

Development of fun flashcard series: Fruits and animals for primary students for children at Mustika Tama Orphanage

Yunita Miftahul Jannah^{1*}, Fransiskus Ransus¹, Verawaty Sinaga¹, Agrielsa Alphasati Sinaga¹, Ratih Kusumo Wardani¹

¹Elementary School Teacher Education, Faculty of Teacher Training and Education, Parahyangan Catholic University, Jl. Ciumbuleuit No. 94, Hegarmanah, Kec. Cidadap, Bandung, 40141, Indonesia
e-mail: yunita.jannah@unpar.ac.id

Received 10 August 2025

Revised 16 September 2025

Accepted 15 October 2025

ABSTRACT

This study aims to develop the Fun Flashcard Series: Fruits & Animals learning media as an educational tool to increase the learning motivation and involvement of children at Mustika Tama Orphanage. The development model used was 4D (Define, Design, Develop, Disseminate). The research subjects were 10 children in grades 1 and 2 at the elementary school level at the Mustika Tama Orphanage. The research instruments included expert validation sheets, child response questionnaires, and learning engagement observation forms. The validation results showed that the Fun Flashcard Series media was very suitable for use, with an average validation score of 95%. The children's responses showed a high level of enthusiasm, engagement, and interest in the developed media. Thus, the Fun Flashcard Series: Fruits & Animals proved to be effective as an innovative learning medium that can increase children's learning motivation and engagement at the Mustika Tama Orphanage.

Keywords: English vocabulary, flashcards, learning media, orphaned children.

1. INTRODUCTION

Education is a key factor in shaping the quality of superior human resources. Children in orphanages are part of the nation's generation and have the same right to quality education as other children. However, in reality, children in orphanages often face limitations in terms of facilities, teaching staff, and optimal learning environment. According to [Suyanto \(2018\)](#), children who grow up in orphanages face different challenges, especially in terms of psychosocial aspects and educational support, thus requiring a more creative, interesting, and contextual learning approach to meet their needs.

In this context, learning motivation is an important aspect. [Schunk, Pintrich, and Meece \(2014\)](#) explain that learning motivation is the main driving force influencing student engagement, effort, and success in learning. If learning motivation is low, student engagement in the learning process will also decrease, which, in turn, can impact their academic achievement and skill development. Children in orphanages with certain social backgrounds tend to experience boredom or lack of involvement in the formal learning process more easily. Therefore, learning strategies that can stimulate motivation and increase children's learning involvement are needed.

One factor that can influence learning motivation is the use of interesting media. [Arsyad \(2017\)](#) states that learning media serves to bridge abstract material to make it more concrete, thereby helping students understand concepts more easily. Media that is interesting, interactive, and suited to the characteristics of children can create a joyful learning atmosphere. This is in line with the opinion of [Heinich et al. \(2002\)](#), who emphasized that learning media can increase students' attention, interest, and involvement in the learning process.

Along with the development of basic education, especially for early childhood and lower elementary school grades, the use of visual media is recommended. Children at this age are in the concrete operational stage according to [Piaget's \(1972\)](#) cognitive development theory. This means that they find it easier to understand material through real experiences or visual representations than through abstract explanations. Therefore, learning media in the form of simple, colorful, and attractive pictures are more effective in supporting the learning process.

Flashcards are a type of media that suit the characteristics of early childhood and lower elementary school-aged children. According to [Yunus and Saiful \(2013\)](#), flashcards are picture cards designed to help students remember, recognize, and understand concepts in a simple but effective way. Flashcards are very flexible and can be used in language learning, science, and the introduction of other basic concepts. The advantages of flashcards are their ability to stimulate visual memory, increase focus, and allow for interactive use both individually and in groups.

Previous studies have also shown that the use of flashcards improves student learning outcomes. [Astuti \(2015\)](#) found that the use of flashcards in English language learning in elementary schools significantly improved students' vocabulary mastery. In addition, [Handayani \(2019\)](#) showed that flashcards can increase student motivation to learn through the presentation of material that is more interesting and easier to understand. Thus, the use of flashcards is not limited to vocabulary mastery but can also be expanded to various learning materials, including the introduction of animals and fruits relevant to children in orphanages.

