ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26apr1077

Effectiveness of the MARS Approach in Developing Alphabet Knowledge Mastery Among Grade One Pupils

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Publication Date: 2026/04/29

Abstract: This study determined the effectiveness of the MARS Approach compared to the Traditional Approach in developing alphabet knowledge mastery among Grade One pupils. An experimental research design was employed involving 26 pupils identified with low-level alphabet mastery. Participants were divided into experimental and control groups. An adapted Catch Them Early Alphabet Mastery Test assessed letter naming, sounding, matching, and writing. Results showed both groups improved significantly; however, the MARS group achieved full alphabet mastery while the Traditional group reached near mastery. Statistical analysis using Wilcoxon Signed-Rank and Mann–Whitney U tests revealed significant differences in favor of the MARS approach. The findings support the use of multi-sensory strategies in early literacy instruction.

Keywords: *MARS Approach, Alphabet Knowledge, Early Literacy, Experimental Research, Grade One Pupils.*

How to Cite: Marcelinda Marpa (2026) Effectiveness of the MARS Approach in Developing Alphabet Knowledge Mastery Among Grade One Pupils. *International Journal of Innovative Science and Research Technology*, 11(4), 2440-2445. https://doi.org/10.38124/ijisrt/26apr1077

I. INTRODUCTION

Early literacy development remains a central priority in educational systems worldwide, as foundational reading skills acquired in the primary grades significantly influence long-term academic achievement. Among these foundational skills, alphabet knowledge—which includes letter naming, letter sounding, letter matching, and letter writing—has been consistently identified as a strong predictor of reading proficiency (Piasta and Wagner 10; Kim et al. 320). Research indicates that children who demonstrate mastery of alphabet knowledge in the early grades are more likely to develop efficient decoding skills and reading fluency (Foulin 125).

Recent advances in reading science emphasize that alphabet learning must extend beyond memorization of letter names toward systematic instruction in letter–sound correspondence and structured writing practice. The National Early Literacy Panel's framework continues to inform contemporary literacy research, highlighting alphabet knowledge and phonological awareness as core precursors of reading success (Shanahan and Lonigan 4). More recent syntheses reinforce that systematic phonics instruction produces significant improvements in early word reading and spelling, particularly in kindergarten through Grade 2 (Ehri 22; Castles et al. 5).

Explicit phonics instruction strengthens children's ability to map graphemes to phonemes, a critical process in decoding (Ehri 25). According to Castles, Rastle, and Nation, instruction grounded in the cognitive science of reading is most effective when it explicitly teaches the relationships between letters and sounds (12). Such findings suggest that early alphabet instruction must incorporate structured opportunities for pupils to read, sound, and write letters rather than rely solely on rote memorization.

In addition to systematic phonics, research supports the integration of multisensory instructional approaches in early literacy. Multisensory strategies engage visual, auditory, tactile, and kinesthetic modalities to reinforce learning and memory retention (Birsh and Carreker 115). Neuro-educational research suggests that engaging multiple sensory pathways enhances neural connectivity associated with language and literacy processing (Hruby and Goswami 180). Structured manipulation of letter materials, tracing activities, and movement-based learning tasks have been shown to strengthen letter recognition and letter formation among young learners (James and Engelhardt 42).

Another growing body of literature highlights the relationship between music, rhythm, and early literacy development. Musical training has been associated with improvements in phonological awareness and auditory discrimination skills, both of which support letter–sound learning (Gordon et al. 12; Tierney and Kraus 15). Degé and Schwarzer found that children who participated in structured music programs demonstrated greater gains in phonological

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26apr1077

awareness than those in control groups (110). More recent meta-analytic findings suggest that music-based interventions can enhance early literacy-related skills (Sala and Gobet 18). However, while music has been linked to phonological development, relatively few experimental studies have directly examined its effect on measurable alphabet mastery outcomes such as letter naming, matching, and writing.

Within multilingual and developing country contexts, there is increasing recognition of the need for culturally responsive and contextually grounded literacy instruction. Research in Southeast Asian classrooms indicates that early grade learners benefit from structured phonics-based instruction adapted to local language contexts (Abadzi 2). However, empirical studies evaluating integrated multisensory and music-based alphabet instruction in Filipino Grade One classrooms remain limited. Many classroom practices continue to reflect traditional teacher-centered instruction, characterized by repetition and copying activities, with limited engagement of interactive and multisensory strategies.

