

Development and Evaluation of Marungko-Based Reading Intervention Material for Kindergarten Learners

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Date received: November 5, 2024

Date revised: November 22, 2024

Date accepted: December 9, 2024

Originality: 93%

Grammarly Score: 99%

Similarity: 7%

Recommended citation:

Saquing, C.M. (2024). Development and evaluation of Marungko-based reading intervention material for kindergarten learners. *Journal of Interdisciplinary Perspectives*, 3(1), 52-59. <https://doi.org/10.69569/jip.2024.0601>

Abstract. With the call of the Department of Education, schools are encouraged to explore relevant strategies to achieve the desirable literacy performance outcomes, especially in reading in the foundational key stage of learning. To improve the beginning reading performance of Kindergarten learners, this study explored the development, validation, and utilization of a researcher-developed reading intervention material employing the principles of the Marungko approach. Participants of this study were 32 Kindergarten learners from a private school and three Kindergarten teacher-validators in the Schools Division Office of Nueva Vizcaya. Ethical research guidelines set by the division office and the participating school were strictly followed in the study. The participants were informed of the study's objectives, associated benefits and risks, management of vulnerability issues, and their rights before their consent to participate was requested. The descriptive-comparative research design was employed where the pre-test and post-test reading performances and the validity indices of the developed intervention material were described, and a statistical comparison of both performances was made to assess the potential of the designed intervention material. The results revealed that the developed reading intervention material met the minimum standards set by the Department of Education and was valid for utilization. Also, increases in the performance levels of the Kindergarten learners across reading subskills were noted after the intervention. The reading performance of Kindergarten learners in the pre-intervention phase considering letters Mm, Ss, and Aa significantly improved after the two-week intervention using the developed Marungko-based intervention material. These findings emphasize the significance of employing developmentally appropriate practices in developing intervention materials toward improving foundational literacy. Further, the study highlights the necessity of evaluating the learning intervention materials to ensure compliance with the Department of Education's standards before utilization.

Keywords: Intervention material; Kindergarten education; Marungko approach; Reading.

1.0 Introduction

Aligned with the United Nations Organization's Sustainable Development Goal on quality education, functional literacy serves as the cornerstone for achieving meaningful and flexible lifelong learning through relevant educational opportunities (Chapman et al., 2020; Confraria et al., 2024; Dodd et al., 2020; Ghosh & Chakravarty, 2024; Fallah Shayan et al., 2022; Foley, 2021; Sorooshian, 2024; United Nations Department of Economic and Social Affairs, 2021).

Reading skills, as a component of functional literacy, should be enhanced. These are essential skills that learners should master with full appreciation beginning in the early years of education (Lasdya et al., 2022). Formal development of reading skills is one of the compelling goals of educational institutions to produce learners who are effective readers. Reading together with writing is one of the foundations of literacy. Moreover, effective reading is about understanding what is read, applying the information read, and synthesizing what is read for functional living. Hence, learning to read in the early grades is one of the key learning outcomes of primary education (Purwanto, 2021a, 2021b; Saquing, 2015; Yang, 2022).

However, this vision of effective reading is challenged if early-grade readers have not acquired the essential reading skills. This may tremendously impact their academic performance at succeeding levels. In the Programme for International Student Assessment (PISA), the 2022 results revealed that the Philippines scored less than the OECD average in mathematics, reading, and science. Focusing on the reading performance, 24% of Filipino learners attained Level 2 or higher. Learners within this level can identify the main idea of a text, determine information, and reflect on the purpose and form of texts when explicitly told. Also, almost no students scored at Level 5 or higher in reading who are supposed to be learners who can comprehend texts more than moderate length, deal with abstract concepts, and distinguish between fact and opinion based on implicit cues about the content or source of information (OECD, 2023).

