Innovative and Technological Multisensory Approaches and Literacy Skills among Primary School ESL Learners

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Abstract

The study investigates the effectiveness of multisensory learning approaches in enhancing the literacy skills of Grade 2 English as a Second Language (ESL) learners in the Philippine context. It focuses on how visual, auditory, kinesthetic, and tactile strategies contribute to the development of phonemic awareness, reading comprehension, and vocabulary proficiency. The research is grounded in several key learning theories, including the Orton-Gillingham Approach, Vygotsky's Sociocultural Theory [22];[12], Gardner's Theory of Multiple Intelligences, Scarborough's Reading Rope Model, and the Multisensory Integration Theory [36]. The research aims to identify the most preferred sensory learning styles among Grade 2 students and determine how these preferences relate to literacy outcomes. The findings suggest that visual and auditory learning strategies are preferred, but differences in kinesthetic and tactile methods highlight that learners respond differently to instructional approaches. The study also found no significant relationship between preferred multisensory styles and phonemic awareness, reading comprehension, or vocabulary proficiency.

Keywords: *Innovative and Technological Multisensory Approaches, Literacy Skills, Primary School, ESL Learners*

1. Introduction

Language acquisition holds a strong place in early education for every other learner, particularly for regard English as a Second Language (ESL) learners. This is because of the complex yet cognitive, linguistic, and sensory involved processes of acquisition. Initiatives toward literacy acquisition at early grade levels called for effective teaching strategies that met the needs of learners with varying forms of learning diversity. One of the approaches that gained popularity in this respect is called the multisensory method, which applies visual, auditory, kinesthetic, and tactile methods to heighten language learning by penetrating more senses in the process making learning more active and meaningful for learners especially in developing of their foundational literacy skills. Very important to recognizing the most effective learning styles among Grade 2 ESL learners was the design of the engaging, structured instruction around these. Multisensory

approaches thus created a more inclusive environment in the learning process, accommodating the various preferences individual learners have in learning. These studies further showed how, in developing phonemic awareness, reading comprehension, and vocabulary proficiency, young learners benefited from interactive, experience-based instruction. Grade 2, as the transition from basic to advanced standards in literacy skills, warranted good instructional methods to bolster this level in the development of their English language learning. Several theories that underscore the relevance of the multisensory modality in early literacy instruction are socio-cultural theory about learning defined as occurring through social interaction leading to guided experiences, in which multisensory techniques are used to reinforce learning of the language. Gardner's Multiple Intelligences Theory stressed that there are various formats for the processing of information by students, and thus, a multisensory approach would suit a good number of young ESL learners who have different learning needs. Seaba put it, confirming that retention and comprehension increase with multiple cognitive pathways activation, thus sustaining multisensoriness as a suitable path to early-grade literacy. Reading pitfalls were still glaringly prevalent among Filipinos. The result of international assessments on the priority need to enhance the literacy instruction was emphasized. The 2022 Programme for International Student Assessment (PISA) put the Philippines at 77 out of 81 countries in reading, clearly indicating that Filipino students are lagging behind their would-be global peers by almost five to six years. The same statement was made about the 2019 Southeast Asia Primary Learning Metrics (SEA-PLM) regarding only 10 percent of Grade 5 students in the Philippines meeting the reading proficiency standard, second most disadvantaged country among participating nations. This showed that early grades would continue to bear the main problems with literacy, particularly ESL learners battling the transition from their first language to English as an interface. In addition, areas of concern for early-grade learners flagged by DepEd included reading comprehension and proficiency in English. Rich literate experiences and diverse linguistic environments were described by Rupley as crucial for reading proficiency [35]. The hurdles of multilingual learners were further expounded by Snow in terms of limited vocabulary and reading comprehension difficulties, among others [38]. One prominent recommendation in the 2023 TESOL International Association study regarding the Science of Reading for Multilingual Learners is focusing on phonemic awareness, vocabulary development, and comprehension strategies that will further improve literacy instruction. Supporting ESL learners with evidence-based structured yet engaging literacy instruction would be learned from the ideas that multisensory approaches will bring. While many literacy programs exist for ESL students, many 2nd graders still experience difficulty due to the ineffective nature of traditional teaching methods that do not consider different learning styles. Although studies suggest that multisensory strategies can improve language acquisition, little research has been conducted regarding the effectiveness of such strategies within a Grade 2 ESL classroom in the Philippines. The study was therefore conducted to fill this gap by determining how multisensory approaches enhanced basic literacy skills in young ESL learners. In doing so, educators will gain more insight on what particular techniques are most effective so that more inclusive and evidence-based literacy instruction can be designed that better supports the diversity of learning needs.

Related Literature

On Multisensory Approaches in Literacy Instruction

It was well known that multisensory approaches worked their charm in literacy development at early grades and intensified retention and learning as the engagement focused on visual, tactile, kinesthetic, or auditory modalities [18]. Teachers would thus offer specifications on how learners would process and absorb a given concept and its appeal and accessibility to literacy instruction.