In the context of the Mustika Tama Orphanage, the existence of innovative learning media, such as the Fun Flashcard Series: Fruits & Animals, is very important. Children in orphanages often have limited access to modern learning media. Learning activities tend to be monotonous and lack variety; therefore, children can easily become bored. By presenting flashcards that are fun, colorful, and thematic (fruits and animals), it is hoped that children will not only learn to recognize vocabulary but also develop motivation to learn and actively engage in the learning process.

Furthermore, children's engagement in learning is an important factor. [Fredricks, Blumenfeld, and Paris \(2004\)](#) distinguish engagement into three dimensions: behavioral, emotional, and cognitive. The use of interesting media such as flashcards can encourage all three aspects simultaneously: children are more active behaviorally (e.g., responding to cards quickly), emotionally involved (feeling pleasure while learning), and cognitively stimulated (thinking about and remembering the concepts learned). Thus, the

Fun Flashcard Series media not only functions as a memorization aid, but also as a means of strengthening children's learning engagement.

In addition, the media development approach using the 4D model (Define, Design, Develop, Disseminate) introduced by [Thiagarajan, Semmel, and Semmel \(1974\)](#) provides a systematic framework for producing valid, practical, and effective learning products. This model emphasizes the importance of needs analysis (define), media design (design), product development (develop), and dissemination or implementation in a real context (dissemination). Using this development model, it is hoped that the Fun Flashcard Series: Fruits & Animals media produced will not only be a creative product, but also meet the eligibility criteria of experts, be acceptable to children, and be proven effective in increasing motivation and learning engagement.

The urgency of this research is even stronger when linked to the principles of inclusive and equitable education in Indonesia. According to [UNESCO \(2015\)](#), every child, without exception, has the right to equal and meaningful learning opportunities regardless of their disability. Children in orphanages, as part of a vulnerable group, often receive less attention regarding access to quality education. Therefore, the development of innovative learning media that suit their needs is a tangible contribution to supporting the achievement of the Sustainable Development Goals (SDGs), particularly Goal 4, Quality Education.

Thus, research on the development of the Fun Flashcard Series: Fruits & Animals learning media at the Mustika Tama Orphanage is important. First, it provides alternative learning media that are suitable for the characteristics of elementary school-aged children. Second, it supports an increase in children's motivation to learn and their involvement in the learning process. Third, it provides practical contributions to educators, caregivers, and volunteers in creating a more enjoyable and meaningful learning environment.

Fourth, it expands the literature on the effectiveness of using flashcards in the context of non-formal education, especially for orphans. Based on this explanation, it can be confirmed that this study has important theoretical and practical value. Theoretically, this study enriches the literature on the role of visual-based learning media in increasing children's motivation and involvement in learning.

Practically, this research provides concrete solutions to the problem of limited learning media in orphanages, while inspiring the development of similar media in other contexts. Therefore, the development of the Fun Flashcard Series: Fruits and Animals is expected to be an innovation that contributes to improving the quality of education for children at the Mustika Tama Orphanage.

2. METHOD

2.1 Type and Design of Research

This research is a research and development study with the aim of producing a Fun Flashcard Series: Fruits & Animals learning media that is suitable and effective for use in children's learning processes. The development model used is the 4D (Define, Design, Develop, Disseminate) model developed by [Thiagarajan, Semmel, and Semmel \(1974\)](#). This model was chosen because it provides systematic steps for producing learning products, starting from needs analysis to implementation in the field.

2.2 Research Subjects

The subjects in this study were 10 first- and second-grade elementary school children living in the Mustika Tama Orphanage. The subjects were selected based on the availability of children in the lower elementary school age range, which is suitable for using simple visual media such as flashcards. The material for introducing fruit and animal vocabulary in English is also suitable for first- and second-grade elementary school children.