Further, one of the national programs to gauge the learners' outcomes in the Philippine basic education system is the conduct of the Early Language, Literacy, and Numeracy Assessment (ELLNA) for the primary learners. Based on the report forwarded to the Schools Division Office of Nueva Vizcaya (2024), the learners' performance in 2022 ELLNA, particularly in English, Filipino, Mother Tongue, and Mathematics, is within the 'average mastery' level. However, reading and comprehension remained the lowest learning domain in English, Filipino, and Mother Tongue.

To address the issues related to literacy enhancement in basic education, the Department of Education calls on the innovation of relevant contextualized strategies to help learners improve their literacy performance within a positive school climate in the early years of formal education. More than literacy performance, the department aims explicitly to improve reading, math, and socio-emotional skills in the early grades through developmentally appropriate practices (National Educators Academy of the Philippines, 2024; RTI International, 2021).

One contextualized approach considered in developing reading skills in the primary grades in the country is the use of Marungko-based reading. The reading approach is found to be an effective tool in enhancing foundational reading skills, especially in identifying letter names, identifying letter sounds, identifying initial sounds, reading familiar words, and reading oral passages (Alauya & Basmayor, 2023; Balgua et al., 2022; Boltron & Ramos, 2021; Canaveral et al., 2023; Santos & De Vera, 2020). This reading approach is conducted with the developmentally appropriate instructional strategies and materials necessary to promote learners' literacy in the foundational learning stages (Abayan et al., 2021; Qasmi et al., 2022; Silinskas et al., 2020; Sucena, 2023; Tariman, 2022).

Given these challenges, there is a clear gap in the literature on how literacy can be enhanced at the Kindergarten education level, which serves as the primary educational level, especially in the local context of the Schools Division Office of Nueva Vizcaya. Responding to the Department of Education's call, the division encourages schools to explore relevant strategies to achieve desirable literacy performance outcomes, especially in reading. While existing studies emphasize the wide acceptance of the Marungko reading approach as a potential reading intervention to raise literacy performance among learners, the local studies usually considered non-Kindergarten learners. The reviewed studies considered Grade I to Grade III learners who underwent contextualized reading intervention using the approach.

To address these gaps, the present study explores the development and validation of the researcher-developed reading intervention material employing the principles of the Marungko approach to improve the beginning reading skills of kindergarten learners in the Schools Division Office of Nueva Vizcaya. Also, this study aims to determine and compare the beginning reading performance of kindergarten learners before and after using the validated researcher-developed reading intervention material to establish the intervention material's effectiveness.

2.0 Methodology

2.1 Research Design

This study employed a descriptive-comparative research design. In this study, the reading performance levels of the Kindergarten learners in producing letter sounds, identifying letter names, reading familiar words, and reading phrases/sentences are described before and after the conduct of the intervention activities using the designed intervention material. Descriptive statistics is employed to determine the acceptability of the designed intervention material as evaluated by the learning area experts. Statistical comparison between the pre-and post-intervention performance is also done to assess the potential of the designed intervention material.

2.2 Research Participants

The study's participants included 32 Kindergarten learners from a private school in Solano, Nueva Vizcaya. They have their respective informed assent through their parents or legal guardians to participate in the study. The learners underwent a two-week reading intervention using the developed intervention material. Also, the study involved three early childhood education teachers who were purposely selected and have expressed their consent to compose the group of evaluators to evaluate the developed intervention material for the Kindergarten learners based on the Department of Education's standards. The teacher-participants are from Solano District and have handled learners in Key Stage 1 for at least seven years.

2.3 Research Instrument

The study utilized a three-part researcher-made test to evaluate the Kindergarten learners' performance levels in producing letter sounds, identifying letter names, reading familiar words, and reading phrases/sentences. The first part of the researcher-made test considers six letter cards composed of the uppercase and lowercase format of the first three letters introduced in the Marungko reading approach for beginning reading. Each card bears one letter in either uppercase or lowercase format, which will be shown to the learners so they can produce the sounds and names. The second part of the test uses a set of ten flash cards. In each card is a Tagalog word formed from a combination of the letters Mm, Ss, and Aa, like "masa, ama, and mas," which are relevant to the daily context of the learners. The third part of the test uses five phrase cards. In each card is a phrase from the combination of the words initially shown in the second part of the test, such as "*sasama sa ama.*"

