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Empowering Grade One Struggling Readers: The PAS and Multimedia Approach to Reading Intervention Success

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Abstract: The current study investigated the impact of Phonic Analysis and Synthesis (PAS) combined with a Multimedia Approach on the reading proficiency of first-grade poor readers at the Mindanao State University-Integrated Laboratory School (MSU-ILS). The program's September 2023 launch primarily focused on making it easier for beginner readers to overcome their reading difficulties, achieved through a combination of systematic phonics instruction and various multimedia resources. The intervention focused on both phoneme segmentation and synthesis, combining the practices of decoding and word recognition with watching videos, listening to audio materials, and using digital learning tools. A pre-test–post-test research design was employed to evaluate changes in spelling, vocabulary, and reading comprehension. The pre-tests were conducted in the first quarter, while the post-tests took place in the fourth quarter of the school year. Through statistical analysis, it was determined that there was a significant difference between the mean scores of the pre-test and post-test ($p < .05$), indicating a notable improvement in the children's reading skills after they underwent the intervention. The results suggest that the PAS method can be highly effective in teaching young children the fundamentals of reading when combined with multimedia instruction. This research contributes to the existing body of knowledge by demonstrating that reading interventions based on phonics, combined with various instructional modes, can be highly effective. Additionally, it emphasizes that early literacy development should be characterized by structured and engaging methods.

Keywords: Reading Intervention, Phonics, Multimedia Learning, Early Literacy, Grade One

1. Introduction

Reading ability is the basis of success in education and learning throughout life. Difficulties in reading, particularly in the early phases, could have a lasting negative influence on children's educational paths. As a result, the researchers took it upon themselves to investigate the situation regarding the reading issue at the Mindanao State University–Integrated Laboratory School (MSU–ILS). A new Reading Intervention Program was introduced on September 16, 2023, at the MSU-Integrated Laboratory School.

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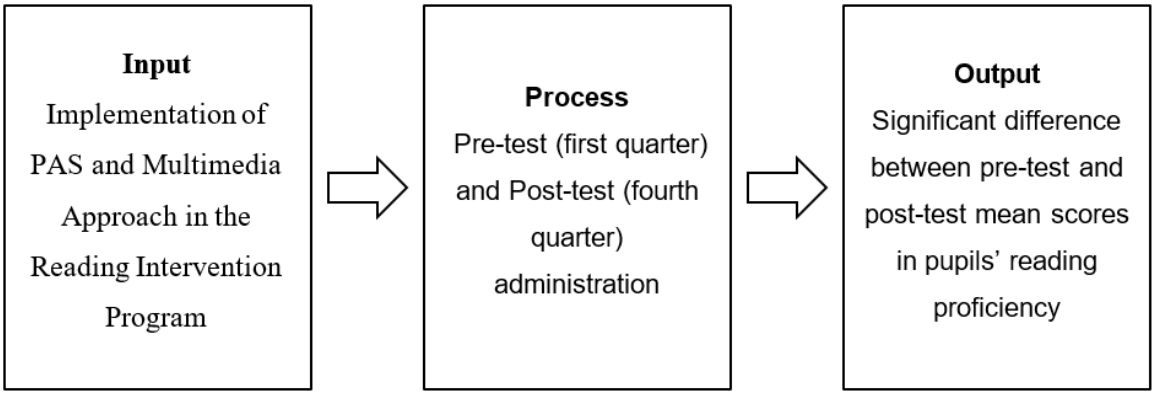
The reading program mainly focused on first graders labeled as poor readers. They would be able to work on their literacy skills by using the phonics strategy Phonic Analysis and Synthesis (PAS) together with a Multimedia Approach. PAS is a phonics strategy based on research, which helps students learn to read by dividing words into their smallest sound units (phonemes) and then joining these sounds to produce the words. Gradually, this processing helps the learner develop phonological skills, read mechanically, and comprehend.

To keep the children's attention and meet the diverse learning needs of the students, the program utilized various types of media. These included video lessons demonstrating how to blend phonemes, digital games that facilitated sound recognition, and pictorial materials that connected sounds with their printed forms. Through the provision of explicit phonics teaching in conjunction with multimedia resources, the intervention offered students various interesting ways to acquire and practice reading skills.

1.1. Theoretical and Conceptual Framework

The research is predominantly grounded in three theoretical approaches. Primarily, the Motivational Theory posits that both intrinsic and extrinsic factors are crucial for students to remain actively involved and devoted to their educational tasks (Slavin, 1988; Deutsch, 1949). Secondly, the Schema Theory emphasizes the importance of existing knowledge and mental frameworks in the reading comprehension process (Rumelhart, 1980). Lastly, the Cognitive Development Theory, influenced by the works of Piaget and Vygotsky, supports learning experiences that are active, scaffolded, age-appropriate, and socially mediated (Johnson, 1990).

