children aged 5-6 years' knowledge of balanced nutrition. The study focused on developing media prototypes that met eligibility standards (validity, practicality, and attractiveness) and on assessing whether the intervention significantly increased children's

knowledge compared with conventional methods. In addition to measuring the magnitude of the media's influence, this study will also evaluate the implementation process in the classroom by describing teachers' and children's responses, providing a full picture of the media's effectiveness in real learning.

RESEARCH METHODOLOGY

Types Of Research

This study employs a mixed-methods design. Research and Development (R&D) model ADDIE untuk pengembangan produk, yang diintegrasikan dengan desain uji coba kuasi-eksperimen (Quasi-Experimental Design) tipe Nonequivalent Control Group Design. The selection of a quasi-experimental design is based on ecological and ethical considerations in the school environment, where full randomization of subjects (random assignment) is not possible because it will disrupt the stability of learning groups (study groups) that have been formed (Branch, 2009; Sugiyono, 2019). This study also integrates qualitative data from observations and interviews to enrich findings on the implementation process.

Time and place of research

The research was carried out for 6 (six) months, from the preparation stage (January-February 2025) through Product Development (March-April 2025) to implementation and evaluation (May-June 2025). The research location is the PAUD Lab School at the University of Bengkulu.

Research objectives (population and sample)

This study involved 30 children aged 5-6 years in the PAUD Lab School, University of Bengkulu, who were purposively selected and randomly assigned to an experimental group using Big Book media and a conventional control group. With the number of samples referring to the standard (Cohen, 1988) Data collection was carried out through observation, image-based nutritional knowledge tests, interviews, and validation questionnaires, while the development of the media followed the ADDIE model, ranging from the analysis of Bengkulu folklore potential to product evaluation, to ensure the feasibility and effectiveness of the intervention.

Data Analysis Techniques

Quantitative Data from pretest and posttest results were analyzed using inferential statistics. Normality and homogeneity tests were conducted as preliminary checks. To test the difference in knowledge improvement between the experimental and control groups, an independent-samples t-test is used when the data are normally distributed and homoscedastic. Besarnya pengaruh intervensi (effect size) dihitung menggunakan Cohen's d. Qualitative Data from observations and interviews

were analyzed descriptively through the stages of data reduction, data presentation, and conclusion. Expert validation. Data were analyzed using quantitative and qualitative descriptive methods.

RESULTS AND DISCUSSION

RESULTS

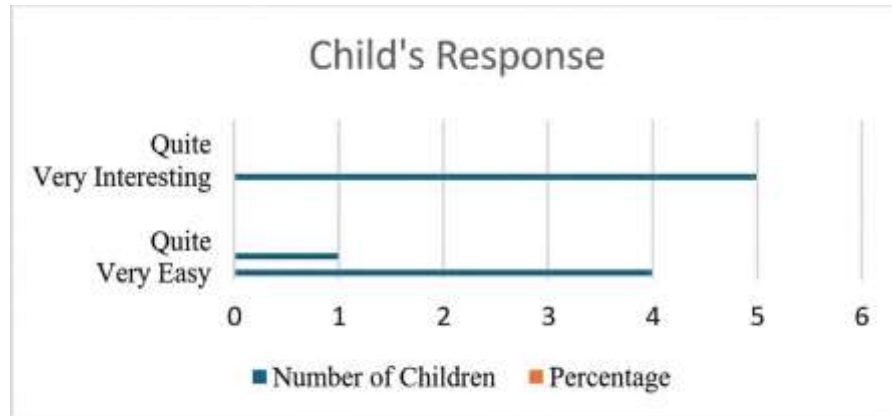
The development of Big Book media based on Bengkulu folklore is conducted through a series of expert evaluations to ensure feasibility before testing with children. Validation was conducted by three experts: media experts, nutrition materials experts, and language and culture experts. The validation results showed that the developed media received a very high rating from experts. Overall, this medium is considered very suitable for learning.