The researcher-made test underwent content validation and was subsequently tested for reliability using Cronbach's alpha. In its content validation, three teachers with at least five years of experience handling Kindergarten learners initially evaluated the test instrument before its pilot testing. The pilot test involving 34 Kindergarten learners yielded a Cronbach's alpha of .829 for letter identification and sound production, .885 for word reading, and .877 for phrase/sentence reading. In addition to the researcher-made test, the evaluation form introduced by the Department of Education – Learning Resources Management and Development Section (LRMDS) for teacher-developed print instructional material was adopted to establish the validity of the researcher-developed reading intervention material. This four-part evaluation tool looks into the material's content, format, presentation, organization, and accuracy, which is rated using a four-point Likert scale.

2.5 Data Gathering and Analysis Procedure

In the reading performance assessment of the Kindergarten learners, the learners were assessed individually using the three-part researcher-made test to evaluate the Kindergarten learners' performance levels in producing letter sounds, identifying letter names, reading familiar words, and reading phrases/sentences before and after the two-week group intervention. Mean score, mean percent score and qualitative descriptions were used to provide a comprehensive view of the performance levels and evaluation of the intervention material. In interpreting the performance levels of the Kindergarten learners across the competencies being assessed, the following qualitative descriptions from DepEd Order No. 31 s. 2012 were adopted. Specifically, the qualitative descriptions are beginning (74% and below), developing (75-79%), approaching proficiency (80-84%), proficient (85-89%), and advanced (90% and above).

The existing Department of Education guidelines in evaluating learning resource materials were used to validate the researcher-made reading intervention material. Three local experts in Kindergarten education evaluated the reading intervention material. The following qualitative descriptions for the acceptability of the material are adopted from the Guidelines and Processes for LRMDS Assessment and Evaluation (DepEd, 2009), which include

very satisfactory (3.50-4.0), satisfactory (2.50-3.49), poor (1.5-2.49), and not satisfactory (1.0-1.49). In each component, the material is evaluated as either passed or failed. For the resource material to pass in each component, it must score 21-28 in content, 54-72 in format, 15-20 in presentation and organization, and 24 in accuracy of information. The Kindergarten learners' performance levels across the competencies before and after using the researcher-made reading intervention material were statistically compared using the t-test for dependent samples to determine if a significant difference exists.

2.6 Ethical Considerations

The procedures in this study adhered to ethical research guidelines set by the Department of Education-Schools Division Office of Nueva Vizcaya and the participating school. After obtaining clearance to conduct the study from the school administration, informed assent was obtained from the Kindergarten learners through their parents or legal guardians. Consent from the parents or legal guardians was also secured. Likewise, consent from the three local validators of the reading intervention material was secured before they participated in the study. To protect their privacy and confidentiality, all collected data were meticulously anonymized, with no personally identifiable information disclosed in the research findings. Their responses were utilized within the bounds of the study. Participants were also explicitly informed of the voluntary nature of their participation and their unconditional right to withdraw from participating without facing any consequences at any phase of the study.

3.0 Results and Discussion

3.1 Pre-Intervention Performance of the Kindergarten Learners

Before the intervention, the Kindergarten learners' performance levels in producing letter sounds, identifying letter names, reading familiar words, and reading phrases/sentences were assessed, focusing on the letters Mm, Ss, and Aa. Table 1 shows the pre-intervention learners' performance levels in the identified competencies.

Table 1. Pre-intervention performance of the kindergarten learners

Competencies	Mean	Qualitative Description
Producing letter sounds	50.52	Beginning
Identifying letter names	50.52	Beginning
Reading familiar words	53.13	Beginning
Reading phrases/sentences	27.08	Beginning

It can be gleaned from the table that the performance of the Kindergarten learners before the administration of intervention across the competencies is within the beginning level. The learners in this stage struggle and have not yet acquired the foundational knowledge or skills to aid understanding. Among the four competencies assessed, the Kindergarten learners exhibited the lowest performance in reading phrases/sentences with a mean percent score of 27.08% while the highest performance in reading familiar words with a mean percent score of 53.13%. The learners have equal performance levels in producing letter sounds and identifying letter names, with a mean percent score of 50.52%.

