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The Effectiveness of the Learning Styles in Improving the Academic Performance of the Grade 4 Learners in Libmanan South District, Division of Camarines Sur

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ABSTRACT

This study examined the extent of multimodal instructional practices—described in the source as learning styles—and their teacher-perceived effectiveness for Grade 4 learners in Libmanan South District, Division of Camarines Sur, during School Year 2023–2024. A descriptive-evaluative-correlational survey used total enumeration of 50 Grade 4 teachers across five clusters. A five-point researcher-made instrument was summarized through weighted means and ranks; Kendall's W and chi-square assessed concordance in indicator rankings. Audio-visual (M=4.76), kinesthetic (M=4.67), and auditory practices (M=4.66) were Very Much Employed, while visual practices were Much Employed (M=4.45); the overall mean was 4.63. None of the modality domains showed significant concordance across clusters (W=.11–.23). Perceived effectiveness was Very Much Evident overall (M=4.78), highest in science (M=4.84) and social studies (M=4.81), followed by mathematics and writing (both M=4.76) and reading (M=4.73). Concordance was non-significant for all five subject domains (W=.15–.30). The results indicate broad teacher use and favorable perceptions of multimodal instruction, but they do not validate matching instruction to a learner's presumed style. A publishable interpretation is grounded in universal design: use multiple representations, modes of engagement, and avenues for action when they fit the content and reduce barriers. Future research should combine observations, learner-level outcomes, validated measures, and experimental comparisons.

1. Introduction

Learners encounter curriculum through words, diagrams, demonstrations, sounds, movement, discussion, tools, and social interaction. Instruction becomes more accessible when teachers deliberately combine modes that clarify the content, support attention, and provide meaningful opportunities to respond. Multimodality is therefore a design principle, not merely a preference inventory.

The popular learning-styles proposition makes a stronger claim: that learners should be classified by a preferred sensory modality and taught in a matching mode. Reviews have found insufficient evidence for the required matching interaction (Coffield et al., 2004; Pashler et al., 2008). Preferences may be real, but they do not establish that matched instruction improves learning.

A more defensible approach is Universal Design for Learning (UDL), which encourages multiple means of engagement, representation, and action or expression while maintaining clear goals and appropriate challenge (CAST, 2024). The central question becomes which combination of modalities best represents the disciplinary idea and removes a learner barrier, not which fixed label defines the learner.

Multimedia research also emphasizes design quality. Words and pictures can support learning when they direct attention to relevant relationships, but redundant, decorative, or poorly paced media can overload working memory (Mayer, 2021). An audio-visual lesson is not automatically effective; coherence, signaling, segmentation, prior knowledge, and active processing matter.

Grade 4 is a transition point in which learners encounter longer texts, more complex explanations, subject-specific vocabulary, multi-step mathematics, and increasingly abstract science and social studies. Flexible representations can support access, yet learners also need systematic reading, writing, reasoning, and retrieval practice.

The present evidence consists of teacher reports about how frequently modalities were used and how effective they appeared across subject areas. Such data are useful for describing practice and shared priorities, but they do not measure learner-style categories, the quality of multimodal design, or the causal effect of a modality on academic performance.

Accordingly, the article reframes the source construct carefully. The original domain names are retained in the tables for fidelity, while the discussion interprets them as reported instructional modalities and avoids endorsement of the unverified matching hypothesis.

1.1 Research Purpose and Analytical Focus

The study aimed to determine the extent to which visual, auditory, audio-visual, and kinesthetic practices were employed; examine concordance in their rankings across clusters; assess teacher-perceived effectiveness in reading, mathematics, writing, science, and social studies; and test concordance in subject-domain rankings.

The analytical objective was to translate the descriptive profile into an evidence-informed multimodal design framework that aligns representation with learning goals, provides flexible participation, and verifies effectiveness through learner evidence.

