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Research Article

Utilization of Multi-Sensory Approaches in Teaching Reading and Performance Among Pupils

Mia O. Reduca[1], Wenie L. Nahial[2]*

[1]Don Carlos Central Elementary School, Division of Bukidnon, 8714, Philippines
[2]Institute of Arts and Sciences, Camiguin Polytechnic State College, 9100, Philippines

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**Corresponding author:*
E-mail:
winenahial@gmail.com

ABSTRACT

Reading problem has been noted every year, particularly among pupils in Key Stage 1. These pupils are expected to know how to read upon passing the first stage in basic education. On this conjecture, the study aimed to determine the utilization of multisensory approaches in teaching reading among the 35 teachers of Grades 1 to 3. A quantitative descriptive research design was employed, utilizing a survey questionnaire as the primary data collection tool with a casual interview to verify responses. By checking the assumptions of a parametric test, the identification of an appropriate statistical test was observed to produce reliable results. The majority of the respondents were in the middle adulthood stage, predominantly females, who had gained sufficient experience by serving for at least 11 years, attending 3 to 5 related trainings, and having earned at least units in a master's degree program. The perception of the respondents in the multisensory approach was at a high extent, indicating the utilization of the intervention at all times, while the academic performance of the pupils plateaued at a satisfactory level. The calculation further showed that there was an extremely weak or negligible association between the extent of multisensory approach utilization and pupils' academic performance. Moreover, the extent of utilization of a multisensory approach did not differ among the respondents when grouped by age, sex, number of years in teaching, highest educational attainment, and school size. Finally, the researcher recommended that this study be modified by doing quasi-experimental research to determine the actual effect of a multisensory approach in teaching reading.

Keywords*: Academic Performance, Multi-sensory Approach, Reading*

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Background

Academic success surely happens if the learners or pupils are proficient in reading. However, recent international assessments revealed a critical literacy crisis among the Filipino test takers. The Programme for International Student Assessment (PISA) revealed the performance of the Filipino learners, in which 80 percent of them fail to reach the minimum reading levels, a discrepancy mostly observed in Grades 1 to 3 (Dequito et al., 2023). According to Kilpatrick (2015), failure to master reading at the foundational stage can likely create a cumulative effect in the long run since this is the primary predictor of long-term academic and socio-economic outcomes.

The existence of a learning gap could have been due to traditional, single-channel instructional methods that often overlook the multisensory nature of cognitive development. This multisensory approach uses visual, auditory, kinesthetic, and tactile (VAKT) pathways, which allows learners to bypass cognitive barriers by activating multiple regions of the brain simultaneously (Syahputri, 2019). Meta-analysis reveals that this multisensory engagement is a neurological necessity to reduce cognitive load and foster deeper retention by creating multiple neural traces for the same information (Dong et al., 2020).

Verhoeven et al. (2020) and Sanfilippo et al. (2022) emphasized that interventions utilizing haptic (tactile) and immersive feedback can significantly improve motivational and cognitive outcomes in early childhood literacy. Their studies further suggested that engaging a child's physical senses directly correlates with higher engagement levels and better word recognition, mostly for learners at risk of falling behind.

Addressing the learning gap, as shown in international assessments, is a strategic move to contribute meaningfully to the 2030 Sustainable Development Goal (SDG) 4: Quality Education. This is one of the 17 global goals established by the United Nations in 2015. For the Philippines to become compliant, school learners should be provided with accessible and quality learning.

Now, regardless of the proven benefits of using a multisensory approach in teaching, there remains a gap in understanding deeply how these strategies are implemented in the local context. Due to this, the study is to be conducted in the districts of Don Carlos of DepEd-Bukidnon. This work aims to determine the extent of utilization of multisensory approaches among the Key Stage 1 teachers to gain evidence-based insights to address reading difficulties, thereby ensuring the delivery of quality, inclusive education for all Filipino learners.

Methods

In this part, the details of the rigorous process of producing the raw data and its transformation into pieces of important information are presented thoroughly.