Mayer's Cognitive Theory on Multimedia Learning assumes a better learning process for individuals in verbal and visual languages rather than using either alone [25]. It states that using a variety of media in designing instruction gets access to the auditory and visual input channels by

which learners can comprehend information more profoundly. These, according to Mayer, are effective when both these media and channels are involved because then it becomes easier for the individual in associating and recalling the information. This theory works towards propelling multisensory learning methods, through which a learner incorporates both the visual and auditory senses to better construct the referential association between new learning and that which already exists in cognitive structures. Through multiple representation forms, multimedia learning environments can reduce the chances of cognitive overload and promote deep learning, especially in language acquisition or literacy contexts.

The Sociocultural Theory of Vygotsky also supported multisensory as an effective learning method [22]. This theory also underlined the contribution of social interaction, guided support, and experiential learning to cognitive development [21]. Students actively engaged in literacy tasks with multiple sensory modalities would strengthen their phonemic awareness, reading comprehension, and vocabulary skills.

Dabbled in educational psychology, researching that multisensory instruction is fundamental to phonemic awareness and strengthens the sound-symbol relationships. Brown and Taylor found that auditory cues, activities involving movement, and visual reinforcement increase early reading skills [4]. Gardner's Multiple Intelligences Theory was pro-multifaceted in its variety of ways through which teaching would incorporate different kinds of learning styles or needs into the literacy instruction process, thus making instruction more "fair" and effective [1].

Structured literacy instruction in the Orton-Gillingham Approach thus was built upon the multisensorial techniques to foster phonemic awareness and decoding skills [12]. The method was popularly implemented on literacy intervention not only for all experimentation but even upon "poor" readers, because it presented an explicit, structured way of phonics instruction alongside word recognition.

There is research backing multisensory interventions for phonemic awareness development via the use of Orton-Gillingham lines; specifically, through repetitive and structured tasks in reinforcing letter-sound correspondences [15];[12]. Jones and Carter identified a child who participated in phonemic awareness activities similar to Orton-Gillingham's structured drills exhibited significant improvement in phonemic segmentation and blending [19];[12].

Phonemic Awareness and Multisensory Techniques

Phonemic awareness was a critical success factor in literacy development, as it enabled learners to recognize, manipulate, segment, and blend sounds, thus enabling decoding and reading. It shows mechanism research has supported the importance of a multisensory approach in facilitating phonemic awareness since it engaged learners in activities that reinforced sound-symbol relationships using multisensory inputs.

Jones and Carter emphasized those children participating in phonemic awareness activities through manipulatives, sound blending games, and interactive storytelling demonstrated higher gains in recognizing and segmenting sounds than children receiving traditional instruction [19]. These activities were to make connections between sounds, letters, and, words through being engaged in manipulative hands-on activities, thus demonstrating how symbolic sounds could be tangibly-based in Letters.

Inconsistent with other prior findings, research suggested that integrating movement-based learning strategies could significantly improve phonemic identification. Tracing letters in the air, clapping syllables, and tapping to phonemic sounds actually help reinforce auditory and visual cues [43]. Such practices wire the intended connections between sounds and their written form; thus, they ensure a smoother transition through the learning pathway.

It created more nexuses for students' identities, which coalesced creative and linguistic learning with multi-sensory strategies in a manner that was interactive, engaging, and practical for teaching theoretical understanding of the early skills of reading among second language learners.

Reading Comprehension and Multisensory Instruction

Indeed, improving reading comprehension was certainly central to literacy development, and research evidence supported the finding that multisensory approaches might indeed advance the level of understanding students could have with regard to texts. White and Green conceived that, by incorporating graphic organizers, dramatization, and interactive read alouds, students would be capable of inferring meaning and establishing a deeper connection to a text [42]. These involved the engagement of multiple senses and included visualization of ideas, hearing contextual vocabulary, and the active involvement of learners into the learning.

Scarborough's Reading Rope model served a framework for appropriate literacy instruction linking word control to language comprehension [36]. The model in question also emphasized the importance phonemic awareness, vocabulary building, and comprehension activities make up an essential part of multisensory learning. Scarborough, in her analysis, notes that fluent reading comprehension manifests from input-by-input formations of phonological awareness, decoding, sight recognition, vocabulary knowledge [36], and verbal reasoning. A multisensory approach using graphic organizers, interactive storytelling, and dramatization reinforced these essential literacy skills by enhancing both word recognition and comprehension [42]. Within that, Scarborough's model of applying multisensory instruction ensured that children developed decoding as well as meaning-making abilities [36], which is expected to enhance their performance in overall reading proficiency [27].

Multisensory strategies have been found efficacious even by recent studies for reading instruction. Pulliam further studied the effects of audiovisual integration on people having reading and language difficulties [33]. Their meta-analysis established that the inclusion of auditory along with visual input had notable effects on language processing and literacy skills which also added credence to this aspect of multisensory instruction for facilitating reluctant readers.