1.2 Conceptual and Empirical Synthesis

The study is interpreted through three interacting components: disciplinary representation, learner access, and evidence of learning. Teachers select modes that make the concept visible or actionable; learners engage through supported pathways; and formative assessment determines whether the representation produced understanding.

High use of a modality is not synonymous with high instructional quality. Audio-visual media may explain a process clearly or distract from it; movement may embody a relationship or become unrelated activity. The mechanism and alignment must be specified.

Teacher-perceived effectiveness is treated as an implementation signal. Strong ratings can identify practices worth documenting, but achievement claims require objective, subject-specific measures and comparison of instructional alternatives.

2. Methodology

The descriptive-evaluative-correlational study was conducted in Libmanan South District during School Year 2023–2024. Total enumeration included 50 Grade 4 teachers distributed across five school clusters.

A researcher-made, five-point questionnaire examined four modality domains and perceived effectiveness in five subject areas. The source's table of specifications lists 103 item placements, although a separate narrative statement gives a different total; the table-of-specifications count is used here with the inconsistency disclosed.

Weighted means and ranks summarized the responses. Kendall's coefficient of concordance and corresponding chi-square statistics assessed whether clusters similarly ordered the indicators within each modality and subject domain.

The analysis is descriptive and perceptual. It did not assign learners to matched or mismatched conditions, collect individual learner preference scores, or estimate associations between modality ratings and achievement outcomes.

Table 1. Research Design, Participants, Measures, and Analysis

Component	Specification
Design and locale	Descriptive-evaluative-correlational survey; Libmanan South District; SY 2023–2024
Participants	Total enumeration of 50 Grade 4 teachers across five clusters
Measure	Researcher-made five-point questionnaire; 103 placements reported in the table of specifications
Domains	Visual, auditory, audio-visual, kinesthetic; perceived effectiveness in five subjects
Analysis	Weighted mean, rank, Kendall's W, and corresponding chi-square

2.1 Analytical Rigor and Boundaries

Total enumeration provides a district-wide teacher perspective for the identified population. Reporting modality and subject domains separately helps prevent a favorable overall mean from obscuring relative differences.

One source item was reported with a mean above the five-point scale, and two sections disagreed on the number of questionnaire items. The out-of-range value is excluded from the article; domain summary means that remained within the valid scale are retained. These issues should be checked against the raw dataset before submission to a journal.

A robust replication should establish content validity, internal consistency, factor structure, and measurement invariance; document classroom exposure; and analyze objective learner outcomes with multilevel methods. It should test content-aligned multimodal design rather than classify learners into fixed sensory types.

3. Results and Discussion

3.1 Extent of Reported Instructional Modalities

Teachers reported frequent use of all four modalities, with audio-visual practice highest.

Table 2. Extent of Instructional Modalities

Source Domain	Mean	Interpretation	Rank
Audio-visual	4.76	Very Much Employed	1
Kinesthetic	4.67	Very Much Employed	2
Auditory	4.66	Very Much Employed	3
Visual	4.45	Much Employed	4
Overall	4.63	Very Much Employed	—

Audio-visual practice ranked first, suggesting that teachers frequently combined spoken or written explanation with images, demonstrations, or media. This can be valuable for dynamic processes and relationships when visuals are relevant and synchronized with explanation. The result should prompt a quality audit of media selection, pacing, signaling, accessibility, and opportunities for active processing.

Kinesthetic and auditory practices were also highly rated. Movement and manipulation are most defensible when they instantiate the target idea—for example, measuring, arranging, modeling, rehearsing oral language, or conducting an investigation. Auditory presentation should be paired with vocabulary support, checks for understanding, and alternatives for learners who need text or visual scaffolds.

Visual practice ranked last but remained frequent. The narrow range across modalities suggests a broadly multimodal repertoire

rather than exclusive reliance on one mode. That pattern is compatible with UDL, provided teachers select modes by content and learner barrier rather than presumed fixed style.

3.2 Concordance in Modality Rankings

None of the modality domains showed statistically significant concordance across clusters.