The MARS (Manipulating Materials, Alpabasa Song Singing, Reading and Sounding Letters) Approach was conceptualized to address this gap. By combining hands-on letter manipulation, culturally relevant alphabet song singing, systematic instruction in letter–sound correspondence, and guided letter writing practice, the approach seeks to enhance mastery of alphabet knowledge through multiple learning pathways. Although international research supports each individual component of the MARS approach, there remains a lack of quantitative studies examining their integrated implementation in Filipino Grade One classrooms using structured assessment tools. Therefore, this study aims to determine the effectiveness of the MARS approach compared with the traditional approach in developing mastery of alphabet knowledge among Grade One pupils.

➢ *Theoretical Framework*

This study is anchored on several theories that explain the cognitive and pedagogical foundations of early literacy development.

- *Ehri's Phase Theory of Word Reading*

This study is anchored on Linnea Ehri's Phase Theory of Word Reading Development, which explains how children acquire word reading skills through progressive mastery of alphabet knowledge and letter–sound correspondences. The theory posits that reading development occurs in qualitatively distinct phases, each characterized by increasing reliance on alphabetic principles and orthographic mapping.

Ehri proposed that children move through four developmental phases: pre-alphabetic, partial alphabetic, full alphabetic, and consolidated alphabetic (154). In the pre-alphabetic phase, learners rely on visual cues rather than letter–sound relationships. In the partial alphabetic phase, learners begin to use limited letter–sound knowledge, typically focusing on initial or final consonants. Advancement to the full alphabetic phase occurs when learners can systematically map graphemes to phonemes and blend sounds to decode unfamiliar words. Finally, in the consolidated alphabetic phase, readers recognize larger spelling patterns, such as syllables and morphemes, enabling automaticity and fluency.

Central to this theory is orthographic mapping, a cognitive process through which readers permanently store written words in long-term memory by connecting letter sequences to their corresponding sounds and meanings (Ehri, "Orthographic Mapping" 5). This process depends heavily on two foundational skills: alphabet knowledge and phonemic awareness. Without mastery of letter names and sounds, learners cannot efficiently build a robust sight-word vocabulary.

The relevance of Ehri's Phase Theory to the present study lies in its emphasis on alphabet knowledge as a prerequisite to proficiency. Learners with low-level alphabet mastery are likely functioning within the pre-alphabetic or partial alphabetic phases. This framework supports the assumption that strengthening alphabet knowledge through the MARS approach facilitates the transition to the full alphabetic phase. Furthermore, Ehri's theory aligns with the "Simple View of Reading" which asserts that reading comprehension is the product of decoding and linguistic comprehension (Gough and Tunmer 7).

- *Multisensory Learning Theory*

According to Ladan Shams and Aaron Seitz, learning improves when multiple sensory systems—visual, auditory, tactile, and kinesthetic—are activated simultaneously (416). The MARS approach aligns with this theory by integrating hands-on manipulation of materials with auditory song and visual letter recognition.

- *Sociocultural Theory*

From a Vygotskian perspective, learning occurs through social interaction and guided scaffolding. The structured instruction and collaborative singing activities within the MARS approach reflect this orientation, where the teacher provides the necessary support for pupils to reach their "zone of proximal development" (Vygotsky 86).

- *Culturally Responsive Pedagogy*

Instruction becomes more effective when connected to learners' cultural and linguistic backgrounds (Gay 22). The "Alpabasa Song" component of the MARS approach supports culturally contextualized literacy learning, making the abstract concept of the alphabet more accessible to Filipino learners.

➢ *Statement of the Problem*

This study aims to determine the effectiveness of the MARS (Manipulating Materials, Alpabasa Song Singing, Reading and Sounding Letters) Approach compared to the Traditional Approach in developing alphabet knowledge mastery among Grade One pupils with low-level alphabet mastery at Marciano Abela Elementary School. Specifically, this study seeks to answer the following questions:

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26apr1077

- What is the level of alphabet knowledge mastery of the pupils under the MARS Approach before and after the intervention in terms of: (a) letter naming; (b) letter sounding; (c) letter matching; and (d) letter writing?
- What is the level of alphabet knowledge mastery of the pupils under the Traditional Approach before and after the intervention in terms of: (a) letter naming; (b) letter sounding; (c) letter matching; and (d) letter writing?
- Is there a significant difference between the pretest and posttest scores of the pupils under the MARS Approach in terms of letter naming, sounding, matching, and writing?
- Is there a significant difference between the pretest and posttest scores of the pupils under the Traditional Approach in terms of letter naming, sounding, matching, and writing?
- Is there a significant difference between the posttest scores of the pupils exposed to the MARS Approach and those exposed to the Traditional Approach in terms of letter naming, sounding, matching, and writing?