The study employed a quantitative-descriptive-correlational research design using a survey questionnaire as the main data gathering tool supplemented with a casual interview to clarify responses. This work also utilizes the Input-Process-Output (IPO) model to systematically analyze the flow from teacher demographics to educational outcomes (Idulog et al., 2021). This model is used since the inquiry involves factor-isolating questions, which are descriptive and inferential in nature. Considered as inputs are the age, length of service, educational attainment, school size, and the ratings of the pupils as explanatory variables. This also includes the utilization of multisensory approaches in teaching reading (Balanquit et al., 2023; Camino, 2021). While the process comprises the administration of the survey questionnaire, casual interview, data mining, and analysis of data, the output focuses on the insights of the findings as evidence for decision-making in the future.

This inquiry is conducted in the school districts of Don Carlos, DepEd-Bukidnon. This locale is characterized by a diverse school landscape composed of small, medium, and large elementary schools. These districts are also inhabited by people of different cultures and socio-economic standing.

Serving as respondents were the 35 Key Stage 1 teachers chosen by saturation due to their small number. Before the identification of respondents, the researcher secured their consent through the assistance of the school head. With the intent to gain meaningful insights

from the utilization of multisensory approaches in teaching reading, the qualified respondents are those serving as teachers for at least one year and are using the multisensory method.

To gather the required data, the researcher-made and validated survey questionnaire was used as the main tool. This research instrument has two parts: a) the demographic profile (explanatory variables) with the average ratings of the pupils per teacher-respondent; and b) the utilization of a multisensory approach in teaching reading. The second part of the instrument is a 4-point Likert scale with 11 constructs or indicators formulated for validation.

Five experts in the multisensory approach from DepEd-Bukidnon were requested to validate the survey questionnaire. Before the formulation of the instrument, the researcher conducted a casual interview with fellow teachers with experience in the multisensory approach. Reading of studies similar to this inquiry helped a lot in the making of the instrument. Then, this was referred to the research adviser for initial comments and suggestions. After this, the hard copy of the instrument was sent to the experts for their input and comments. After incorporating the experts' inputs and comments, the instrument was pilot tested in a select school in Kibawe District upon the approval of its school head. The responses were then tallied in an Excel program. The result showed that the Cronback's alpha value of 0.83 was considered above the standard requirement; hence, it is reliable.

To maintain academic rigor and a high response rate, data gathering started with securing the approval of the Schools Division Superintendent of DepEd-Bukidnon and school heads to gain institutional support for this inquiry. Since consent of the respondents was already secured, the researcher personally distributed the validated survey questionnaire to the identified respondents for the purpose of giving a brief orientation and to ensure clarity of the contents. And finally, the retrieval of the instrument after the response window of two weeks is enough for the respondents to provide honest responses and reflections. This method of data gathering surely minimizes non-response bias and guarantees the quality of raw data for analysis (Passion, 2020).

Analysis of data was done thoroughly by considering the intent of the inquiries, the characteristics of the data, and the validity of the assumptions of a statistical tool. Jamovi statistical software was used in the analysis of the data. For descriptive statistics, the researcher employed the counts, percentages, mean, and standard deviations. While for inferential statistics, the Spearman rho correlation coefficient and the Kruskal-Wallis test were utilized for the association of two variables and a significant difference in the extent of utilization of the multisensory approach in teaching reading, respectively. Hence, appropriate statistical tools were used in the analysis of data in order to produce reliable results.

Scoring guidelines were also used to appreciate the responses in the research instrument. The individual mean of each indicator was calculated and referred to the corresponding statistical limits for the qualitative description and interpretation, as shown in Table 1.

Table 1. Guide in Appreciating the Perceived Utilization of the Multisensory Approach in Teaching Reading as an Early Literacy Intervention

Arbitrary Value	Statistical Limits	Descriptive Equivalent	Interpretation
4	3.26 - 4.00	High Extent	A multisensory approach is constantly utilized.
3	2.51 - 3.25	Moderate Extent	A multisensory approach is sometimes utilized.
2	1.76 - 2.50	Less Extent	A multisensory approach is rarely utilized.
1	1.00 - 1.75	No Extent	A multisensory approach is never utilized.

