

The Effectiveness of the Utilization of the Learning Activity Sheets (LAS) In Improving the Numeracy Skills of the Grade 6 Learners in the Public Elementary Schools of Naga North District, Division of Naga City

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ARTICLE INFORMATION	ABSTRACT
Article history: Published: October 2026 Keywords: Learning Activity Sheets Grade 6 Numeracy Mathematics Instruction Formative Assessment Kendall's W	The study described utilization of Learning Activity Sheets (LAS) and Grade 6 mathematics teachers' perceptions of their effectiveness for numeracy instruction in five public elementary schools of Naga North District, Naga City, during school year 2025–2026. A descriptive–evaluative–correlational survey included all 31 Grade 6 teachers in the district (16 from big, 11 from medium and 4 from a small school) and used a researcher-made 140-item questionnaire. The source reported a utilization mean of 4.17 (“Much Utilized”), highest for teacher guidance and monitoring (4.57) and lowest for learner engagement and participation (3.70). Perceived effectiveness across six numeracy-skill domains averaged 4.01 (“Much Effective”), highest for conceptual understanding (4.20) and lowest for speed and efficiency (3.86). The original chapter presented Kendall coefficients of concordance of .86–.99 for utilization-indicator ranks and .79–.94 for perceived effectiveness-indicator ranks, comparing three school-type profiles. The survey did not include pretest–posttest numeracy measurements and did not establish a causal effect. The reported reliability coefficient of .87 requires methodological verification because the cited KR-21 formula is generally intended for dichotomously scored items, while this questionnaire used Likert ratings. The findings support greater attention to learner engagement, independent practice and fluency within curriculum-aligned LAS.

1. Introduction

Numeracy in upper elementary schooling requires accuracy, conceptual understanding, mathematical communication, problem solving and the efficient retrieval of basic operations. These capabilities are related but not interchangeable: a learner may understand how an operation works but still complete tasks slowly, or may perform calculations quickly without selecting an appropriate approach for a novel problem.

Learning Activity Sheets (LAS) are a practical format for structuring exercises, offering guided examples, allocating independent practice and extending instructional time beyond regular lessons. Their educational value rests not only on frequency of distribution but also on alignment with grade-level competencies, clarity of directions, teacher feedback and whether the activities elicit relevant mathematical thinking.

The study was situated in Naga North District, Division of Naga City, and assessed both the extent of LAS utilization and teachers' perceptions of its effectiveness for six aspects of Grade 6 numeracy. It divided the schools into big, medium and small categories. The researcher's complete Chapters 1–5 were supplied across two PDF files, permitting examination of the stated sample, instrument, analysis and source tables.

The mathematics intervention practice guide published by the Institute of Education Sciences identifies structured instruction, purposeful mathematical language and well-chosen representations as evidence-based practices (Fuchs et al., 2021). This guidance provides a reason to look beyond mere usage counts and assess the cognitive demands and instructional support built into individual LAS. Instructional materials may be deployed frequently while requiring improvement in student engagement and independent practice. Teacher guidance is valuable, especially with difficult content, but pupils also need to reason, check their solutions and respond to formative feedback. A high rating for teacher monitoring therefore cannot automatically stand in for independent numerical fluency.

2. Methods

The study described a descriptive–evaluative–correlational research design for school year 2025–2026. Naga North District was selected purposively as the study locale. Within that district, all Grade 6 mathematics teachers were included through total enumeration; the source reported 31 teacher respondents across five public elementary schools. The term “correlational” in the thesis referred specifically to significance testing of agreement in ranked indicators and did not represent a conventional teacher-level predictor–outcome correlation.

The instrument was a researcher-made questionnaire-checklist with a five-point Likert response scale. It was described as containing 140 items: 71 related to LAS utilization and 69 to its perceived effectiveness for numeracy skills. The domains for utilization were frequency, learning-competency alignment, clarity/appropriateness, learner engagement, teacher guidance and monitoring, and

accessibility. Perceived outcomes included accuracy, problem solving, conceptual understanding, speed and efficiency, critical thinking and reasoning, and retention/transfer.