Vocabulary Proficiency and Multisensory Strategies

Majorly for literacy enhancement, vocabulary skills had to be developed, and then the other methods, such as multisensory, were often applied to assist in word learning. Thompson noted that students involved in hands-on vocabulary activities such as textured word cards, role-playing, and multimedia noticed better memory of words and contextual application of those words as compared to others [39]. Invoking different senses-tactile, auditory, and visual-these activities supported word understanding and helped to make vocabulary acquisition more engaging and effective.

This was equally true for Johnson, who stated that vocabulary learning was enhanced through movement-giving gestures and acting out words-which greatly benefited ESL students [17]. This method followed the kinesthetic learning principle that students could remember words better if they acted upon them. Herein lies the crux of the study: connection of words with movements gives ESL students understanding of meaning and context that makes recalling those words into practical use in reading and communication. The paper highlighted the usefulness of multisensory vocabulary instruction for Grade 2 ESL learners, for whom vocabulary acquisition through recognition and practical usage was an uphill task owing to their limited exposure to English. Being able to combine tactile, auditory, visual, and kinesthetic approaches while teaching vocabulary gives a teacher an edge: one could enhance compositional retention and understanding, hence facilitating meaningful language development, and ultimately bringing about mainstream improvement of the learner's literacy skills.

The Role of Demographic Factors on Literacy Development

Research had explored the role of demographic factors on literacy growth, highlighting multisensory approaches that catered to students' diverse backgrounds and learning styles. Miller and Adams suggested that tailored multisensory instruction could help bridge gender gaps in phonemic awareness and reading comprehension [1]. This indicated that boys and girls might have engaged with literacy activities in different ways, making it essential to use strategies that aligned

with their learning preferences. For instance, movement-based activities could support kinesthetic learners, while visual aids might benefit those who learned best through structured imagery.

These previous studies and claims highlighted the value of multisensory approaches in literacy instruction, as they catered to diverse learning needs through differentiated, engaging, and inclusive strategies. This method allowed educators to establish an engaging and supportive learning environment that strengthened phonemic awareness, reading comprehension, and vocabulary skills among Grade 2 ESL learners.

On Multisensory Approaches

The research on learning styles relative to young English as a Second Language (ESL) learners underscored the value of multisensory instruction for language development. Studies posited that children would typically respond to a teaching approach differently, depending on their cognitive preferences and sensory modalities.

Gilakjani, on the other hand, was again looking into the role of visual and auditory input in second language learning [11]. The paper declared both input modes to be important; however, individual requirements differed from learner to learner and teachers, therefore, had to adopt an eclectic approach. This research study emphasized that using a balanced system that attains input through visualization, oral interaction, and active exercises would benefit comprehension and retention for ESL pupils. In a more recent study, Patel has pointed out the effectiveness of multisensory instruction in building among young ESL learners' phonemic awareness, reading fluency, and vocabulary skills [32]. Their study identified that kinesthetic and visual learning strategies led to more profound enhancement as learners were more actively involved in lessons characterized by movement and imagery. This therefore, supported the premise that multisensensory methods would benefit in making an encompassing and effective learning environment for ESL learners. These studies highlighted the necessity for individual instruction of ESL learners based on personal learning styles. By embedding kinesthetic, tactile, visual, and auditory functions, the teachers could organize a more engaging and meaningful learning experience that would foster the language development and literacy growth of young ESL learners.

Multisensory Techniques and Phonemic Awareness

According to a study conducted by Patel and Sharma, early-grade learners' phonemic awareness was found to be influenced by multisensory phonics instruction. The quasi-experimental study concluded that children engaging in multisensory activities-auditory, kinesthetic, and visual activities-such as segmentation and sound blending, benefited greatly compared to traditional instruction in phonics. Likewise, in Kim and Park's study with Asian ESL learners, it was offered that multisensensory strategies somewhat managed to remedy gaps in phonemic awareness by providing letters-sound relationships through interactive and tactile modes.

On Multisensory Approaches and Reading Comprehension

The longitudinal study of Lopez and Rivera in Southeast Asia stressed that when auditory-visual reinforcement was applied, more information was retained, and a deeper understanding was exhibited. Brown thereafter studied how multisensensory reading interventions would foster comprehension among ESL readers who are struggling. They found a great enhancement in inferential and evaluative comprehension skills in students who practiced strategies like graphic organizers, story mapping, and dramatization.

On Multisensory Approaches and Vocabulary Proficiency

With respect to ESL learners, the importance of involving visual and kinesthetic strategies , like acting out words and using flashcards with textured elements, to foster foreign language vocabulary acquisition and usage was highlighted by Nguyen and Tran. Johnson and Evans have likewise examined the relationship between multisensory vocabulary instruction and word

retention of ESL students in Grade 2. They found that students who participated in an active vocabulary-building program involving things such as word mapping and tactile word tracing retained the new words longer and more effectively used them in context.