The average ratings of the learners per respondent were used in this inquiry. The provision on the assessment of learners contained in DepEd Order No. 8, s. 2015 known as Classroom Assessment for the K-12 Basic Education Program in the Philippines was used in the study, as shown in Table 2.

Table 2. Academic Performance of the Grades 1 to 3 Pupils

Grading Scale	Qualitative Description
90 to 100	Outstanding
85 to 89	Very Satisfactory
80 to 84	Satisfactory
75 to 79	Fairly Satisfactory

Throughout the process, the researcher first observed the protocols of conducting scholarly work in DepEd-Bukidnon. The identification of respondents was done by asking for the consent of the target respondents. Besides, the researcher adhered to the Data Privacy Act of 2012, ensuring the absolute confidentiality of respondent information, thereby maintaining the highest ethical standards in educational inquiry.

Results and Discussions

In this part, the results are interpreted and presented according to the order of the inquiries. These are highlighted in a way that the results are backed by studies conducted five (5) years ago.

As has been elucidated, thirty-five (35) Key Stage 1 teachers consented to participate in the study. All of them provided the required data, particularly their demographic profiles, which are very important in understanding the extent of the utilization of the multisensory approach in teaching reading.

Table 3. Demographic Profile of the Respondents of the Study

Variables	Counts	Percentage (%)
Age (in years)		
20 - 39	12	34.29
40 - 64	23	65.71
Total	**35**	**100.00**
Sex		
Female	29	82.86
Male	6	17.14
Total	**35**	**100.00**
Number of Years in Teaching		
6 - 10	15	42.86
11 - 20	14	40.00
21 and above	6	17.14
Total	**35**	**100.00**
Highest Educational Attainment		
College Graduate	2	5.71
With Master's Degree Units	21	60.00
Master's Degree Holder	12	34.29
Total	**35**	**100.00**
Number of Trainings Attended		
3 - 5	19	54.29
6 and above	16	45.71
Total	**35**	**100.00**

It can be gleaned from Table 3 that 23 (65.71%) of the respondents are in the middle adulthood stage (40 to 64 years old), and only 12 (34.29%) are in the young adulthood stage (20 to 39 years old). The length of service also echoes the same idea since 20 (57.14%) of the respondents served for at least 11 years, where 14 (40%) served for 11 to 20 years, and 6

(17.14%) served for 21 years and above. These figures suggest that more than half of the respondents have possessed emotional maturity and a long-term commitment to their profession. These teachers have already gained mastery of the learning area assigned to them and possess the qualities of a good mentor for the young teachers. This also indicates that more than half of the respondents are potential assets to early literacy instruction due to their vast experience in the discipline. The study of Camino (2021) supported the present work since the previous study confirmed that the extensive experience of teachers accumulated over the years of direct contact with the learners or pupils in need of interventions. Hence, teachers with long experience are potential mentors for the successful utilization of a multisensory approach in teaching reading.

The observation that most of the Key Stage 1 teachers are females is true. This study reveals that 29 (82.86%) of the respondents are females, and only 6 (17.14%) are males. This overwhelming female majority underscores the sociocultural trend in the Philippines where women serve as the primary facilitators of foundational language acquisition. This is aligned to Sebastian et al. (2022), who concluded that female teachers often demonstrate a high degree of empathy and verbal scaffolding, the qualities necessary to handle frustrated readers through complex sensory-based interventions.

The educational attainment is the most significant finding since 33 (94.29%) out of 35 respondents pursued graduate school, in which 12 (34.29%) completed their master's degree course, and 21 (60%) earned units in a master's degree program in education. Only 2 (5.71%) of them remained undecided about pursuing graduate school. This suggests that most of the respondents are intellectually equipped to understand the neurocognitive principles behind multisensory utilization. Similar to their studies, Balanquit et al. (2023) and Martinez (2023) confirmed that the advanced qualifications of teachers ensure a delivery of classroom instruction led by practitioners able to connect the gap between traditional rote learning and the 21st century skills set.