2.3 Development Procedure

The research procedure followed the 4D model stages as follows: (1) Define: Needs analysis was carried out through initial observations and interviews with orphanage caregivers to identify the learning

conditionss and the difficulties faced by children in their learning process. This step was followed by an analysis of the children's characteristics, which included considerations of their age, cognitive development stage, and individual learning interests. In addition, a material analysis was conducted by selecting themes that are closely related to children's daily lives, namely fruits and animals, so that the content presented would be familiar, meaningful, and relevant to the basic learning needs of the children; (2) Design: The initial design of the Fun Flashcard Series featured colorful illustrations of fruits and animals to attract children's attention and stimulate their interest in learning. The flashcard content was carefully developed using simple vocabulary in both Indonesian and English, aiming to introduce bilingual learning in a way that is accessible to children at the primary-school level. To support the research process, several instruments were prepared, including expert validation sheets to assess the quality of the media, child response questionnaires to measure their perceptions and enthusiasm, and observation sheets to record the level of learning engagement during the implementation; (3) Develop: The initial flashcard product was developed and subsequently validated by two experts, a learning media expert and a basic education material expert. Revisions were then carried out based on the input and suggestions provided by the validators to enhance the content quality and visual appearance of the media. After the revision stage, the improved flashcard product was tested on a limited basis with 10 children at the Mustika Tama Orphanage to evaluate its practicality and effectiveness in a real learning context. The revised product was then tested on a limited basis with 10 children at the Mustika Tama Orphanage; (4) Disseminate: This stage involved testing the use of the media during learning activities at the orphanage to observe children's responses and engagement. In addition, the media was introduced to orphanage caregivers and education volunteers as part of the initial dissemination process, with the aim of enabling its wider use and ensuring that the flashcards could serve as a sustainable learning tool in the orphanage environment.

2.4 Research Instruments

The instruments used in this study included: (1) Expert Validation Sheet – used to assess the feasibility of the media based on content, language, appearance, and usability; (2) Child Response Questionnaire – used to determine children's opinions regarding the attractiveness and ease of use of flashcards; and (3) Learning Engagement Observation Sheet – used to measure the level of children's engagement during the learning process using the Fun Flashcard Series.

2.5 Data Collection Techniques

Data were obtained through several techniques: (1) Expert Validation, which involved the assessment of media by media and material experts; (2) Response Questionnaire, which was given to children after learning to assess the attractiveness, ease of use, and usefulness of the media; and (3) observation, which was conducted during the learning process to observe children's behavioral, emotional, and cognitive engagement.

2.6 Data Analysis Techniques

The data analysis techniques are as follows: (1) Expert Validation data were analyzed by calculating the average score of all aspects assessed, then categorized as very feasible, feasible, fairly feasible, or less feasible; (2) Child Response Data were analyzed descriptively and quantitatively by calculating the percentage of positive responses to the media; and (3) Learning Engagement Observation Data were analyzed using an engagement scale (high, medium, low) based on indicators of children's activities during learning.

The Fun Flashcard Series media is considered successful if it meets the following criteria: a) the expert validation score is at least in the "highly feasible" category ($\geq 85\%$); b) the percentage of positive responses from children to the media reaches at least 80%; and c) the level of children's learning engagement shows an increase after using the media.

3. RESULT AND DISCUSSION

3.1 Results

3.1.1 Media Validation Results

Validation was carried out by two validators: a learning media expert and a basic education material expert. The average validation results are listed in Table 1.

Table 1. Fun Flashcard Series Media Validation Results

No	Aspect Assessed	Score (%)	Description
1	Media Format	96%	Highly Feasible
2	Content	94%	Highly Feasible
3	Language & Appearance	95%	Highly Feasible
	Average	95%	Highly Feasible

Based on the recapitulation results, the Fun Flashcard Series: Fruits & Animals media is classified as highly feasible. This is in accordance with the Likert scale criteria (Riduwan, 2006), which states that a research instrument is considered highly feasible if it has a percentage of 81% or higher.

3.1.2 Results of the Children's Response Questionnaire

The questionnaire was administered to 10 children at the Mustika Tama Orphanage after using the flashcards. The average response results are presented in Table 2.

Table 2. Children's Responses to the Fun Flashcard Series Media

No	Assessment Aspect	Score (%)	Description
1	Media Attractiveness	90%	Very Good
2	Ease of Understanding	85%	Very Good
3	Motivation & Engagement	88%	Very Good
	Average	87.6%	Very Good

Overall, the child showed high enthusiasm, found the media interesting and easy to use, and was motivated to learn using flashcards.