Figure 1 presents the study's conceptual framework grounded on the Input–Process–Output (IPO) model.



This research study is important because it entails analyzing the Reading Intervention Program in detail and its effects on first-grade pupils with reading difficulties at MSU–ILS. The program accommodates the differences among students in learning pace, cognitive development, and interests, thus promoting an inclusive approach to early literacy education.

The use of multimedia resources, along with the PAS strategy, not only enhances basic reading skills but also fosters curiosity, motivation, and enjoyment in learning among students. The quality of the readers engaged in the program has undergone a remarkable transformation, as observed by the researchers. The findings also indicate that the use of digital interactive tools, combined with a traditional phonics teaching approach, can significantly enhance literacy skills. This paper aims to communicate these results to teachers, researchers, and decision-makers, and to contribute to the growing body of literature on effective reading interventions. Ultimately, the research highlights the effectiveness of various methods in helping every pupil become a confident, fluent, and passionate reader.

1.2. Scope and Limitation of the Study

This study evaluates the Phonic Analysis and Synthesis (PAS) strategy, integrated with multimedia resources like videos, digital games, audio materials, and interactive tools, to improve spelling, vocabulary, phonetic sounds, and reading comprehension. It targets 37 Grade One struggling readers (non-readers) at Mindanao State University-Integrated Laboratory School (MSU-ILS) in Marawi City, over one academic year (2023-2024) with weekly Friday sessions starting September 2023. A pre-test (first quarter) and post-test (fourth quarter) design, analyzed using paired t-tests and SPSS, examines teacher-applied PAS/multimedia techniques and gains in pupils' reading proficiency.

The study excludes other Grade One sections, including fast, average, and slow readers, focusing solely on non-readers/struggling readers grouped in one classroom receiving the PAS and multimedia intervention. No experimental/control group division was used, restricting causal claims and generalizability.

1.3. Related Literature and Studies

Phonic Analysis and Synthesis (PAS), an effective approach for phonics-based treatments and interventions for struggling readers, has been the subject of several studies.

Johnson and Williams (2018) did a randomized controlled trial to test the hypothesis that the PAS strategy would yield better reading outcomes. The struggling readers were assigned at random to an intervention group that received the PAS or a control group that received regular reading instruction. The PAS group participated in special activities focused on decoding and phonemic awareness. It was found that the CG exhibited a noticeable lag in phonemic awareness, word recognition, and reading rate compared to the PAS group. This means that the PA strategy has become a less popular choice for addressing the literacy needs of struggling readers.

In a positive manner, Brown et al. (2019) examined the long-term impact of PAS-based instruction. The participants underwent testing for phonemic awareness, word recognition, and reading comprehension at various times throughout the experiment: before, during, and three times after the intervention (6 months and 1 year later). The research has shown that reading skills requirements are lasting, and it can be mutually concluded that PAS not only gives instant rewards but also helps gradual literacy development in the future.

In the past, Johnson (1970) considered a Multimedia Approach to reading instruction for second graders of Allegan Public Schools. This particular program incorporated the use of books along with different types of audiovisual resources. Primary source materials were common readers, library books, filmstrips, TV teaching, and a reading lab, and were further supported by students' creative writing, art activities, and a class-made movie. The program, utilizing visual, auditory, and experiential media, yielded notable gains in vocabulary, understanding, and motivation. Johnson maintained that incorporating multimedia components into reading instruction would not only make the books more appealing but also kindle curiosity and establish a lifelong reading habit.

Newer researchers continue to highlight the same advantages of using technology and multimedia in reading interventions. Sabeen et al. (2023) have reported that technology-supported reading interventions for English Language Learners (ELLs) can be customized if learners' needs are assessed through adaptive digital tools, thus enabling students to receive proper help at their own pace. Additionally, the incorporation of interactive elements, such as games and multimedia activities, has been shown to not only increase motivation and enjoyment but also enhance vocabulary development. On the other hand, the authors were very clear in stating that if devices are not provided with the same ease of access to everyone and there is also no digital literacy training, the full benefits of the solution will not be realized.

Martinez (2019) highlighted the data-driven and technology-supported approaches, which were the main focus of his study. He used Istation's Indicators of Individual Progress (ISIP) as the primary tool to identify weak readers and determine interventions. The application of ISIP's adaptive reading curriculum was credited with enhancing comprehension and strategic reading skills among upper

elementary students. Martinez highlighted the importance of supportive school environments in implementing data-based instruction and providing teacher training in educational technologies.