Table 1. Media eligibility validation results by experts

Assessment aspect	Media expert (score)	Nutrition material	Expert (score) language & culture expert (score)	Average
feasibility of content	4.6	4.8	4.7	4.7
Suitability for Child Development	4.5	4.4	4.6	4.5
Visual/Display Quality	4.7	4.5	4.4	4.53
accuracy of nutrition messages	-	4.8	4.6	4.7
accuracy in using folklore	4.4	-	4.8	4.6
Overall average	4.55	4.63	4.62	4.6

Category: 4.21-5.00 (Very Eligible); 3.41-4.20 (Eligible); <3.40 (Not Eligible)

Based on expert validation results, Big Book media was declared "very worthy" with an average score of 4.6. This shows that this media meets the criteria of content feasibility, suitability for Child Development, visual quality, accuracy of nutritional messages, and accuracy in the use of folklore. After being declared eligible, the media were tested with children on a limited basis to assess their initial response. In addition to expert validation, limited trials were conducted with children to evaluate the attractiveness and acceptance of the Big Book media. The child's response is observed through indicators of visual interest, interaction with the story, and ease in understanding the message conveyed. The following graph illustrates the child's responses during the limited trial.



Graph 1. Results of children's responses in limited trials

A limited trial showed that the majority of children responded positively to the Big Book media. They seem enthusiastic, actively attend to the picture, and can retell the plot in their own language. This indicates that this media is not only visually appealing, but also effective in conveying the message of balanced nutrition to early childhood.

The Media is declared feasible and tested. The next step is to test its effectiveness in improving children's knowledge of balanced nutrition. Before further analysis, the pretest and posttest data are tested for normality to determine the feasibility of using parametric statistical tests.

Table 2. Normality Test

Kelompok		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
Pretest Score	Experimental Pretest Score	.102	15	.200*	.978	15.952	.952
	control	.107	15	.200*	.970	15.861	.861
Posttest Score	Experimental Posttest Score	.099	15	.200*	.982	15.984	.984
	control	.085	15	.200*	.979	15	.965

Based on the results of the normality test, pretest and posttest data from both groups are normally distributed. This enables the use of parametric statistical tests in subsequent analyses. In addition to the normality test, a homogeneity-of-variance test was conducted to assess whether the experimental and control groups had equivalent variances prior to the intervention.

Table 3. Homogeneity test results

		Levene Statistic	df1	df2	Sig.
Skor Pretest	Based on Mean	.014	1	28	.905
	Based on Median	.009	1	28	.923
	Based on Median and with adjusted df	.009	1	27.748	.923
	Based on trimmed mean	.014	1	28	.908
Skor Posttest	Based on Mean	.276	1	28	.603
	Based on Median	.274	1	28	.605
	Based on Median and with adjusted df	.274	1	27.577	.605
	Based on trimmed mean	.276	1	28	.603

The results of the homogeneity test showed that the variances between the experimental and control groups were homogeneous on both the pretest and posttest scores. Thus, the comparative analysis between the two groups can continue to determine the difference in improvement in nutritional knowledge between the experimental and control groups. A comparative analysis of pretest and posttest scores was carried out. The results are presented in the following table.

Chart 4. Unpaired t-test results unbalanced nutrition knowledge

Group	n	Pretest (Rerata ± s.b)	Posttest (Rerata ± s.b)	Gain Score (Rerata ± s.B)	P
experiment	15	42.33 ± 6.78	81.67 ± 5.92	39.34 ± 7.15	<0.001
control	15	43.00 ± 7.21	57.33 ± 8.44	14.33 ± 6.89	<0.001

The table above shows that both the experimental and control groups had improved nutritional knowledge scores after the intervention. However, the increase in the experimental group (39.34 points) was higher than in the control group (14.33 points). This difference is statistically significant ($p < 0.001$). Visually, the comparison of average nutritional knowledge scores between the experimental and control groups is shown in the following graph.