3.2 Discussion

The extremely high expert validation results (average of 95%) indicate that the Fun Flashcard Series: Fruits & Animals meets the relevant format, content, and language standards for lower-grade children at the Mustika Tama Orphanage. These findings are consistent with many studies on the development of learning media that emphasize the importance of expert validation as a preliminary step before field testing; the application of the 4D (Define–Design–Develop–Disseminate) development model generally produces valid and practical products when the validation and revision stages are carried out properly. Several recent literature reviews have reported that the 4D model continues to be widely used in contemporary educational R&D and is effective in producing usable teaching materials.

Pedagogically, the high response rate from children (average response \approx 87.6%) indicates that the visual design, simplicity of language, and interactive activities included in the flashcards successfully triggered interest and motivation to learn the language. Empirical evidence from the past decade consistently shows that flashcards—both physical and digital—improve attention, vocabulary retention, and positive attitudes toward learning when attractively designed and used in a structured manner. A systematic review and field study from 2019 to 2024 found that flashcards improve vocabulary mastery

and memory retention in children and young learners, especially when combined with retrieval practice and spaced repetition. These findings support the interpretation that validated flashcards can directly influence students' motivation and early achievement.

The observed increase in engagement across the behavioral, emotional, and cognitive dimensions is consistent with the modern literature emphasizing the strong link between engagement and learning outcomes. Meta-analyses and reviews of engagement in recent years show that interventions that increase student engagement (e.g., interactive visual media, collaborative activities, educational games) tend to result in improved academic achievement, motivation, and positive attitudes toward learning. For early childhood and lower grades, behavioral engagement (active participation), emotional engagement (enthusiasm), and cognitive engagement (deep processing) are important mediators between media use and short-term learning outcomes. Therefore, the increase in engagement observed in the field observations provides a plausible mechanism to explain why children's motivation and responses increased after using the flashcards.

The institutional context of children living in orphanages raises practical and theoretical considerations. Contemporary intervention literature on children in institutional care (foster care/orphanages) shows that structured, cognitively, and emotionally stimulating educational programs that can be implemented by non-specialist caregivers provide real benefits for children's cognitive development and well-being. Simple, repetitive, and easy-to-maintain interventions (such as flashcards) are often recommended because of their low cost, ease of adaptation, and ability to be reproduced by orphanage administrators. The results of the study at the Mustika Tama Orphanage, which showed high enthusiasm and engagement, support the idea that simple but high-quality media can improve the quality of learning experiences for vulnerable children.

Contemporary debates also highlight the comparison between paper flashcards and digital flashcards (or flashcard-based applications such as Quizlet and Anki). Recent reviews and experimental studies have found that both are effective, but their effects depend on instructional design, interactive features (feedback, gamification), and the context of implementation. Digital flashcards offer advantages in personal adaptation (spaced repetition, tracking), while paper is more accessible in low-resource settings, such as many orphanages. Therefore, the success of the physical version of the Fun Flashcard Series studied is consistent with evidence that design and contextual usability are more decisive for effectiveness than the medium alone. If resources allow, a digital/integrated version could be considered for future development to add scheduled repetition and progress tracking features.

In terms of instructional design, best practices proven in the literature—such as the use of congruent images, short text, repetition, and meaningful context—were applied in this product, which may explain the high expert validation scores. Research on augmentative/interactive flashcards (e.g., AR flashcards or multimedia) also shows that adding multimodal elements can increase motivation and retention, especially when they are age-appropriate and not cognitively overwhelming for children. However, additional technologies should be considered based on resource availability and operator (caregiver/volunteer) competency. In the orphanage context, simple modifications (bright colors, clear illustrations, and matching activities) are often more realistic and effective.

Although the results are very promising, it is important to note the methodological limitations relevant to the current R&D literature: small sample size ($n=10$), time-limited field tests, and the lack of formal pre-post quantitative measurements of cognitive abilities (e.g., word recognition tests before and after). Further studies recommended by modern R&D reviews include the use of quasi-experimental designs (pretest-posttest control), increased sample size, measurement of medium-term effects, and analysis of the implementation process (fidelity) to understand the factors that influence the success of the replication. Sustainable implementation also requires training for caregivers so that media is used consistently and in accordance with learning objectives.