Demographic factors and their interaction with literacy development have been studied. Carter and Williams studied phonemic awareness development in early-grade learners and found that girls outperformed boys in phonemic segmentation and blending tasks. The authors, however, indicated that boys gained more benefit from kinesthetic-based multisensory activities, such as writing letters in the air or using manipulatives**.**

Statement of the Problem

This study determined the relationship between the use of a multisensory approach and the literacy skills of Grade 2 ESL learners. Specifically, it determined how phonemic awareness, reading comprehension, and vocabulary proficiency correlated with multisensory instruction:

1. What is the most preferred Multisensory Learning Approach among Grade 2 ESL learners: visual, auditory, kinesthetic, or tactile?
2. What are the baseline literacy levels of Grade 2 ESL learners in the following areas:
   2.1 Phonemic Awareness
   2.2 Reading comprehension
   2.3 Vocabulary proficiency?
3. Is there a significant relationship between Grade 2 ESL learners' Multisensory Approach and phonemic awareness?
4. Is there a significant relationship between Grade 2 ESL learners' Multisensory Approach and reading comprehension?
5. Is there a significant relationship between Grade 2 ESL learners' Multisensory Approach and vocabulary proficiency?
6.

Scope and Delimitation

The researcher was after exploring the connection the multisensory approach has on basic literacy skills such as phonemic awareness, reading comprehension, and vocabulary proficiency among 100 Grade 2 ESL students at San Roque Elementary School, Region IX, Philippines. This was made possible through a correlational research design wherein it was used to determine the strength and direction of these relationships after a six-week program on multisensory literacy. The basic literacy skills are integrated with visual, auditory, kinesthetic, and tactile (VAKT) strategies to enhance literacy development.

The study was intended 100 poor ESL learners, selected out of 12 sections, in a public elementary school. Identification of ESL learners was done through language background survey, teacher recommendations, and school records.

The respondents were sampled randomly from 12 sections using Slovin's formula to ensure fairness. It was also limited to struggling Grade 2 ESL students with fundamental skills in English who could not decode, understand vocabulary, and read comprehension or who had already mastered these skills. Further, the study was confined to one school, which might affect the generalizability of the findings to other educational settings and grade levels. The research was targeted at exploring the correlation between multisensory approaches and literacy development, not establishing cause-effect relationships. Schools tend to have different learning environments for students; thus, the results may not be fully applicable to Grade 2 ESL learners in other regions.

2. Methodology

Research Design

The methodology was described as Descriptive Quantitative Correlational Design in order to determine the interconnectedness between the literacy instructional multisensensory approaches and the basic literacy skills of Grade 2 ESL learners. The aforementioned design was very suitable for the researcher to observe some naturally occurring associations or correlation and to avoid manipulation of the variable under study. The study was concerned with examining the relationships between phonemic awareness, reading comprehension, and vocabulary proficiency. Other demographic factors like sex, socioeconomic status, or ethnicity are noted for convenience, but they were not the major focus of the analysis. All research processes should be conducted in an orderly manner to define the problem with the utmost accuracy. The flowchart is proposed to map out the critical steps, from identifying the research problem to the final report, while maintaining quality and upholding ethical standards.

Population and Sampling Procedure

One hundred (100) Grade 2 ESL learners, aged 7 to 12, consisting of 50 boys and 50 girls from 12 sections of a public elementary school in School A, participated in the study. The selected respondents came from various socioeconomic backgrounds and ethnicities to ensure a holistic analysis of how multisensensory intervention influenced literacy skills.

School A was purposively selected as the research setting owing to the diverse population of Grade 2 ESL learners comprising a multitude of socioeconomic and cultural backgrounds. Such diversity made it an appropriate site to study the correlation between multisensensory approaches and literacy development. Well-established literacy programs present in the region further justified the significance of the study by assuring that any attention to the multisensensory strategies would have direct correspondence and augmentation with the already existing educational initiatives. There was sagacity, together with the accessibility, administrative support, and general goodwill from the school towards research collaboration, which made it ideal as a site for a research activity.

Ethical Considerations

The ethics of research in this study were stern. Confidentiality of a respondent, informed consent, and the well-being of all concerned were the most important ethical principles that were being fostered. Informed Consent-As guardians or parents, consent forms were given detailing the study, aims, and methods with possible benefits, participation being voluntary. Their inclusion was secured only after obtaining signed consent, ensuring respect for their rights and autonomy. Confidentiality and Data Protection-Identity of respondents was anonymized no data was confidentially kept and only meant for research. Compliance was made with respect to the Data Privacy Act of 2012 (Republic Act No. 10173) to protect sensitive information from unauthorized access. Nonmaleficence and beneficence-The study has ensured that no harm accrues to the learners since the intervention was in line with the DepEd literacy program. All research methods were oriented to give educational benefit to the respondents while minimizing risk or discomfort; Disclosure of Conflict of Interest- That there was no conflict of interest concerning the study was declared by the researcher. The research was purely for academic purposes free from any personal, financial, or professional associations that could affect the objectivity or integrity of the findings. Whenever the site selected for research had relations with the researcher that would compromise the neutrality of the study, such is reported. All the processes and interpretations of the data were carefully executed to maintain credibility in the research.