➢ *Null Hypotheses*

Based on the research questions presented, the following null hypotheses (H_o) were formulated and tested at a .05 level of significance:

- There is no significant difference between the pretest and posttest scores of the pupils under the MARS Approach in terms of letter naming, letter sounding, letter matching, and letter writing.
- There is no significant difference between the pretest and posttest scores of the pupils under the Traditional Approach in terms of letter naming, letter sounding, letter matching, and letter writing.
- There is no significant difference between the posttest scores of the pupils exposed to the MARS Approach and those exposed to the Traditional Approach in terms of letter naming, letter sounding, letter matching, and letter writing.

➢ *Scope and Limitations of the Study*

This study focuses on determining the effectiveness of the MARS Approach compared to the Traditional Approach in improving alphabet knowledge mastery among Grade One pupils at Marciano Abela Elementary School. The participants consist of twenty-six (26) Grade One pupils identified as having low-level alphabet mastery based on screening assessment results. The pupils are divided into two groups: thirteen (13) pupils assigned to the MARS Approach (experimental group) and thirteen (13) pupils assigned to the Traditional Approach (control group).

The study employs a quasi-experimental pretest–posttest control group design. Alphabet knowledge is measured using an adapted Catch Them Early (CTE) Alphabet Mastery Test, which assesses letter naming, letter sounding, letter matching, and letter writing. The intervention is implemented during the first quarter of the school year 2023–2024. While the MARS Approach integrates manipulating materials, Alpabasa song singing, explicit reading and sounding of letters, and guided writing activities, the Traditional Approach follows the standard classroom method of alphabet instruction commonly practiced in the school.

The findings of this study are limited to the twenty-six (26) identified pupils and may not be generalized to other Grade One learners, schools, or grade levels. The relatively small sample size may affect statistical power and generalizability. Additionally, differences in individual learner characteristics, home literacy support, and classroom environment may influence outcomes. The duration of the intervention may also limit the long-term conclusions regarding the retention of alphabet mastery. Despite these limitations, the study aims to provide empirical evidence on the comparative effectiveness of a structured multisensory and culturally responsive approach versus traditional instruction for learners with low-level alphabet mastery.

➢ *Definition of Terms*

The following terms are defined operationally as they are used in this study:

- Alphabet Knowledge. The measurable ability of pupils to correctly name, sound, match, and write letters as assessed through the adapted Catch Them Early (CTE) Alphabet Mastery Test.
- Catch Them Early (CTE). A diagnostic assessment tool adapted by the researcher to measure alphabet mastery across four domains: letter naming, sounding, matching, and writing.
- Letter Matching. The cognitive and motor ability of pupils to correctly pair uppercase letters with their corresponding lowercase counterparts during the assessment.
- Letter Naming. The ability of pupils to correctly identify and verbally state the conventional name of presented alphabet letters.
- Letter Sounding. The ability of pupils to correctly produce the specific phonetic sound associated with each presented grapheme.
- Letter Writing. The ability of pupils to correctly form and produce written letters through dictation or visual prompts.
- Low-Level Alphabet Mastery. A classification for pupils identified through screening assessments as performing at or below 35% proficiency (a score of 0–9) in alphabet knowledge prior to the intervention.
- MARS Approach. A structured instructional framework integrating Manipulating materials, Alpabasa song singing, Reading and sounding letters, and guided writing activities.
- Traditional Approach. The conventional method of alphabet instruction characterized by teacher-led drills, rote repetition, and oral recitation without the integration of multisensory materials.

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26apr1077

II. METHODOLOGY

➢ *Research Design*

This study utilized a quasi-experimental pretest–posttest control group design. This approach was selected because it allows for the comparison of learning gains between an experimental group and a control group within a natural classroom setting where full randomization was not feasible. The experimental group was exposed to the MARS Approach, while the control group received traditional instruction. Both groups underwent identical pretest and posttest assessments to identify improvements in within-group performance and to compare the overall effectiveness of the two instructional methods.

➢ *Participants of the Study*

The participants consisted of twenty-six (26) Grade One pupils from Marciano Abela Elementary School identified as having low-level alphabet mastery based on initial screening. The pupils were divided into two comparable groups: thirteen (13) pupils assigned to the MARS Approach (experimental group) and thirteen (13) pupils assigned to the Traditional Approach (control group).

➢ *Research Instruments*

The primary tool was an adapted Catch Them Early (CTE) Alphabet Mastery Test. Originally a diagnostic tool for foundational reading, this version was adapted to include the letters Ñ and NG, reflecting the 28 letters of the Filipino alphabet.