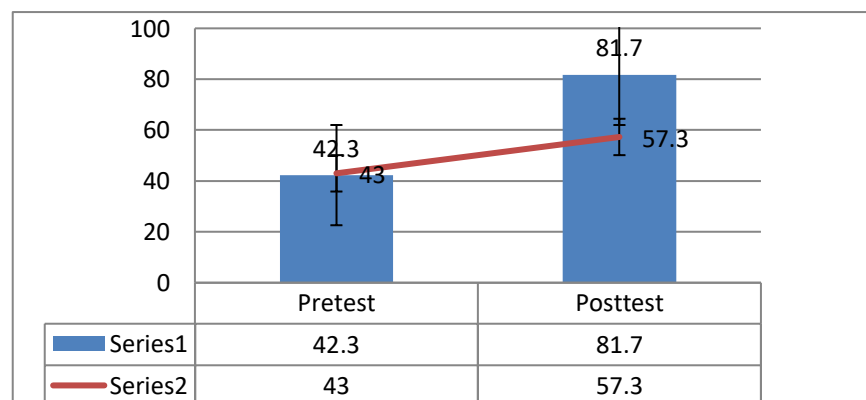


Figure 2. Comparison Chart of Average Balanced Nutrition Knowledge Score

The graph shows that the experimental group experienced a sharper increase than the control group. This indicates that using the Big Book of folklore-based media effectively increases children's knowledge of balanced nutrition, to ensure that the increase in knowledge in the experimental group was truly caused by the media intervention, a statistical test was conducted on the gain score (difference between posttest and pretest) between the two groups.

Table 5. Unpaired t-test results on Gain Score

Aspek	t	df	p-value	Mean Difference	95% Confidence Interval
Gain Score	9.427	28	<0.001	25.01	19.67 - 30.35

The unpaired t-test of the gain score showed a significant difference between the experimental and control groups ($p < 0.001$). This reinforces the finding that *the Big Book media* has a greater impact on improving children's nutrition knowledge. In addition to statistical significance, the magnitude of the intervention effect was assessed using Cohen's d (effect size) to quantify the practical impact of the media.

Table 6. Perhitungan Effect Size

Group	Mean Gain	SD Pooled	Cohen's d
Experimental vs. Control	25.01	7.02	3.56

Interpretation: d = 0.20 (small); 0.50 (medium); 0.80 (large); >1.30 (very large)

The obtained Effect size of 3.56 falls within the "very large" category. That is, *the Big Book media* is not only statistically significant but also has a strong impact on improving children's knowledge of balanced nutrition.

Qualitative Data from observations and interviews with teachers (n=3) and simple interviews with children (n=10 from the experimental group) provide in-depth context on the process and impact of the intervention.

Observations during 4 intervention sessions showed that children in the experimental group were more involved (engaged). Children actively pointed at pictures, asked about the names of local foods in the story, and were able to retell the plot of the story by mentioning nutritional messages, in addition to quantitative data, the study also collected qualitative data through observation and interviews to get an in-depth picture of the learning process and user response. Observation was conducted during four intervention sessions to assess children's involvement in learning activities.

Table 7. Observation of children's involvement in the learning process

Engagement indicators	Session 1 (n)	Session 2 (n)	Session 3 (n)	Session 4 (n)	average
eye contact with media > 80% of the time	9 (60%)	12 (80%)	14 (93%)	15 (100%)	83,3%
spontaneous verbal response	640%)	10 (67%)	13 (87%)	14 (93%)	71,7%

active participation in discussions	7 (47%)	11 (73%)	14 (93%)	15 (100%)	78,3%
retelling ability	4 (27%)	8 (53%)	12 (80%)	13 (87%)	61,7%

The observations showed that children's involvement increased from session to session. In the last session, all children (100%) were actively involved, paying attention to the media, responding verbally, participating in discussions, and retelling nutritional messages. This shows that *the Big Book media* managed to create interactive and interesting learning, to complete the observation data, interviews were conducted with teachers and children from the experimental group. This interview aims to understand their perceptions of the media and the learning process implemented.

Results of interviews with 3 teachers and 10 children from the experimental group

Results of the interview with the teacher

A thematic analysis of interview transcripts resulted in three main themes:

Easy contextualization: the teacher notes that using familiar folklore makes the nutritional message easier to accept.

"The children immediately understood when I said, 'like the deer in the book, we have to eat a variety of foods. ' So they have a real example, not just memorization."(A teacher, 10 years of experience).

Media as a spark of interaction: The Big Book is said to be an effective tool to start a two-way discussion.

"It's usually hard to get them to talk about food. With this great book, they actually show each other pictures and stories of each other's experiences. The class is alive."(Teacher B, 7 years experience).

Practicality and willingness to adopt: all teachers expressed a desire to use this medium in the future and recommend it to peers.

"This book is not complicated, the material is around us. I've been thinking of making another folklore with the message to wash your hands with soap."(Teacher C, 5 years experience).

Children's Response to Media

Simple post-intervention interviews with children showed that they remembered the main nutritional figures, plot, and messages well.

"I like the story of the strong mouse deer eating spinach and fish. Now I want to eat spinach so I can run."(Andi, 6 years old).