Research Instruments

1. Learner Rating Scale for Preferred Multisensory Approaches

Adapted from Fleming's VARK framework and the Orton-Gillingham Approach, the scale required Grade 2 ESL learners to express their preferences for Visual, Auditory, Kinesthetic [12], and Tactile strategies. Learners were then grouped into categories Highly Preferred, Preferred, Sometimes Preferred, or Least Preferred based on their overall ratings, making it easier to identify their dominant learning styles.

2. Multisensory Approach Checklist

The Multisensory Approach Checklist, adapted from the Orton-Gillingham Approach [12], was utilized to assess the application of multisensory strategies during instruction. It evaluated the integration of visual, auditory, kinesthetic, and tactile methods in lessons, supporting inclusive and differentiated instruction aligned with the Philippine K–12 curriculum.

Each observed multisensory strategy was checked, and total tallies indicated the level of multisensory integration: High, Moderate, or Low. This checklist provided additional context on the teaching practices influencing learners' literacy outcomes

3. Phonemic Awareness Literacy Screening (PALS)

The Phonemic Awareness Literacy Screening (PALS), developed by [16], assessed learners' ability to identify, segment, and blend sounds in words, which are critical skills for early literacy development. PALS included three sections: Sound Identification, Sound Segmentation, and Sound Blending.

Each correct response was awarded one point. Overall scores were interpreted based on established benchmarks to determine students' phonemic awareness proficiency and to identify areas needing intervention.

4. Comprehensive Rapid Literacy Assessment (CRLA)

The Comprehensive Rapid Literacy Assessment (CRLA), adapted from the Department of Education's (DepEd) reading comprehension framework, was used to evaluate learners' ability to comprehend texts at various cognitive levels. The assessment included a short listening passage followed by five comprehension questions that assessed literal, inferential, and evaluative understanding. Each answer was scored using a four-point rubric: 3 points for correct and complete answers, 2 points for mostly correct responses with minor errors, 1 point for partially correct answers, and 0 points for incorrect or missing responses. Final scores provided an overview of each learner's reading comprehension skills.

5. Vocabulary Assessment (PALS)

Adapted from the Phonemic Awareness Literacy Screening (PALS) by [16], this 15-item tool evaluated word recognition, meaning, and contextual use through three sections: Picture Matching, Word Meaning (with multisensory tasks), and Contextual Clues. Each correct response earned one point, and total scores were interpreted via a five-level rubric from intensive support to strong proficiency—to give a clear picture of each learner's vocabulary development.

Data Gathering Procedure

The study made a conscious effort to have a systematic and structured data collection procedure to ensure authenticity and moral integrity. Set in one public elementary school, this work investigated Grade 2 ESL learners identified as struggling learners. The central theme of this study was aimed towards determining any relationship or correlation that exists between multisensensory approaches and the improvement of foundational literacy skills in phonemic awareness, reading comprehension, and vocabulary proficiency with Grade 2 ESL learners. Primarily, existing thesis samples available in the Graduate Office were consulted to sharpen the research framework and

methodology. The review laid a very firm basis for the design of the study. Once the research framework was agreed upon, approval was sought from the Schools Division Superintendent and the school principal in order to carry out the study in the chosen school. Informed consent from parent or guardian of the learners involved in the study safeguarded the ethical aspect of the study. An orientation was conducted to introduce the objectives and processes of the study. The orientation included reading the instructions aloud to guarantee the learners' understanding and comfort with the involvement requirements. The Learner Rating Scale for Preferred Multisensory Approaches was initially given as an assessment to identify the sensory preferences (i.e., visual, auditory, kinesthetic, or tactile) of each learner. Following this, the literacy lessons focused on phonics, vocabulary, and reading comprehension, using multisensory activities. Observation checklists were used to record the engagement and responsiveness of the learners and their involvement throughout these sessions. At the end of the week, a full literacy assessment was given to test the learners in the three areas of phonics, vocabulary, and reading comprehension. The Phonemic Awareness Literacy Screening (PALS) measured the ability to recognize, segment, and blend sounds in words; this assessment consisted of 15 items and took about 15 minutes. In addition, the Vocabulary Assessment (PALS) assessed three different skills in a limited format of 15 items, taking about 15 minutes: picture-word matching, word recognition, and using context clues. The Comprehensive Reading Literacy Assessment (CRLA) was constructed by the Department of Education to measure reading comprehension with five questions addressing literal, inferential, and evaluative comprehension. Each question was scored with a rating scale of 1 to 3, for a total of 15 points. Together, the assessments were expected to take between 5 and 8 minutes to complete. In total, these instruments provided a set of 45 test items for a well-rounded assessment of the learners' literacy skill.\The data-gathering process took one week during which time the learners participated in literacy sessions implementing multisensory strategies. Throughout the sessions, structured observation and recording of performance were carried out. Let us understand the degree of understanding with data analysis, which correlates to the extent of student engagement with various multisensory instructional strategies and their expressed preferences. Furthermore, this study has proved to correlate the performance areas indicated by the aforementioned measures within the domain of literacy-for example, phonemic awareness, vocabulary proficiency, and reading comprehension. This conclude that data analysis established direct correlation to students' engagement to the diverse multisensory instructional approaches, their expressed sensory preferences, and some of the performance effects in the literacy areas such as phonemic awareness, vocabulary proficiency, and reading comprehension.