The study retained the reported school-category means and overall means. Source descriptive treatment included frequency counts, percentages, weighted means and ranked items. For group-level item rank concordance, the study reported Kendall's W and chi-square approximations. Its printed W, χ^2 and degrees of freedom are reproduced below without generating unreported correlations or causal effects. The study stated that a group of jurors evaluated instrument content and that a reliability coefficient of .87 was obtained using the Kuder–Richardson 21 procedure. Because KR-21 is intended for dichotomous item scoring rather than conventional five-category Likert responses, the statistic requires verification against the original coding and a coefficient appropriate to its measurement scale. The thesis additionally used a t significance test for the reliability coefficient; that procedure should not be treated as validation of internal consistency without methodological justification.

The study documented administrative permission and questionnaire distribution but did not show respondent-level scores within the provided PDFs. It did not provide independently assessed Grade 6 pupils' mathematics pretest and posttest scores, a comparison group or a causal identification strategy. "Effectiveness" in its published tables therefore reflects teacher questionnaire ratings. The present article does not reinterpret those means as measured learning gains.

3. Results

3.1 Respondents

Table 1. Distribution of the 31 Grade 6 teacher respondents

School category	School	Teachers	% of sample
Big	Naga Central School I	8	26
Big	Naga Central School II	8	26
Medium	Calauag Elementary School	6	19
Medium	RV Maramba Elementary School	5	16
Small	Dr. Domingo G. Abcede Elementary School	4	13
Total	Five schools	31	100

Note. From the source respondents table. School-level percentages were rounded in the thesis; category subtotals were 16 big-school, 11 medium-school and 4 small-school teachers.

The respondents were unevenly distributed across school categories: 16 teachers (52%) taught in big schools, 11 (35%) in medium schools and four (13%) in the small school. Although the survey used complete enumeration within the district, comparing three aggregated school categories does not make each category equally precise. In particular, the small-school profile reflects only four respondents. The study therefore described the professional judgments of the district's Grade 6 mathematics teachers. The unit supplying judgments was the teacher, while Kendall's concordance compared ranked items averaged within three school categories. This distinction is central to interpreting the statistical tables.

3.2 Utilization of Learning Activity Sheets

Table 2. LAS utilization domains by school category

Domain	Big	Medium	Small	Overall
Frequency of use	4.05	4.05	4.02	4.04
Alignment with learning competencies	4.40	4.34	4.32	4.35
Clarity and appropriateness of content	4.47	4.40	4.38	4.42
Learner engagement and participation	3.77	3.69	3.65	3.70
Teacher guidance and monitoring	4.62	4.56	4.53	4.57
Availability and accessibility	4.11	3.92	3.86	3.96
Overall	4.24	4.16	4.13	4.17

The overall utilization mean was 4.17, classified as Much Utilized. Teacher guidance and monitoring was the most highly rated domain at 4.57 and the only domain to reach Very Much Utilized. Clarity and appropriateness of content (4.42) and alignment with learning competencies (4.35) were also strongly rated, whereas learner engagement and participation was lowest at 3.70.

This pattern suggests that LAS implementation was particularly strong in teacher-controlled activities, curriculum matching and content design. The comparatively low rating for participation is relevant because materials can be clear and routinely checked without eliciting explanation, argumentation or independent problem solving from all learners.

The study reported a mean of 4.04 for frequency of use and 3.96 for availability/accessibility. The latter category was not as strong in medium (3.92) and small (3.86) schools as in big schools (4.11). These results point to the need for examining distribution timeliness and resource access rather than assuming that the presence of LAS alone guarantees consistent availability.

Within frequency-of-use items, use in both classroom and home learning (4.34) and repeated use for skill mastery (4.32) were the highest-rated practices. Independent practice (3.71) and provision for remediation (3.82) occupied lower positions. This is an opportunity to distinguish repetition undertaken with extensive teacher guidance from practice that helps pupils regulate and monitor their own performance.

Table 3. Reported concordance in LAS utilization rankings

LAS domain	W	χ^2	df	Computed p
Frequency of use	0.99	32.67	11	0.0006
Competency alignment	0.93	27.90	10	0.0019
Content clarity and appropriateness	0.96	25.92	9	0.0021

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LAS domain	W	χ^2	df	Computed p
Engagement and participation	0.86	25.80	10	0.0040
Teacher guidance and monitoring	0.88	23.76	9	0.0047
Availability and accessibility	0.94	28.20	10	0.0017

The source showed strong agreement in the ranking of LAS indicators across the three school types, with W ranging from .86 to .99. Rank concordance was greatest for frequency of use and lowest for learner engagement. These results imply that the three category profiles prioritized the same items similarly, rather than showing whether actual student performance was similar.