- *Reliability and Validity*

The instrument demonstrates content validity as it directly measures the 28 specific graphemes pupils are expected to master. Reliability is maintained through standardized individual administration, ensuring that each pupil is assessed using identical criteria. Scores were interpreted using the following mastery scale:

Table 1 Alphabet Mastery Level Interpretation

Score Range	Percentage	Interpretation
24–28	86%–100%	Full Alphabet Mastery
18–23	64%–85%	Near Mastery
10–17	36%–63%	Developing Alphabet Knowledge
0–9	0%–35%	Low Alphabet Mastery

➢ *Data Collection Procedure*

Data collection occurred in three phases during the first quarter of the 2023–2024 school year. First, a pretest was administered individually to establish a baseline. Second, the interventions were implemented: the experimental group engaged in the MARS Approach (multisensory manipulation, Alpabasa song, and guided writing), while the control group followed the Traditional Approach (teacher-led drills and oral recitation). Finally, the same adapted CTE test was administered as a posttest. All scores were recorded and organized for statistical comparison.

➢ *Statistical Treatment of Data*

The gathered data were analyzed at a 0.05 level of significance using the following tools:

- Mean and Mean Percentage Scores (MPS): Used to describe the baseline and final levels of alphabet mastery.
- Wilcoxon Signed-Rank Test: Employed to determine if there was a significant difference between the pretest and posttest scores within each group. This nonparametric test is ideal for related samples that do not assume normal distribution.
- Mann–Whitney U Test: Used to compare the posttest scores between the experimental and control groups to identify which approach yielded significantly higher gains.

➢ *Ethical Considerations*

Parental consent was obtained prior to participation, and the confidentiality of all pupil data was strictly maintained. The study was conducted without interfering with regular instructional requirements, ensuring all participants received curriculum-standard literacy support.

III. RESULTS AND DISCUSSION

The primary objective of this study was to evaluate the effectiveness of the MARS Approach in comparison to the Traditional Approach. The data reveal significant gains for both groups, but with a distinct advantage for those exposed to the multisensory and song-based MARS intervention as shown in Table 2.

Table 2 MARS Group Performance (Pretest and Posttest)

Skill	Pretest MPS	Posttest MPS	Interpretation
Letter Naming	60.71	97.53	Developing → Mastery
Letter Sounding	56.59	97.80	Developing → Mastery
Letter Matching	70.60	97.53	Near Mastery → Mastery
Letter Writing	62.91	96.15	Developing → Mastery
Overall	62.71	97.25	Developing → Mastery

As shown in Table 2, pupils in the MARS group moved from a "Developing" level of alphabet knowledge to "Full Mastery" in every sub-skill. Notably, letter sounding saw the most significant growth, jumping from 56.59 to 97.80. This suggests that the MARS approach successfully moved students from the partial-alphabetic phase toward the full-alphabetic phase (Ehri 15).

Table 3 Traditional Group Performance (Pretest and Posttest)

Skill	Pretest MPS	Posttest MPS	Interpretation
Letter Naming	57.97	84.07	Developing → Near Mastery
Letter	55.22	82.14	Developing → Near

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26apr1077

Sounding			Mastery
Letter Matching	73.08	94.78	Near Mastery → Mastery
Letter Writing	61.81	82.69	Developing → Near Mastery
Overall	62.02	85.92	Developing → Near Mastery

Pupils in the Traditional group also showed improvement (Table 3), moving from "Developing" to "Near Mastery." However, unlike the MARS group, they only achieved full mastery in one area: letter matching. Their overall posttest MPS (85.92) remained below the threshold for full mastery, indicating that while traditional drills provide some benefit, they may not be sufficient for pupils starting with low-level alphabet knowledge.

➢ *Statistical Significance and Comparative Analysis*

To determine the statistical significance of these improvements, a Wilcoxon Signed-Rank Test was conducted. For the MARS group (Table 4), all skill areas yielded a *p*-value of 0.001 or 0.002, leading to the rejection of the null hypothesis.

Table 4 Wilcoxon Signed-Rank Test for MARS Group

Skill	Z-value	p-value	Decision	Interpretation
Letter Naming	-3.36	0.001	Reject H_o	Significant Improvement
Letter Sounding	-3.36	0.001	Reject H_o	Significant Improvement
Letter Matching	-3.36	0.001	Reject H_o	Significant Improvement
Letter Writing	-3.06	0.002	Reject H_o	Significant Improvement

Similarly, the Traditional group (Table 5) showed significant improvements ($p < 0.05$). These results confirm that both interventions positively impacted student learning.