Practical implications and recommendations: The results of this study reinforce that well-designed flashcards are a feasible and effective intervention to increase the motivation and engagement of children in orphanages. Concrete recommendations include: (1) expanding the trial to several orphanages to test generalization, (2) adding quantitative pre-post tests to measure learning, (3) developing a package of

accompanying activities (simple worksheets, group games), and (4) if possible, exploring a lightweight digital version for scheduled repetition. The literature supports that these steps can strengthen the results and facilitate the sustainability of the intervention.

4. CONCLUSION

Based on the results of the research and discussion, it can be concluded that the Fun Flashcard Series: Fruits & Animals learning media has been proven to be valid, interesting, and effective for use in teaching children at the Mustika Tama Orphanage. Validation by media and subject matter experts showed an average score of 95%, which is considered very good. The children's responses also showed high enthusiasm, with an average of 87.6%, indicating that the developed flashcards significantly increased children's learning motivation and engagement.

The results of the observation showed an increase in children's learning engagement in terms of their behavior, emotions, and cognition. These findings are in line with recent studies that confirm the effectiveness of simple visual media, such as flashcards, in creating a pleasant learning atmosphere, encouraging motivation, and strengthening knowledge retention.

The context of orphanages, which have limited resources, makes this media a practical, inexpensive, and easy-to-use solution for both caregivers and educational volunteers. Thus, the development of the Fun Flashcard Series: Fruits & Animals media not only contributes to improving the quality of learning for children in orphanages but also enriches alternative learning media in nonformal education environments.

However, this study has limitations, particularly in terms of the limited number of participants and the short duration of the trial. Therefore, further research is recommended using a quasi-experimental design with a larger sample, measurable pretest–posttest, and long-term observation to evaluate the sustainability of the media's impact on children's learning outcomes.

Overall, the Fun Flashcard Series: Fruits and Animals can be used as an innovative learning medium that supports the creation of joyful, meaningful, and contextual learning experiences for children at the Mustika Tama Orphanage.

Ethical Approval

This study was conducted in accordance with the ethical research standards. Approval was obtained from the research ethics committee of the authors' institution prior to the data collection.

Informed Consent Statement

All participants were informed of the purpose of the study, and informed consent was obtained prior to the data collection. Participation was voluntary, and all responses were kept confidential and used solely for academic-research purposes.

Authors' Contributions

YMJ made the most significant contributions to this study. She was responsible for the overall conceptualization of the study, designing the research methodology, conducting the formal analysis, preparing the original draft of the manuscript, coordinating the validation process, and supervising all stages of the research. FR contributed primarily to refining the research methodology, supporting the development of the instructional design, and providing the resources necessary to conduct the study. He also assisted in reviewing the manuscript and ensuring the accuracy of the methodological frameworks. VS played an important role in the validation of the media, assisting with the investigation phase, collecting data through the children's responses, and drafting and reviewing the manuscript. She was also involved in analyzing children's engagement and motivation during learning activities. AAS supported the validation process, managed data collection, and prepared visualizations of the findings. She also contributed to refining the structure of the flashcard media and aligning its design with pedagogical principles. RKW contributed to the formal analysis and interpretation of the research findings. She played a role in reviewing

and editing the manuscript to improve its clarity and coherence and provided supervision during the final stages of the study to ensure its academic quality.

Disclosure Statement

No potential conflict of interest was reported by the author

Data Availability Statement

The data presented in this study are available due to privacy considerations.

Funding

This research received no external funding

Funding

This research is an output of internal funding from the Research and Community Service Institute (LPPM) of Parahyangan Catholic University in Bandung.

Notes on Contributors

Yunita Miftahul Jannah

<https://orcid.org/0000-0002-7911-6908>

Yunita Miftahul Jannah is a lecturer in the Elementary School Teacher Education program at Parahyangan Catholic University and also a researcher in the field of basic education with a focus on literacy, learning media innovation, and inclusive education. She is active in community service activities in schools and orphanages, with research interests in literacy development, numeracy, STEAM-based media, and contextual learning.