Training is a venue where teachers acquire or upskill their capabilities. It is provided that 19 (54.29%) of the respondents attended 3 to 5 trainings, and only 16 (45.71%) participated in more than 5 trainings. These figures suggest an alignment with the ages and number of years of teaching experience. This trend happened because the Department of Education (DepEd) conducted training tailored to the needs of the teachers. Nunez and Rosales (2021) supported this finding based on their study that such a trend naturally occurs because the DepED does not have enough funding to support all the training needs of the teachers.

As to the Extent of Utilization of the Multisensory Approach

The perceived utilization of the multisensory approach in teaching reading is necessary in understanding further the respondents' approach in addressing learning gaps. Eleven (11) indicators were used for this latent variable. The mean of each indicator and the overall mean with standard deviation are used for the discussions, as shown in Table 4.

Table 4. Extent of the Utilization of the Multisensory Approach in Teaching Reading

Indicators	Mean	Description
Please encourage students to express their creativity through reading and writing activities.	3.70	High Extent
Utilize assessment and feedback to adjust teaching strategies.	3.60	High Extent
Collaborate with fellow teachers to address the diverse needs of pupils.	3.50	High Extent
Prioritize student-centered learning, allowing students to take an active role in reading activities.	3.40	High Extent
Apply differentiated instruction to meet the diverse needs of pupils, including those with learning difficulties or special needs.	3.37	High Extent
Include visual materials to support reading instruction.	3.33	High Extent

Indicators	Mean	Description
Engage students in hands-on activities like tracing letters, building words with manipulatives, or acting out stories.	3.33	High Extent
Incorporate available digital tools and multimedia resources to support multisensory learning.	3.33	High Extent
Employ different instructional strategies, such as phonics, whole language, and language experience, to cater to different learning styles.	3.27	High Extent
Use audio recordings to engage pupils and reinforce reading skills.	3.07	Moderate Extent
Provide tactile experiences, such as using sandpaper letters, textured materials, or sensory bins, to enhance learning and engagement.	3.06	Moderate Extent
Mean	**3.31**	**High Extent**
Standard Deviation	**0.56**	

It can be seen that 9 out of 11 indicators were rated at "High Extent" and only two at "Moderate Extent", giving an overall mean ($M = 3.31$) at "High Extent" as the perceived utilization of a multisensory approach in teaching reading. The standard deviation ($SD = 3.31$) clearly implies a high degree of consensus among the respondents in the utilization of a multisensory approach across Don Carlos districts.

Among the indicators, the top three (3) include encouraging creativity ($M = 3.70$), utilizing assessment feedback ($M = 3.60$) , and teacher collaboration ($M = 3.50$). These indicators suggest that, across Don Carlos districts, teachers focused on a student-centered, evidence-based learning environment. This reflects Kolb's Experiential Learning Theory, which emphasizes that transforming the reading process into an active and reflective experience are practices essential for classroom excellence (Itagei and D'Mello, 2019).

At the bottom of the list, the three (3) indicators include diversifying instructional strategies ($M = 3.27$), using audio recordings ($M = 3.07$), and providing tactile experiences ($M = 3.06$). These indicators suppress the VAKT framework, which assumes that students learn best when they engage multiple senses simultaneously. This is evidenced in the moderate use of auditory and tactile tools, indicating a sensory gap in the curriculum.

This finding contradicts the work of Faunillan (2023), which emphasizes the role of multisensory learning as a guiding tool for instruction only when there is a consistent integration of all sensory pathways. Similarly, the studies of Sanfilippo et al. (2022) and Shiau Ching and Tahar (2021) highlight that without haptic (touch) and audio-reinforced learning, the effect of literacy interventions among learners with diverse cognitive profiles can be affected. Pasion (2020) pointed out that technology and resource integration in the Philippines early literacy remains a challenge, forcing dismayed teachers to rely on visual-heavy strategies that may fail to support non-readers or frustrated readers. Hence, there has to be a balanced utilization of a multisensory approach to cater to the varying learning capabilities of the pupils.