The pre-intervention reading performances of the Kindergarten learners across the competencies considered are within the same level observed in the 2022 Early Language, Literacy, and Numeracy Assessment performance of the Schools Division Office of Nueva Vizcaya. Among the learning domains of English, Filipino and Mother Tongue, the Key Stage 1 learners performed least in grammar and in reading with comprehension (Schools Division Office of Nueva Vizcaya, 2024). This outcome is similar to the 2022 Program for International Student Assessment result. The Philippines scored less than the Organisation for Economic Co-operation and Development (OECD) average in reading, mathematics, and science. Among the three fields, Filipino learners had the lowest performance in reading, with a mean score of 347 (OECD, 2023). With these outcomes, the need to explore contextualized developmentally appropriate interventions is emphasized from the national to the classroom levels. These instructional strategies are necessary to promote foundational literacy at the earliest stage of education (Abayan et al., 2021; Qasmi et al., 2022; Silinskas et al., 2020; Sucena, 2023; Tariman, 2022).

3.2 Evaluation of the Researcher-Developed Intervention Material

In developing the reading intervention material, the principles of the Marungko approach to improving reading skills were considered, focusing on producing letter sounds, identifying letter names, reading familiar words, and reading phrases/sentences using the letters Mm, Ss, and Aa. Furthermore, the resource material considered

principles of fostering a positive school climate to improve literacy performance through developmentally appropriate practices. Three learning area experts evaluated the researcher-developed reading intervention material using the DepEd's guidelines and processes for LRMDs assessment and evaluation of print materials. Table 2 details the consolidated evaluation results of the researcher-developed print intervention material.

Table 2. Consolidated evaluation results of the researcher-developed intervention material

Factors	Mean	Description
A. Content		
1. Content is suitable to the student's level of development.	4	Very Satisfactory
2. Material contributes to the achievement of specific objectives of the subject area and grade/year level for which it is intended.	4	Very Satisfactory
3. Material provides for developing higher cognitive skills such as critical thinking, creativity, learning by doing, inquiry, problem-solving, etc.	4	Very Satisfactory
4. Material is free of ideological, cultural, religious, racial, and gender biases and prejudices.	4	Very Satisfactory
5. Material enhances the development of desirable values and traits such as pride in being Filipino, honesty and trustworthiness, scientific attitude and reasoning, etc.	4	Very Satisfactory
6. Material arouses the interest of the target reader.	4	Very Satisfactory
7. Adequate warning/cautionary notes are provided in topics and activities related to safety and health.	4	Very Satisfactory
Total	28	Passed
B. Format		
1. Prints		
1.1 The size of the letters is appropriate for the intended user.	3	Satisfactory
1.2 Spaces between letters and words facilitate reading.	3.66	Very Satisfactory
1.3 Font is easy to read.	4	Very Satisfactory
1.4 Printing is of good quality (i.e., no broken letters even density, correct alignment, properly placed screen registration).	4	Very Satisfactory
2. Illustrations		
2.1 Simple and easily recognizable	3.66	Very Satisfactory
2.2 Clarify and supplement the text	4	Very Satisfactory
2.3 Properly labeled or captioned (if applicable)	4	Very Satisfactory
2.4 Use realistic/appropriate colors	4	Very Satisfactory
2.5 Attractive and appealing	4	Very Satisfactory
2.6 Culturally relevant	3.66	Very Satisfactory
3. Design and Layout		
3.1 Attractive and pleasing to look at	4	Very Satisfactory
3.2 Simple (i.e., does not distract the attention of the reader)	4	Very Satisfactory
3.3 Adequate illustration of the text	4	Very Satisfactory
3.4 Harmonious blending of elements (e.g., Illustrations and text)	4	Very Satisfactory
4. Paper and Binding		
4.1 The paper used contributes to easy reading.	4	Very Satisfactory
4.2 Its durable binding can withstand frequent use.	3.66	Very Satisfactory
5. Size and Weight of Resource		
5.1 Easy to handle	3.66	Very Satisfactory
5.2 Relatively light	3.66	Very Satisfactory
Total	69	Passed
C. Presentation and Organization		
1. The presentation is engaging, interesting, and understandable.	4	Very Satisfactory
2. There is a logical and smooth flow of ideas.	4	Very Satisfactory
3. Vocabulary level is adapted to the target reader's likely experience and level of understanding.	4	Very Satisfactory
4. The length of sentences is suited to the comprehension level of the target reader.	4	Very Satisfactory
5. Sentences and paragraph structures are varied, and interesting to the target reader.	4	Very Satisfactory
Total	20	Passed
D. Accuracy of Information		
1. There are no conceptual errors.	4	Very Satisfactory
2. There are no factual errors.	4	Very Satisfactory
3. There are no grammatical errors.	4	Very Satisfactory
4. There are no computational errors.	4	Very Satisfactory
5. There is no obsolete information.	4	Very Satisfactory
6. There are no typographical and other minor errors (e.g., inappropriate or unclear illustrations, missing labels, wrong captions, etc.).	4	Very Satisfactory
Total	24	Passed