Pre-test identified 23 Grade 1 strugglers as non-readers/emergent; post-test after 2 months of Marungko phonics showed most advanced to instructional/independent levels via Comprehensive Rapid Literacy Assessment (CRLA). Significant gains in word recognition, fluency, and comprehension; t-test confirmed intervention efficacy ($p<0.05$), (Elli et al., 2025). In addition, Grade 1 pupils (n unspecified) started at frustration level pre-test; post-phonics intervention, mean scores rose significantly in reading skills (word attack, comprehension) per standardized tests. Paired t-test: $p<0.001$, no control group needed for action research validation, (Can-avid Central, 2025).

According to Weikert (2018), it is essential to have reading interventions based on scientific evidence that would meet the requirements of all the students. The research results showed that using teaching methods tailored to the individual students and organizing reading groups mainly through guided reading resulted in better reading comprehension than whole-class instruction. The selective pull-out interventions enhanced students' decoding and spelling accuracy, while the integrated whole-to-part methods fostered broader comprehension. Weikert argued that aligning small-group practices with key reading strategies is crucial for enhancing the performance of struggling readers across multiple literacy domains.

Collectively, these studies support a growing consensus that combining structured phonics-based methods such as PAS with multimedia and technology-enhanced instruction can produce meaningful improvements in literacy outcomes. This evidence provides a strong theoretical and empirical foundation for the present study's examination of the PAS and Multimedia Approach in improving the reading proficiency of Grade One struggling readers.

1.4. Research Method and Design

This study employed a pre-test–post-test design to evaluate the effectiveness of the Reading Intervention Program, which integrated the Phonic Analysis and Synthesis (PAS) strategy with a Multimedia Approach. The intervention aimed to enhance pupils' spelling, vocabulary, and reading comprehension skills. During the first quarter of the academic year, pre-test scores were obtained, and at the end of the year (fourth quarter), post-test scores were administered. The statistical analysis revealed a significant difference ($p < .05$) between the pre-test and post-test mean scores, indicating that the reading performance of the students improved as a result of the intervention.

1.4.1. Participants

The initial sample of the research consisted of thirty-seven (37) first-grade pupils from different sections who were identified as struggling readers at the beginning of the 2023-2024 school year. The selection was made based on the outcome of a standardized reading assessment conducted at the beginning of the year. These students demonstrated below-par performance in the areas of decoding, vocabulary, and comprehension, and were therefore considered for the intervention program.

1.4.2. Locale of the Study

The Mindanao State University–Integrated Laboratory School (MSU–ILS) in Marawi City served as the research site. MSU, which was established on September 1, 1961, through Republic Act 1387, has evolved into a comprehensive university system serving a diverse range of learners. The Integrated Laboratory School is a teaching site for education majors and provides comprehensive programs for elementary and secondary education. The majority of its student body consists of children or dependents of MSU workers.

1.4.3. Data Collection

At the time of the intervention and subsequently, numerical evidence was collected through the evaluation of spelling, vocabulary, and reading comprehension. The standardized reading tests used had the purpose of evaluating the most essential literacy skills: phonemic awareness, decoding, reading fluency, and comprehension. The same tests were administered to the subjects both before and after the intervention to ensure the equivalence of the outcomes.

1.4.4. Procedure

The Reading Intervention Program, which merged the PAS strategy with a Multimedia Approach, was implemented throughout an entire academic year. Every Friday, the instructional sessions were held, offering dedicated support to the chosen weak readers. Extra help was provided to the students who needed more reinforcement.

Initially, the researchers used a self-developed pre-test to determine the baseline performance, and subsequently, a post-test was conducted to assess the learning gains at the end of the program. The intervention included phoneme segmentation and blending as its core teaching, along with multimedia support, such as educational videos, digital games, and interactive reading activities, that not only reinforced phonological skills but also comprehension.

1.4.5. Data Analysis

Quantitative data were analyzed using statistical software. Paired t-tests were used to compare pre-test and post-test mean scores and to determine the statistical significance of observed differences. This analytical approach allowed the researchers to measure the extent of improvement in participants' reading skills and to evaluate the overall effectiveness of the PAS and Multimedia Approach.

Overall, the pre-test–post-test design provided a clear and systematic means of assessing the impact of the intervention on the reading proficiency of Grade One struggling readers.