"In the book, there are pictures of rice, vegetables, side dishes, and fruit on one plate. The teacher said, That's a good example of eating well."(Sari, 5 years old).

The results showed that the Big Book "The Story Of The Mouse Deer and healthy dishes," which was developed, was very feasible to use and significantly effective with great effect in improving the knowledge of balanced nutrition of children aged 5-6 years. Qualitative Data reinforce these findings by demonstrating high child engagement and positive teacher responses to media practicality and contextuality.

DISCUSSION

The results showed that the development of Big Book media based on Bengkulu folklore significantly and effectively improved the knowledge of balanced nutrition among children aged 5-6 years. These key findings, characterized by an increase in the experimental group's average score of 39.34 points as well as the "very large" category effect size (Cohen's $d = 3.56$), were consistent with previous findings reported by in their systematic review, which found that picture books-based interventions were a powerful modality for changing concepts and preferences of healthy food in early childhood (Nekitsing et al., 2022) . Parallel to the study Ragalmuto et al (2023) which asserts that large-scale visual media help focus a child's attention (attentiveness), a key prerequisite for cognitive information processing in preschool age.

Interesting differences in the level of engagement compared to conventional nutritional literacy studies. If previous research by Fikawati et al (2021) Those who used standard poster or flashcard media often reported a decrease in children's attention after 15 minutes of learning; this study actually showed an increase in participation until the end of the session. This difference can be explained by the integration of elements of "folklore" (local culture). Pendekatan ini relevan dengan teori Culturally Responsive Teaching yang dijelaskan oleh (*Culturally Responsive Teaching: Theory, Research, and Practice* - Geneva Gay - Google Buku, n.d.) and updated the context by Abukari and Mfoafo-m'carthy (2021), where the use of familiar cultural artifacts (such as Kancil figures or Bengkulu local settings) lowers children's cognitive load. The child does not need to process two new pieces of information at once (foreign characters and nutritional material), but can immediately focus on nutritional messages because the characters are familiar.

Interpretasi temuan ini mengacu pada Teori Konstruktivisme Vygotsky, especially the concept Zone of Proximal Development (ZPD) dan Scaffolding. Media Big Book dalam penelitian ini berfungsi sebagai scaffolding visual dan naratif. The book's large size allows for an optimal shared reading experience, where the teacher and child interact dialogically. Previous research by Luo et al (2020) also supports the idea that the Big Book-assisted dialogic reading method strengthens children's memory retention through repetition and the simultaneous association of images with

verbal concepts (Dual Coding theory). Children's enthusiastic responses recorded in qualitative data, such as the ability to retell that "eating spinach makes you strong like a mouse deer," prove the occurrence of deep learning processes, not just memorization.

Limitations of this study include a relatively small sample size ($n=30$) and a focus on a single geographical location. This limits the generalization of results to populations with drastically different cultural backgrounds. In addition, this study has not measured the long-term impact on real changes in eating behavior, but rather focused on the cognitive (knowledge) realm. Social desirability bias in child interviews is also possible, in which the child answers according to the teacher's expectations. This should be considered in the interpretation of the results and serve as a guide for future research to use longitudinal designs with larger, more diverse sample sizes.

Despite these limitations, these findings have important repercussions. This Media offers concrete solutions for early childhood teachers to teach abstract material (nutrition) in a concrete and fun way. From a policy perspective, the implications include the need to revitalize the early childhood education curriculum by integrating local content into health education, in line with the Presidential Regulation on accelerating stunting reduction, which emphasizes a specific and sensitive approach. This discussion underscores the need for teacher training to develop ethnopedagogy-based teaching media that optimize the application of research findings in real-world contexts. This research not only contributes to the theoretical literature on Early Childhood Learning media but also provides real benefits for the Prevention of nutritional problems in the community through education.

CONCLUSION

Based on the results of the study, it can be concluded that the media-based Big Book Bengkulu folklore "The Story Of The Deer and healthy dishes" developed proved to be very feasible and effective in improving the knowledge of balanced nutrition in children aged 5-6 years in early childhood Lab School University of Bengkulu, indicated by an average expert validation score of 4.6, a significant increase in knowledge in the experimental group (gain score 39.34) compared to the control group (14.33) with a very large effect size (Cohen's $d=3.56$), and supported by qualitative data that reveal the high involvement of children and teachers' positive responses to contextuality and practicality of media as an interactive learning tool based on local wisdom.

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