Data Analysis Procedure

After gathering data from 100 respondents, the results from the Phonemic Awareness Literacy Test, Comprehensive Rapid Literacy Assessment, and Vocabulary Proficiency Assessment were processed using a standardized scoring procedure. These assessments measured phonemic awareness, reading comprehension, and vocabulary proficiency.

Statistical Treatment of Data

Mean, standard deviation and Pearson Product Moment Correlation were utilized for the descriptive and inferential statistics that provided scientific data that answered the research questions in this study.

3. Results

The Most Preferred Multisensory Learning Approach among Grade 2 ESL Learners: Visual, Auditory, Kinesthetic, or Tactile

This study focuses on the preferred multisensory learning strategy of the participants based on a survey rating scale (rated by the teacher). The learners mostly liked visual and auditory means (Mean scores = 3.61 & 3.67, SDs = .723 & 5.13). They were fond of kinesthetic and tactile (Mean = 3.17 & 3.06) modes of learning (SD values= .92 & 1.16). On average, the children highly favored multisensory learning (Mean= 13.51, SD= 2.20), with all standard deviations considered relatively high statistical values. This means the students are heterogeneously grouped in terms of their preferred multisensory learning approach.

Grade 2 ESL learners preferred visual and auditory multisensory strategies to a great extent, which is similar to other research conducted about multisensory learning. This preference is supported by Gardner's Theory of Multiple Intelligences arguing that the student does not have only one learning style (visual and auditory modalities) [1]. Pashler's findings further support the argument since it says that the two learning channels; namely: the visual and auditory are important for language acquisition more so for ESL learners [31]. This represents phonological processing and vocabulary development that are critical in language learning since students use sight and sound in decoding and understanding new words [44].

However, that preference was for kinesthetic and tactile learning, as was least dominant, thus showing how various students may require different kinds of sensory stimulation. Practitioners of the Orton-Gillingham approach contend that by adding kinesthetic and tactile elements to literacy instruction, motor activities can reinforce cognitive processing of skills for learning disabilities like dyslexia [12]. Here again is a similarity with Vygotsky's Sociocultural Theory, emphasizing the importance for cognitive development of hands-on interactive experiences [22].

While having visual-auditory preferences, the variable pattern of preferences for kinesthetic and tactile strategies shows that multifaceted multisensory exposure is important. As Mayer's Cognitive Theory of Multimedia Learning suggests, the potential to improve learning outcomes through involving both sensory modalities is based on the notion of helping learners process material more efficiently over different channels [25].

On the basis of usability through added multisensory learning strategies as reported by a rating survey with a checklist from teachers, learners were proficient in this use of learning strategies (Mean = 15.23, SD = 4.87). The SD is statistically considered a large value, which means the learners are heterogeneously grouped as far as their use of multisensory strategies.

It denotes the fact that while some learners used successful multisensory techniques, others used these rather inconsistently. This is reflected in the findings of Smith and Johnson [18], as they emphasize that structured and consistent multisensory instruction takes comprehension and retention a long way, especially for early-grade learners. Pulliam, similarly, supports the need to emphasize auditory and vision integration for learners with reading difficulties, thus accentuating the need for consistency in strategy use [33].

These findings also amplify the value of differentiated instruction, a requirement of Gardner's Theory of Multiple Intelligences, as there are many types of learning styles in his students. Inconsistent application of multisensory approaches indicates that, while using them, teacher training and resource availability must be improved further to reap maximum benefits from multisensory learning.

The Baseline Literacy Levels of Grade 2 ESL learners in the following areas: Phonemic Awareness, Reading comprehension and Vocabulary proficiency

Learners had baseline literacy scores reflected as being very strong in phonemic awareness and vocabulary proficiency (Mean scores=10.28& 11.49, SDs=3.06&2.76). However, they still needed improvements in reading comprehension (M =3.58, SD=1.50). All standard deviations are

considered big statistically, meaning that learners are heterogeneous grouped in terms of their baseline literacy levels.

The emphatic phonemic awareness scores support the importance of multisensory instruction. According to the Orton-Gillingham Approach, the use of auditory, visual, and kinesthetic inputs has improved one's ability to Decoding features [12]. This has been echoed by Jones and Carter and Williams [7];: [19], emphasizing how it improves phoneme recognition since such techniques are used by ESL students.

High vocabulary proficiency accords with Gardner's Theory of Multiple Intelligences [1]: learners do gain from different modalities whose best exhibited methods include role plays and tangible word games. Similarly, Nguyen and Tran and Johnson and Evans [17];[29] have held that learning by practice through smaller shared interaction with stimuli improves retention of learnt words.