It can be gleaned from the table above that the teacher-developed reading intervention material has passed the minimum considerations in the four major factors for learning material to be utilized in instruction, which includes the content, the presentation and organization, accuracy, and format. Each subcomponent in the first three identified major factors (i.e., content, presentation and organization, accuracy) is identified to be meeting the standards (very satisfactory). Although the print instructional material generally 'passed' along format, one of its subcomponents was identified to have been 'satisfactorily' met. One of the format's components, namely the font sizes, has to be adjusted based on existing standards to provide a better experience for the target audience. The readability of the information may be significantly enhanced, which can, in turn, lead to an increase in user engagement.

The Guidelines and Processes for LRMS Assessment and Evaluation Manual (DepEd, 2009) states that any material before utilization must pass the requirements or standards in the four components, specifically on content, format, presentation and organization, and accuracy of information. For the resource material to pass the standards, it must score at least 21 points out of a maximum of 28 points in content, at least 54 points out of 72 points in format, and at least 15 out of 20 points. Moreover, the resource material must have a perfect score of 24 points in accuracy of information to pass. Should there be any component where the resource material does not meet the minimum standards, the resource material will undergo revision before utilization.

3.3 Post-Intervention Performance of the Kindergarten Learners

After the intervention using the researcher-designed reading intervention material, the learners' performance levels across the competencies were assessed. Table 3 shows the post-intervention performance of the Kindergarten learners in the identified competencies.

Table 3. Post-intervention performance of the kindergarten learners

Competencies	Mean	Qualitative Description
Producing letter sounds	73.96	Beginning
Identifying letter names	72.92	Beginning
Reading familiar words	81.77	Approaching Proficiency
Reading phrases/sentences	57.56	Beginning

The table above reveals an increase in the performance of Kindergarten learners across the competencies after administering intervention. Among the performance levels of the Kindergarten learners, their performance in reading familiar words elevated to approaching proficiency level with a mean percent score of 81.77%. The learners at this level have developed the basic knowledge and skills with foundational understanding. With this performance level, the learners still need guidance from the teacher and assistance from their peers to apply their knowledge and skills in authentic performance tasks.

Though increases in performance scores are noted, the learners are still within the beginning level in terms of producing letter sounds (mean percent score=73.96%), identifying letter names (mean percent score=72.92%), and reading phrases/sentences (mean percent score=57.56%). The utilization of developmentally appropriate intervention resource material using the Marungko approach is effective in developing reading skills among Kindergarten learners. The increase in the performance results share with the findings in the studies of Alauya & Basmayor (2023), Balgua et al. (2022), Boltron & Ramos (2021), Canaveral et al. (2023), and Santos & De Vera (2020).