Table 5 Wilcoxon Signed-Rank Test for Traditional Group

Skill	Z-value	p-value	Decision	Interpretation
Letter Naming	-3.36	0.001	Reject H_o	Significant Improvement
Letter Sounding	-3.36	0.001	Reject H_o	Significant Improvement
Letter Matching	-3.36	0.001	Reject H_o	Significant Improvement
Letter Writing	-2.61	0.009	Reject H_o	Significant Improvement

However, the Mann–Whitney U Test (Table 6) highlights the superiority of the MARS approach. With a mean rank of 17.54 for the MARS group compared to 9.46 for the Traditional group ($p = 0.007$), the difference in posttest performance is statistically significant.

Table 6 Mann–Whitney U Test for Posttest Scores (MARS vs Traditional)

Group	Mean Rank	U-value	p-value	Decision
MARS Approach	17.54	36.50	0.007	Reject H_o
Traditional Approach	9.46			

The findings suggest that the MARS Approach's integration of multisensory strategies—visual, auditory, tactile, and kinesthetic—enhanced neural connectivity and retention (Shams and Seitz 416). By using the Alpabasa song and material manipulation, the MARS group likely developed stronger orthographic mapping than the Traditional group, who relied on rote repetition. The culturally relevant components of the MARS approach also appeared to increase engagement, which is critical for learners in developing country contexts (Abadzi 2). In summary, while both methods are effective, the MARS approach provides the structured, multisensory reinforcement necessary to achieve full alphabet mastery among Grade One pupils.

IV. CONCLUSION AND RECOMMENDATIONS

➢ *Conclusion*

The results of this study provide empirical evidence that while traditional instructional methods contribute to alphabet knowledge, the integration of multisensory and culturally relevant strategies yields superior mastery. Prior to the intervention, Grade One pupils in both groups demonstrated "Developing" levels of alphabet knowledge, struggling particularly with letter sounding and letter writing. Following the intervention, both groups showed significant statistical improvement; however, only the MARS group achieved "Full Mastery" across all assessed components.

The findings lead to the conclusion that the MARS Approach—by activating multiple sensory pathways and utilizing culturally familiar songs—facilitates a more robust transition through Ehri's phases of reading development. The approach proved particularly effective in improving letter sounding, which is a critical precursor to decoding. This suggests that for learners identified with low-level alphabet mastery, a structured, multisensory approach is more effective than rote repetition in ensuring foundational literacy success.

➢ *Recommendations*

Based on the findings and conclusions of this study, the following recommendations are offered: For Grade One Teachers: Educators should consider adopting the MARS Approach or similar multisensory strategies—integrating song, manipulation of materials, and guided writing—to support learners who struggle with traditional alphabet instruction. Moving beyond rote memorization to systematic letter–sound correspondence is essential. For School Administrators: Schools should provide professional development workshops for early grade teachers focusing on

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26apr1077

the implementation of multisensory and culturally responsive literacy interventions. Furthermore, the procurement or creation of tactile letter materials and localized musical resources should be supported. For Curriculum Developers: The success of the "Alpabasa Song" suggests that incorporating localized and culturally relevant content into the national literacy framework can enhance pupil engagement and retention in Filipino classrooms. For Future Researchers: This study was limited to a small sample size (N=26) at a single school. Future research should involve a larger, more diverse participant pool to enhance generalizability. Additionally, longitudinal studies could examine the long-term effects of the MARS Approach on subsequent reading fluency and comprehension levels as these pupils progress to higher grades.

ACKNOWLEDGMENT

I would like to express my deepest gratitude to the individuals who contributed to the successful completion of this study. First and foremost, I extend my heartfelt appreciation to my research professor, Dr. Arra Q. Abaniel, whose expertise, patience, and unwavering support were instrumental to this endeavor. Her guidance in statistical analysis and her valuable suggestions significantly improved the logical flow and quality of this manuscript.

I am also sincerely grateful to the Iba District Research Evaluation Committee, including Mr. George P. Acupan, Iba District Supervisor; Mr. Joey E. Caasi, District Research Manager; and Mr. John Arex M. Ocampo, Head Teacher III, for their constructive feedback and insightful recommendations. Their comments were vital in refining the study's overall quality.

Special thanks are extended to Mr. Joel A. Alvior, Head Teacher III of Marciano Abela Elementary School, for granting permission to conduct this research. I also recognize the teachers and pupils of Marciano Abela Elementary School; their cooperation and active participation made the data collection process possible.

I am deeply thankful to my family and loved ones for their constant encouragement, understanding, and moral support throughout this academic journey. Finally, I offer my deepest praise to the Almighty God for providing the strength, wisdom, and perseverance necessary to complete this work.

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