Table 3. Kendall Concordance for Instructional Modalities

Source Domain	W	χ^2	Reported Decision
Visual	.11	4.95	Not significant
Auditory	.20	10.20	Not significant
Audio-visual	.23	12.45	Not significant
Kinesthetic	.15	6.15	Not significant

Low, non-significant concordance means clusters did not order the specific indicators within each modality consistently. This can reflect differences in subject content, available equipment, teacher expertise, class composition, or interpretation of the items. It does not mean that modalities were rarely used.

Variation can be productive when teachers adapt to content, but it can also signal uneven access or quality. Collaborative planning should therefore examine actual lesson artifacts and learner responses, distinguishing principled adaptation from arbitrary activity selection.

3.3 Teacher-Perceived Effectiveness by Subject

Perceived effectiveness was uniformly high, with science rated highest.

Table 4. Perceived Effectiveness across Grade 4 Subjects

Subject	Mean	Interpretation	Rank
Science	4.84	Very Much Evident	1
Social studies	4.81	Very Much Evident	2
Mathematics	4.76	Very Much Evident	3
Writing	4.76	Very Much Evident	4
Reading	4.73	Very Much Evident	5
Overall	4.78	Very Much Evident	—

Science's leading rating is plausible because demonstrations, diagrams, models, observation, and hands-on investigation can make processes and structures more accessible. Social studies can similarly benefit from maps, timelines, images, oral accounts, and source analysis. These explanations are theoretical; the survey did not isolate which components produced the ratings.

Reading remained Very Much Evident but ranked last. Reading development ultimately requires learners to process print, vocabulary, syntax, meaning, and text structure. Multimedia can build background knowledge and motivation, but it should not displace sustained reading, discussion of text evidence, fluency work, and comprehension monitoring.

The means were compressed within .11 points. Rank order should therefore guide fine-tuning, not imply substantial subject disparities. Independent learner evidence is needed to determine whether the differences are educationally meaningful.

3.4 Concordance in Perceived Subject Effectiveness

No subject-domain ranking reached the reported significance threshold.

Table 5. Kendall Concordance for Perceived Effectiveness

Subject	W	χ^2	Reported Decision
Reading	.18	7.20	Not significant
Mathematics	.30	13.50	Not significant
Writing	.19	10.45	Not significant
Science	.15	7.50	Not significant
Social studies	.18	8.10	Not significant

The absence of significant concordance suggests that clusters differed in which specific effectiveness indicators they prioritized, even though the overall subject means were uniformly favorable. Contextual variation should be explored rather than erased by a district average.

The statistics do not test whether modality use is associated with grades or test scores. The study's effectiveness construct is therefore perceptual. A publishable conclusion is that teachers saw multimodal practices as useful across subjects, not that learning-style matching improved achievement.

3.5 Evidence-Based Reinterpretation for Classroom Design

The results are most useful when translated from learner labels into instructional design decisions.

Table 6. From Modality Labels to Evidence-Informed Design

Reported Modality	Content-Aligned Use	Required Check
Visual	Diagrams, models, maps, worked examples, and text structure	Can learners explain the represented relationship?
Auditory	Oral modeling, discussion, rehearsal, and vocabulary	Can learners retrieve and apply the idea without prompts?
Audio-visual	Segmented explanation of processes or demonstrations	Is each element relevant and cognitively manageable?
Kinesthetic	Manipulation, measurement, enactment, investigation	Does the action embody the target concept?

This translation preserves the practical value of teachers' multimodal repertoire while avoiding fixed learner typing. The same learner may benefit from different representations across tasks, and some content is inherently better expressed in one form before being translated into another.

Every mode should end in evidence of learning: explanation, retrieval, problem solving, composition, transfer, or performance. Preference and engagement are useful, but neither substitutes for accurate, durable, and transferable understanding.