3.4 Comparison of the Pre- and Post-Intervention Performances of the Kindergarten Learners

The Kindergarten learners' performance levels across the competencies before and after using the researcher-made reading intervention material were statistically compared to determine if a significant difference exists. The results of the statistical comparison are shown in Table 4.

Table 4. Comparison of the pre- and post-intervention kindergarten learners' performances

	Mean Difference (Pre-Post)	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference		t	df	Sig. (2-tailed)
				Lower	Upper			
Producing letter sounds	-1.41	0.797	0.140	-1.693	-1.118	-9.97	31	.000
Identifying letter names	-1.34	0.700	0.123	-1.596	-1.091	-10.8	31	.000
Reading familiar words	-1.72	1.113	0.196	-2.120	-1.317	-8.72	31	.000
Reading phrases/sentences	-1.47	0.621	0.109	-1.692	-1.244	-13.3	31	.000

Based on the previous table, the Kindergarten learners' performance levels are within the 'beginning' level, specifically in producing letter sounds, identifying letter names, and reading phrases and sentences. Meanwhile, the learners achieved approaching proficiency level in reading familiar words. Although the Kindergarten learners are within these levels, the table above shows the existence of statistically significant differences in the performance levels of the Kindergarten learners across competencies before and after the intervention phase. Specifically, the $p\text{-value} < 0.001$ at a 0.05 level of significance highlights the significance of the gain scores that the learners had when their pre-intervention performance was compared with their post-intervention performance.

For the gain scores, the highest increase is observed in the learners' performance on reading familiar words, with a mean gain score of 1.72, while the least is on identifying letter names, with a mean gain score of 1.34. This is followed by the learners' performance on reading phrases/sentences (1.72) and producing letter sounds (1.41).

Using the researcher-made intervention material focusing on letters Mm, Ss, and Aa allowed the learners to develop the necessary reading skills appropriate to their grade level, from producing letter sounds to reading phrases and sentences. With the consideration of developmentally appropriate practices, the Marungko approach can be maximized to help the early grade learners to develop foundational literacy, which is a cornerstone of academic success in higher grade levels (Alauya & Basmayor, 2023; Balgua et al., 2022; Boltron & Ramos, 2021; Canaveral et al., 2023; Santos & De Vera, 2020). As one of the essential skills of functional literacy, reading is a sequential process that should start within the early years of education and should be mastered with full appreciation (Abbas, 2019; Agustina, 2016; Bektas & Horzum, 2012; Mutiani, 2021).

4.0 Conclusion

The reading performance of the Kindergarten learners in the first phase considering letters Mm, Ss, and Aa improved using the Marungko approach-based researcher-made intervention material after the two-week intervention. The pre-test performance of the learners in producing letter sounds, identifying letter names, reading familiar words, and reading phrases/sentences significantly improved after using the designed intervention material based on the post-test results. These findings emphasize the significance of employing developmentally appropriate practices in developing intervention materials toward improving foundational literacy. Further, the study highlights the necessity of evaluating the learning intervention materials to ensure compliance with the Department of Education's standards before utilization.

5.0 Contributions of Authors

The author confirms sole responsibility for the study conception and design, data gathering, and manuscript preparation. For the data analysis and interpretation of results, the author worked with a local expert in statistical analysis to ensure the appropriateness of the data analysis procedures.

6.0 Funding

No specific grant from any public, private, or nonprofit funding organization was obtained for this study.

7.0 Conflict of Interests

To prevent any conflicts of interest, the researcher established certain protocols beforehand. The researcher collected data and analyzed the data impartially by remaining neutral and having no direct affiliations with the participating learners, and local validators.

8.0 Acknowledgment

The author extends her gratitude to the research participants and to the individuals who assisted in the statistical analysis of the data to ensure impartiality and accuracy of results, and in editing of the manuscript.

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