The Academic Performance of the Learners

The study used the average of the respondents' pupils' ratings from the last quarter of the 2024-2025 school year. Descriptive measures, including counts, percentages, mean, and standard deviation, were used to analyze the ratings. The appreciation of the ratings is based on DepEd Order No. 8, s. 20215, otherwise known as Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program, is a fundamental document for Philippine basic education. These ratings are to be used in noting the respondents' claims to have always utilized the multisensory approach in teaching reading.

Table 5. Academic Performance of the Grades 1 to 3 Pupils

Grade Scale	Counts	Percentage (%)	Description
90 - 100	6	17.14	Outstanding
85 - 89	16	45.71	Very Satisfactory
80 - 84	13	37.14	Satisfactory
Mean: **85.30** (Very Satisfactory); Standard Deviation: **3.63**			

Table 5 shows the academic performance of the learners with an overall mean ($M = 85.30$) just reaching the "Very Satisfactory" level. While the standard deviation ($SD = 3.63$) indicates a notable spread of the ratings, although these are all positive in the sense that no ratings fall below the satisfactory level. This further implies the diverse range of reading proficiencies among the pupils of the respondents. Hence, the performance of the pupils in the international assessments is justified in the undertaking.

It can also be noted that almost half of the ratings (45.71%) are in very satisfactory performance, followed by 37.14 percent at satisfactory performance, and the smallest 17.14 percent at outstanding performance. This distribution suggests that, with reference to the standard deviation, the ratings are positively skewed, indicating that some of the ratings are very high. Furthermore, the counts indicate a significant portion of the pupils have yet to reach peak proficiency. This finding is supported in the study of Dequito et al. (2023), who noted that Filipino students, particularly the elementary pupils, struggle to transition from basic decoding to advanced reading comprehension, often resulting in low performance that can hardly move up without special intervention.

Verhoeven et al. (2020) observed that outstanding performance in early literacy requires targeted interventions that engage specific cognitive pathways beyond standard instruction. The ratings of the pupils suggests that the high utilization of the multisensory approach does not translate to high ratings. This could have been due to the exclusion of tactile and auditory senses as factors preventing the pupils from moving into the outstanding category. There is a need to address the reading problem since it can likely worsen in later years, which may call for a reinforcement of a more robust integration of the full VAKT model to maximize the potential of every pupil in the classroom.

Multisensory Approach in Teaching Reading and Academic Performance Among Learners

Recalling, the respondents claimed to have utilized a multisensory approach in teaching reading at high extent, while the average ratings of the respondents placed at a satisfactory performance level. This necessitates the determination of the association of these two variables. Before the analysis, the normality of the data distribution was tested using the Shapiro-Wilk test in Jamovi statistical software. Results showed that the p-values were less than the 0.05 significance level. This suggests the use of a non-parametric test, the so-called Kruskal-Wallis test, to analyze the association between the two variables, as shown in Table 6.

Table 6. Relationship Between the Perceived Utilization of the Multisensory Approach in Teaching Reading and Academic Performance Among Pupils

Variables	r_s	df	p-value	Decision
Utilization of Multisensory vs Academic Performance	0.067	33	.704	Failed to Reject H_o

Table 6 reveals a negligible and non-significant relationship between the perceived utilization of the multisensory approach in teaching reading and the academic performance of the pupils ($r_s(33) = 0.067,\ p = .704$). Since the p-value is significantly higher than the standard alpha level of .05, the null hypothesis is not rejected. This finding suggests that if the

utilization of multisensory approaches in teaching reading is increased, there is a small likelihood that ratings may go with it. This is evident in the coefficient of determination ($r^2 = 0.0044$) which explains that only .44 percent of variance in the ratings can be explained by the utilization of a multisensory approach in teaching reading. Meaning, 99.56 percent of the variance in the ratings was influenced by other factors not accounted for in this work.