3.6 Integrated Interpretation of the Findings

Teachers described a rich multimodal environment and perceived it as highly effective across subjects. The profile is a strength because it suggests willingness to vary representation and participation rather than teach through a single channel.

The non-significant concordance results show that specific practices were not prioritized uniformly across clusters. Shared professional learning should focus on design principles and learner evidence, while allowing subject-appropriate variation.

The evidence does not support sorting learners into visual, auditory, or kinesthetic types. A stronger interpretation is that instruction should offer strategically selected modes, explicit goals, accessible alternatives, and opportunities to integrate representations.

The district should move from asking whether a mode was used to asking why it was selected, how it represented the content, what barrier it reduced, and what learner evidence demonstrated understanding.

4. Conclusions and Implications

4.1 Conclusions

Grade 4 teachers reported Very Much Employed multimodal practice overall (M=4.63), led by audio-visual, kinesthetic, and auditory modalities.

No modality domain showed significant concordance across clusters, indicating variability in the ordering of specific practices.

Teacher-perceived effectiveness was Very Much Evident across all five subjects (M=4.78), with science highest and reading lowest within a narrow range. Concordance was non-significant for every subject.

The findings support flexible, content-aligned multimodal design but do not validate the learning-styles matching hypothesis or establish causal improvement in academic performance.

4.2 Study Limitations

The cross-sectional design describes conditions during the stated school year and cannot establish temporal or causal effects. Ratings of effectiveness, competence, or implementation are therefore interpreted as respondent perceptions rather than independently verified improvements in learner performance.

The principal measures were researcher-made, self-report scales. Social desirability, recall, common-method variance, and differences in interpretation of the response anchors may have influenced the estimates. Classroom observation, document review, learning-resource audits, and learner-level outcome data were not incorporated into the principal analyses.

Kendall's W evaluates concordance in the ordering of indicators. It does not test a respondent-level causal relationship between program implementation and competence, nor does it show that a higher-rated practice produced a learner outcome.

The instrument documentation contained an inconsistent item total, and one reported item mean exceeded the five-point scale. The article relies only on valid-range domain summaries and requires raw-data verification before external submission.

4.3 Implications for Practice and Policy

Reframe professional development around UDL and multimedia design principles rather than identification and matching of fixed sensory styles.

Require lesson plans to specify the learning goal, purpose of each modality, anticipated learner barrier, and formative evidence of understanding.

Audit digital and non-digital media for coherence, accessibility, language demand, cognitive load, and cultural relevance.

Protect sustained disciplinary practice: reading text, writing extended responses, reasoning mathematically, investigating scientifically, and evaluating sources in social studies.

Use observation, learner work, and common assessments to determine which multimodal sequences are effective for particular content and groups.

5. Policy and Implementation Priorities

Table 7. Multimodal Instruction Quality Framework

Priority Area	Recommended Direction	Expected Evidence
Goal alignment	State the disciplinary goal before selecting media, movement, or response modes.	Aligned lesson plan and task
Representation	Use complementary modes and explicitly connect concrete, visual, verbal, and symbolic forms.	Learner explanation across representations
Accessibility	Provide captions, readable text, language scaffolds, and flexible response pathways.	Accessibility checklist; participation evidence
Cognitive load	Remove decorative elements, segment complex explanations, and signal essential information.	Media review; comprehension check
Assessment	Evaluate durable knowledge and transfer, not preference or enjoyment alone.	Common assessment; learner work
Professional learning	Conduct subject-based lesson study and moderated review of artifacts and outcomes.	Lesson-study record; revision evidence

6. Directions for Future Research

Compare specific multimodal lesson sequences with well-defined alternatives using objective pretest, posttest, retention, and transfer measures.
Examine how subject matter, prior knowledge, language proficiency, disability, and resource access moderate the benefits of particular representations.
Validate a district instrument that measures multimodal design quality rather than fixed learning-style categories.
Use classroom observation and stimulated-recall interviews to explain cluster differences in modality selection and implementation.

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