On the contrary, very low scores on reading comprehension point to an enduring challenge. Scarborough's Reading Rope Model proves that comprehension comprises not only decoding but also language skills and background knowledge [36]. According to Nelson (2022), ESL learners can decode the word correctly but do not understand what it means due to lack of context and vocabulary. This also puts more weight to scaffolding as proposed by Vygotsky's Sociocultural Theory [22]. When Vygotsky's larks guide learners at the Zone of Proximal Development, they are better positioned to engage with complex text.

Moreover, it boasts the Multisensory Integration Theory Bahrick & Lickliter, Wallace, according to which synchronous sensory inputs heighten learning as well as memory [45]. Applying this in ESL Instructors should be able to use story mapping with visual cues and movements activities within their classes to help improve reading comprehension outcomes [33].

Strengths of phonemic awareness and vocabulary should not preclude targeted support for reading comprehension. It still remains very vital to utilize differentiated, multisensory approaches in the diverse learner needs and improving overall balanced literacy development.

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The Relationship between Grade 2 ESL Learners' Multisensory Approach and Phonemic Awareness

Table 1: Pearson Correlation: The Participants' Multisensory Preference and their Phonemic Awareness

Variables		Phonemic Awareness	Interpretation
Visual	*r*	.176	No Correlation
	p	.079	
Auditory	*r*	.053	No Correlation
	p	.603	
Kinesthetic	*r*	-.063	No Correlation
	p	.532	
Tactile	*r*	-.095	No Correlation
	p	.347	
Overall	*r*	-.006	No Correlation
	p	.950	
Multi-Sensory Learning Strategies	*r*	.191	No Correlation
	P	.067	

The correlation between an individual participant's multisensory preference and their phonemic awareness was found to be nonexistent for all components of multisensory learning and their phonemic awareness (r=.06, .015, .023, -.183, -.063 &.080), all not being significant at alpha .05. Thus, it means that the learners' multisensensory learning preference does not positively correlate with their phonemic awareness.

The Orton-Gillingham Approach holds that multisensory instruction, when applied systematically and consistently, does enhance decoding and phonemic skills [12]. This study sought to ascertain the opposite; that is, it considered the focus on learner preferences and not on the quite different instructional practices actually used. As has been suggested in Vygotsky's Sociocultural Theory, such dichotomization could inhibit learning effectiveness because they are grounded on the type of teacher scaffolding and guided interaction along the learner's Zone of Proximal Development [22]. Where such structured support was neither provided nor inconsistent, then preferences alone may not have yielded any measurable outcomes.

Craig Gardner's Theory of Multiple Intelligences—and by extension, this research—supports consideration of different styles and ways of learning [1]. Yet it speaks about the very instruction that needs to be catered to those styles, rather than just measuring preference through student self-report. If a preference is not matched up to the pedagogy in the classroom, then the advantages that could have been derived from multisensensory learning may have gone unrealized.

Scarborough's Reading Rope Model indicates that phonemic awareness is a function of various strands-instruction quality, cognitive development, etc. [36]. Cross-verifying this, the Multisensory Integration Theory by Bahrick & Lickliter, Wallace say that learning is enhanced when modalities are integrated in a synergistic fashion and this synergy is itself predicated on correct instructional design [45]. It is possible to see in the novel result of no correlation an expression of a sporadic and/or low application of multisensory involvement in the actual teaching configuration.

Overall, the findings suggest that while student preferences exert influence, the consistency and alignment of instruction, as well as the contextual factors such as teaching quality and home environment, are instrumental in exerting phonemic awareness for ESL learners. There needs to be a shift in research to evaluate in real time the application and quality of the use of these multisensory strategies so that their real effectiveness can be determined.

The *Relationship between Grade 2 ESL learners' Multisensory Approach and Reading Comprehension*

There is no correlation found between the participants' multisensory preference and reading comprehension. All students' preferred multisensory learning and reading proficiency were (r=.06, .015, .023, -.183, -.063 & .080). Thus, it can be inferred that the students' multisenssensory learning strategies do not bear on their reading comprehension.

The results suggested there to be no significant relationship between the reading comprehension of Grade 2 ESL learners and their multisensory preferences. It contradicted previous research showing multisensory instruction had improved reading skills, such as Lopez and Rivera and Brown's claim that intention in applying multisensory methods-for example, graphic organizers and visual-auditory strategies-supports comprehension by ESL learners. However, the current study assessed student preferences against actual practices in instruction, which probably influenced their results.

According to the Reading Rope Model proposed by Scarborough, reading comprehension is based on multiple intertwined strands such as background knowledge [36], vocabulary, and language structures. Underdeveloped, especially in the case of ESL learners, sensory preferences may not be enough. The same goes with Vygotsky's Sociocultural Theory, which emphasizes scaffolding and guided support within the Zone of Proximal Development, which are not guaranteed by preferred-based strategies [22].

Also in agreement with Bahrick and Lickliter's multi-sensory integration theory and Wallace, benefits from multisensory input are conditioned by the extent to which such inputs are

well integrated and applied in instruction. If multisensory approaches were not systematically embedded in the learning process-as supported by Rupley and Snow-they might have lost theirfull potential [35]; [38].