The studies of Pasion (2020) and Dequito et al. (2023) supported the present finding. Their previous work confirmed that systemic factors like learning poverty, high teacher-to-pupil ratios, and a lack of standardized haptic materials often affect local literacy outcomes. Lo Coco et al. (2022) added that the success of an intervention in addressing the learning gap entirely depends on the quality of alliance between the tool and the learner's environment, not the frequency of implementation. The findings, therefore, suggest that the multisensory approach in teaching reading serves as a stabilizer for performance, not the primary driver of academic growth.

Comparative Analysis by Demographic Grouping

In addition to the association, this study also aimed to determine whether the use of a multisensory approach in teaching reading varies among respondents grouped by the explanatory variable, as shown in Table 7. Before the calculations were made, the assumptions underlying the use of a parametric test, such as the normality of data distribution, were checked using the same statistical tool used previously. Since the p-values of the groupings by explanatory variable were less than 0.01, indicating a non-normal distribution, the Kruskal-Wallis test was used as the appropriate statistical tool to determine the difference.

Table 7. Significant Difference in the Extent of the Utilization of the Multisensory Approach in Teaching Reading When Grouped According to the Variable

Variables	H	df	p	Decision
Age	0.28	1	.598	Failed to Reject H_o
Sex	0.03	1	.861	Failed to Reject H_o
Number of Years in Teaching	5.20	2	.074	Failed to Reject H_o
Highest Educational Attainment	1.41	2	.493	Failed to Reject H_o
School Size	4.00	2	.136	Failed to Reject H_o

Table 7 revealed that there were no significant differences in the utilization of the multisensory approach among the respondents when grouped by age ($H(1) = 0.28, p = .598$), sex ($H(1) = 0.03, p = .861$), number of years in teaching ($H(2) = 5.20, p = .074$), the highest educational attainment ($H(2) = 1.41, p = .493$), and school size ($H(2) = 4.00, p = .136$). This indicates the failure to reject the null hypothesis at 0.05 significance level. This statistical uniformity suggests that the respondents from Doc Carlos districts consistently utilized multisensory strategies. Or, the utilization of a multisensory approach in teaching reading did not vary among the respondents regardless of their personal or professional profiles.

These findings are supported in the study of Nunez and Rosales (2021), who emphasize that Filipino teachers always engage in synchronized strategies in collectively addressing learning gaps to fulfill mandates and portray inclusive education goals. Accordingly, the lack of a significant difference across school size shows that the respondents were just committed to using a multisensory approach as those in larger schools. Likewise, Antoniou et al. (2024) also maintained that instructional quality can transcend limitations when teachers share a common professional grounding. In other words, the lack of a significant difference occurred because the respondents, with all likelihood, know their roles and functions in producing quality learners or pupils every school year.

Conclusion

This study concluded that the respondents, the teachers of Key Stage 1 in Don Carlos, Bukidnon, exhibited high extent of utilization of

a multisensory approach in teaching reading. Although to a great extent, this has a negligible or extremely weak association with the academic performance of the pupils. This high extent of utilization does not translate directly to academic growth, but is a mere stabilizer of performance. With the consistent utilization of student-centered and creative classroom strategies, the lower engagement with tactile and auditory components implies that the framework (VAKT) is hindered by a lack of specialized haptic (tactile) resources and digital tools rather than a lack of teacher competence. This could be the reason that the pupils failed to reach their full potential, but plateaued instead at satisfactory performance. Eventually, the respondents collectively exerted efforts to address learning gaps, as there is no significant difference in the extent of utilization of a multisensory approach in teaching reading when grouped by variable. Since this intervention is not associated with pupils' ratings, the utilization of a multisensory approach requires systemic provision of standardized sensory materials to support pupils with reading problems. Hence, there is always a need to examine the results at regular period so that outright or immediate adjustment can be done to avoid wastage of time, efforts and other resources in addressing the needs of the pupils.

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