2. Data Analysis Procedure

The conclusions drawn from the participants' scores on the initial reading test, as well as the vocabulary and reading comprehension tests created by the researchers, were analyzed using quantitative data with the aid of the Statistical Package for the Social Sciences (SPSS) software.

Problem 1: Which Phonics Analysis and Synthesis (PAS) methods and Multimedia techniques were employed by the teachers in the Grade One Reading Intervention Program?

Table 1. PAS and Multimedia Approaches Used by Teachers in the Grade One Reading Intervention Program

Teachers	Focus Area	PAS Approaches	Multimedia Approaches
Teacher 1	Phonetic Sounds	- Phoneme segmentation games (e.g., finger tapping, sound mapping) - Phoneme blending and manipulation activities - Use of manipulatives to segment sounds	- Interactive sound walls showing mouth articulation - Digital apps for phoneme isolation and blending - Visual and tactile tools like chips or blocks for sounds

Teacher 2	Vocabulary	- Word construction and deconstruction using phonemes - Phoneme-grapheme connection for building word knowledge - Concept maps linking words with similar sounds	- Multimedia word maps and sound walls - digital vocabulary games with audio cues - Videos demonstrating word usage and meaning in context
Teacher 3	Spelling	- Explicit phoneme segmentation for encoding words - Practice segmenting words into sounds for spelling accuracy - Use of multisensory spelling activities (writing, tapping, visual cues)	- Spelling games and apps with phoneme feedback - Software with dynamic spelling practice and error correction - Use of digital manipulatives to map sounds to letters
Teacher 4	Reading Comprehension	- Integrating phoneme awareness with text decoding practice - Scaffolded comprehension strategies linked to phoneme and word recognition - Use of graphic organizers to connect phonemes to meaning	- Fairytale videos with audio highlighting phonemes and words - Interactive comprehension quizzes with feedback - Multimedia story presentations with watch-read-listen opportunities

The data reported in Table 1 indicate that educators employed a combination of PAS and multimedia approaches to address different literacy areas, including phonetic sounds, vocabulary, spelling, and reading comprehension.

Research Problem 2: Is there a significant difference between the pre-test (first quarter) and post-test (fourth quarter) mean scores of the Grade One pupils in spelling, vocabulary, and reading comprehension?

Table 2. Comparison of Pre-Test and Post-Test Mean Scores in Spelling, Vocabulary, and Reading

		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	posttest	25.7027	37	4.88686	.80339
	pretest	22.2703	37	3.19417	.52512

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	posttest & pretest	37	.870	.000

Paired Sample Test

	Paired Differences						t	dtf	Sig (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	Std. Error Mean	99% Confidence Interval of the Difference				
					Lower	Upper			
Pair posttest 1 pretest	3.43243	2.63038	.432443	.80339	2.55542	4.30945	7.938	37	.000

The Reading Intervention Program led to significant gains in pupils' literacy performance as evidenced by the overall analysis, which revealed $t(37) = 7.94$, $p < .001$. The combination of PAS and Multimedia Approaches had a remarkable impact on the reading proficiency of Grade One struggling readers.

Research Problem 3: Is there an improvement in pupils' reading proficiency levels before and after the intervention in terms of phonetic sounds, vocabulary, spelling, and reading comprehension?

Table 3. t-test of Mean Gain Scores in Phonetic Sounds

Variable	Posttest	Pretest
N	37	37
Mean Score	27.96	10.22
t-Test	-5.233	
p-value	0.0000(s)	

The paired t-test, used to compare pre-test and post-test scores in phonetic sound identification skills, yielded a significant increase, $p < .001$. The finding corroborates the fact that the intervention was successful in enhancing the students' phonological awareness and decoding abilities.

Table 4. t-test of Mean Gain Scores in Vocabulary

Variable	Posttest	Pretest
N	37	37
Mean Score	41.81	18.92
t-Test	-5.218	
p-value	0.0000(s)	

The average score for vocabulary increased considerably from 18.92 (pre-test) to 41.81 (post-test), with $p < .001$. This suggests that the intervention was highly effective in developing students' vocabulary, likely due to the combined application of PAS-based word work and multimedia vocabulary activities.

Table 5. t-test of Mean Gain Scores in Spelling

Variable	Posttest	Pretest
N	37	37
Mean Score	36.09	17.45
t-Test	-5.237	
p-value	0.0000(s)	

The study's outcome indicated a statistically significant improvement in spelling proficiency, $t(37) = -5.24$, $p < .001$. The results obtained can be interpreted to mean that the direct instruction of phoneme segmentation and encoding practice under the PAS approach, in particular, was a powerful factor in the development of children's spelling and word-making abilities.