Thus, there is an argument between the preference of learners for some modalities and the improvement in comprehension skills in reading since improvement depends on the use of the perceived modal methods in classroom instruction. This indicates the need for purposeful, structured, and continued practice of multisensory strategies instead of relying solely on learner preferences.

On the *Relationship between the Learners' Multisensory Approach and Vocabulary Proficiency*

0n-take in participants' multisensory preferences and their reading comprehension is that for all the learners, there is no correlation of the multisensory learning components with their vocabulary proficiency (rs=.10). Though even lower were rs of -.03, -.11, -.01 &.12, all of them were not significant alpha .05. This implies that the pupils' preferred multisensensory learning does not necessarily govern their vocabulary learning.

Data here contradict Nguyen and Tran and Johnson and Evans in emphasizing the effectiveness of visual, kinesthetic, and tactile methods in vocabulary acquisition [29]; [17]. Unlike the above studies that observed active classroom applications, the present research exclusively investigated students' preferred learning styles and not their application in the instruction. Our findings concur with Scarborough's Reading Rope that growth of vocabulary is governed by multiple strands [36], among others background knowledge and language exposure besides sensory input. In Vygotsky's view, meaningful vocabulary learning takes place through guided interaction and therefore, scaffolding is necessary as opposed to mere consideration of sensory preference [22]. The implications are that any attempts to improve vocabulary instruction through multisensory means are likely to produce results only if the use is structured and consistent. The way that sensory preferences are accommodated in their learning environment does not seem to affect students' vocabulary outcomes. While there are implications for this in terminology, the current study showed that merely leaning toward sensory strategies has no significant impact on vocabulary outcomes.

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4. Discussion

Kindergarten teachers in Zamboanga City are found to be inclined towards inclusive education according to self-assessed data on what they hold. However, this does not match with a high level of awareness or practical skill, which is needed in full support of such a positive attitude. Self-awareness is only rated as "more aware" which presents an unusual gap such that teachers profess the ideology of inclusion but do not feel prepared or rather, bold enough to work with children with disabilities. The qualitative component substantiates this assertion as it emphasizes the perception of teachers that having a background in special education is an advantage but the current professional development system does not provide the specialized training necessary to create an expression of readiness for the work-related tasks to change. It is more systemic than attitudinal concerning the barriers to inclusive education. Due to the lack of specialized training, lack of resources, large class sizes, and lack of support from both the school and families, which have been identified as the commonest challenges confronting teachers, the quantitative and qualitative findings evidence such. Thus, the implications of the findings would have a far-reaching effect on educational policy, teacher professional development, and the conduct of inclusive education programs in the Philippines. The conclusion on how the majority problem is systemic and not attitudinal triggers a thoughtful reconsideration of apparently existing policies on the inclusion of education. The policies like DepEd Order No, 72 s. 2009 share the responsibility for including all in most cases; however, they should be implemented with some concrete provisions

in equitable way across all schools irrespective of where they are located. Uniform reasons for readiness lack among teachers mean that the existing support systems, forms of training, and resources are not sufficient or properly spread. On the other hand, positive values and negative attitude did not match in terms of actual skills and so underline the need for improvement in teacher preparation and professional development programs. That is hands-on practical skills like how to develop and implement Individualized Education Programs (IEPs) and use specific strategies for accommodating diverse learning needs positive well beyond theoretical concepts about training. This is consistent with Domain 7 of the Philippine Professional Standards for Teachers (PPST), which advocates for personal growth and professional development. Thus, the findings bring into clear light the significance of collaborative efforts and adoption of inclusive teaching-learning approaches. Also, the strongest thrust teachers place on community linkages and parental involvement can be utilized in establishing a network of support for inclusive classrooms. Hence, the subjection of the data, which has indicated there was no significant difference in readiness across the different specialization categories, validates that inclusive education is a shared responsibility. Thus, all teachers, no matter what specialization they belong to, should be given the necessary preparation and confidence to practice inclusive pedagogy. To buttress the conclusions surrounding the study, it upholds that sustaining inclusive education requires a mélange of positive attitude, pedagogical knowledge, and firm institutional support. Negative assertions about other variables pertaining to the matters of confidence and preparedness provide timely corroboratory evidence for education administrators to establish structured mentorship, resource provision, and a culture of oftentimes continuous professional growth.

5. Conclusion

In this study, the Grade 2 ESL learners prefer visual and auditory strategies; however, teachers should aim at innovative methods such as kinesthetic and tactile, integrated with advanced learning technology. Focus on differentiated instruction, inclusive teaching strategies, and multisensory learning techniques so as to meet diverse learning needs. Reading comprehension can be addressed through guided sessions, leveled texts, and explicit instruction. Evidence-based reading strategies and situations from real-life can aid in vocabulary development. Schools should provide picks of support for learners from diverse language backgrounds or low-income families. Further research should widen the participant pool so as to encompass more diverse sample sizes and look into how multisensory strategies are applied into classrooms.

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