Fransiskus Ransus

Fransiskus Ransus is a lecturer in the Elementary School Teacher Education program at Parahyangan Catholic University. His academic interests include innovative learning strategies, curriculum design, and child education in diverse learning environments. He has been actively involved in research and service programs that support inclusive and equitable education.

Verawaty Sinaga

<https://orcid.org/0009-0005-5934-6414>

Verawaty Sinaga is a lecturer in the Elementary School Teacher Education program at Parahyangan Catholic University, specializing in language learning and literacy. She has published research on literacy development and the integration of innovative media in elementary school classrooms. Her work also extends to community-based education programs.

Agrielsa Alphasati Sinaga

Agrielsa Alphasati Sinaga is a lecturer in the Elementary School Teacher Education program at Parahyangan Catholic University program with expertise in early childhood and primary education. Her areas of focus cover child-centered learning approaches, classroom creativity, and the design of educational media. She has contributed to projects aimed at improving the quality of education in marginalized communities.

Ratih Kusumo Wardani

Ratih Kusumo Wardani is a lecturer in the Elementary School Teacher Education program at Parahyangan Catholic University. Her research interests include inclusive education, educational technology, and character building in elementary education. She has extensive experience in developing teaching materials and implementing community service programs that promote meaningful learning.

REFERENCES

- Arsyad, A. (2017). *Media pembelajaran*. Jakarta: Rajawali Pers.
- Astuti, R. (2015). Penggunaan media flashcard untuk meningkatkan penguasaan kosakata bahasa Inggris siswa sekolah dasar. *Jurnal Pendidikan Dasar*, 6(2), 123–131.
- Fredricks, J. A., Blumenfeld, P. C., & Paris, A. H. (2004). School engagement: Potential of the concept, state of the evidence. *Review of Educational Research*, 74(1), 59–109.
<https://doi.org/10.3102/00346543074001059>
- Gray, J., Scholes, L., Brown, A., & Gindidis, M. (2023). School engagement: A systematic literature review of student engagement from 2000–2020. *Educational Research Review*, 39, 100519.
<https://doi.org/10.1016/j.edurev.2023.100519>
- Handayani, D. (2019). Efektivitas penggunaan media flashcard dalam meningkatkan motivasi belajar siswa sekolah dasar. *Jurnal Inovasi Pendidikan*, 9(1), 45–56.
- Heinich, R., Molenda, M., Russell, J. D., & Smaldino, S. E. (2002). *Instructional media and technologies for learning* (7th ed.). Upper Saddle River, NJ: Merrill Prentice Hall.
- MatecConf. (2022). Application of the 4D model in the development of learning media for elementary students. *MATEC Web of Conferences*, 335, 04020.
<https://doi.org/10.1051/matecconf/202233504020>
- Piaget, J. (1972). *The psychology of the child*. New York: Basic Books.
- Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2014). *Motivation in education: Theory, research, and practice* (4th ed.). Boston: Pearson Higher Ed.
- Suyanto, S. (2018). Pendidikan anak di panti asuhan: Tantangan dan solusi. *Jurnal Pendidikan Anak Usia Dini*, 12(1), 15–28.
- Thiagarajan, S., Semmel, D. S., & Semmel, M. I. (1974). *Instructional development for training teachers of exceptional children: A sourcebook*. Minneapolis, MN: Leadership Training Institute/Special Education, University of Minnesota. <https://eric.ed.gov/?id=ED090725>
- UNESCO. (2015). *Education 2030: Incheon declaration and framework for action for the implementation of Sustainable Development Goal 4*. Paris: UNESCO.
- Wu, J., & Miller, K. F. (2020). Retrieval practice and spacing effects with young learners: Evidence from digital flashcards. *Journal of Experimental Child Psychology*, 192, 104781.
<https://doi.org/10.1016/j.jecp.2019.104781>
- Yunus, M. M., & Saiful, I. (2013). The use of flashcards in improving vocabulary mastery of English for primary school students. *International Education Studies*, 6(8), 85–92.
<https://doi.org/10.5539/ies.v6n8p85>