Table 6. t-test of Mean Gain Scores in Reading Comprehension

Variable	Posttest	Pretest
N	37	37
Mean Score	24.394	20.500
t-Test	-5.720	
p-value	0.0000(s)	

The results of a paired t-test indicated that the post-test comprehension scores were indeed significantly greater than the pre-test ones, $t(37) = -5.72$, $p < .001$. These findings not only affirm the positive effect of the Reading Intervention Program on children's reading comprehension but also endorse the method of combining phonics-based instruction with technology-assisted reading as an effective approach.

3. Conclusion

The research results indicated that the combination of the Phonic Analysis and Synthesis (PAS) strategy and the Multimedia Approach led to a significant enhancement in the reading skills of Grade One slow readers at MSU–ILS. The program focused on phoneme segmentation and synthesis, and the use of multimedia tools led to significant improvements in spelling, vocabulary, phonological awareness, and reading comprehension.

Through statistical analysis, it was found that there were significant gains in all the literacy domains measured, indicating that the intervention has effectively reduced early reading gaps. Besides the academic outcomes, the program seemed to have increased the motivation and self-confidence of the students. All in all, the PAS and Multimedia Approach provide a strong foundation for developing children's literacy skills at an early age and for their long-term academic success.

The findings of the study serve as a basis for the following recommendations to improve and continue reading intervention programs that utilize PAS and Multimedia Approaches:

1. **Curriculum Alignment and Policy Support -** The alignment of early literacy curricula with PAS and multimedia-supported instruction, which are the evidence-based frameworks, is recommended for educational leaders and policymakers. The alignment of these programs with the policies and regulations of the institutions, which include sufficient funding, learning resources, and technological infrastructure, is necessary for the programs to be sustainable and for access to be fair.
2. **Further Research -** The long-term impact of PAS and Multimedia Approaches on reading fluency, comprehension, and learner motivation in different grade levels should be the focus of future research. Involving control or comparison groups in the research would

contribute to strengthening the empirical evidence and extending the generalizability of the findings.

3. **Integration into Early Literacy Programs -** Schools are to take the initiative to officially embed PAS and Multimedia Approaches into their early literacy programs. Systematic phonics instruction, combined with interactive digital materials, can effectively capture the interest, comprehension, and memory of readers, particularly those who have difficulties.
4. **Ongoing Monitoring and Evaluation -** It is of utmost importance to continuously evaluate the reading proficiency of students. Teachers should conduct diagnostic and formative assessments to determine the individual learning needs of students and, consequently, make timely adjustments to instruction and intervention plans.
5. **Parental and Community Involvement -** Outside the classroom, parents and community participants play a key role in strengthening reading skills. Literacy awareness campaigns, family reading sessions, and workshops can be organized by schools to encourage the use of multimedia learning tools at home, promoting home-based reading practice.
6. **Teacher Professional Development -** The PAS strategy will be more successful and easier for teachers to apply if Continuous professional development is provided in the area of multimedia integration into reading instruction. Specific areas of teacher training programs and workshops could include phoneme-based instruction, the use of educational technology, and differentiation for mixed-ability learners.

The study's findings not only contribute to literacy instruction, curriculum design, and educational policy but also have a significant impact on these areas.

Firstly, the excellent results indicate that phonemic instruction, when done explicitly and supported by technology, can effectively meet the needs of poor readers. This means that early literacy programs should not rely solely on text-based approaches, but rather use technology-enhanced, multimodal methods.

Second, the study highlights that motivation and engagement are crucial factors in literacy development. The use of multimedia, such as interactive games, educational videos, and digital storybooks, not only improves children’s cognitive abilities but also helps develop their interest and makes them enjoy reading, which are two main factors in literacy growth and sustainability.

Third, the study results emphasize the important role of a teacher's skill in implementing evidence-based interventions. Teachers who are exceptionally skilled in phonics, as well as multimedia integration, are characteristic of the most inventive ones in creating learning experiences that are suitable for and adaptable to the diverse needs of learners.

Ultimately, the research underscores the significance of promoting underwriting literacy among teachers, parents, and school administrators. This kind of collaborative action not only fosters an atmosphere conducive to literacy learning outside the classroom but also strengthens the practice of reading among children who are just starting out.

In summary, the Phonics Analysis and Synthesis method, combined with the use of multimedia, provides an effective and inclusive framework for advancing early literacy skills. The combination of systematic phonics teaching with vibrant digital engagement will enable teachers to build readers' self-esteem, interest, and skill level to the extent that they can cope with future academic challenges.

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