The high agreement should also be read with reference to the number of raters in the W computation. Here the three school-category rank sets were the ranking units, not the full sample of 31 individual teachers. The test thus provides a summary of category-level ranking consistency and should not be generalized as a 31-person inferential comparison.

3.3 Perceived effectiveness for numeracy skill domains

Table 4. Teachers' ratings of LAS effectiveness for numeracy skills

Skill	Big	Medium	Small	Overall
Accuracy in computation	4.07	3.95	3.90	3.97
Problem-solving skills	4.07	3.97	3.92	3.99
Conceptual understanding	4.25	4.19	4.14	4.20
Speed and efficiency	3.94	3.85	3.79	3.86
Critical thinking and reasoning	4.03	3.96	3.92	3.97
Retention and transfer of learning	4.10	4.04	4.00	4.05
Overall	4.08	3.99	3.95	4.01

The six areas of perceived effectiveness averaged 4.01 ("Much Effective"). Conceptual understanding was rated highest (4.20), followed by retention and transfer (4.05), problem solving (3.99), accuracy and critical thinking/reasoning (3.97 each), and speed and efficiency (3.86). The relatively lower ranking of fluency measures makes them a useful focus for subsequent assessment.

Perceived conceptual understanding had the highest mean within each school category: 4.25 among big schools, 4.19 in medium schools and 4.14 in the small school. This consistency provides a clear indicator of the teachers' favorable judgment about the explanation and organization of mathematical ideas in LAS activities.

Speed and efficiency was lowest across all three school-size groups, at 3.94, 3.85 and 3.79 respectively. The values remain within the positive descriptor, but a relative deficiency in fluent performance can constrain pupils when completing multi-step tasks. A school response could combine carefully sequenced worked examples with timely retrieval practice and targeted review; whether this changes actual fluency must be assessed, not presumed.

Critical thinking and accuracy both averaged 3.97. Those equal domain means should not be interpreted as equivalent learner proficiency because the underlying indicators differed. They instead suggest that the survey rated related but conceptually distinct aspects of numeracy at similar levels.

Table 5. Reported concordance of perceived numeracy-effectiveness rankings

Numeracy area	W	χ^2	df	Computed p
Accuracy in computation	0.94	25.38	9	0.0026
Problem-solving skills	0.92	24.84	9	0.0032
Conceptual understanding	0.94	28.20	10	0.0017
Speed and efficiency	0.79	23.70	10	0.0084
Critical thinking and reasoning	0.93	25.11	9	0.0029
Retention and transfer	0.86	25.80	10	0.0040

Agreement was again high by the source's reported coefficients ($W = .79-.94$). The lowest coefficient concerned speed and efficiency ($W = .79$), while accuracy and conceptual understanding each reached $W = .94$. The ranking results should be interpreted as agreement in the ordering of perceived effectiveness indicators across three types of schools.

Although the study referred to a descriptive–evaluative–correlational design, these tests did not estimate an association between individual pupils' LAS exposure and mathematics scores. The source did not present measured numeracy improvement over time, so the manuscript avoids claims that the high concordance established instructional impact.

3.4 Representative item-level results and interpretive issues

Table 6. Selected LAS implementation and numeracy items

Dimension	Reported indicator	Mean
LAS use	Apply LAS in classroom and home learning	4.34
LAS use	Repeat LAS for skill mastery	4.32
LAS use	Use LAS in remediation sessions	3.82
LAS use	LAS for independent practice	3.71
LAS alignment	Reflect essential mathematics learning competencies	4.61
Content clarity	Use age-appropriate mathematics terms and symbols	4.59
Content clarity	Ensure Grade 6 content is age appropriate	4.56
Engagement	Ask learners to reflect on performance after LAS activities	3.84

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Dimension	Reported indicator	Mean
Engagement	Invite answers and idea sharing during activities	3.64

The selected items clarify where relatively high domain means arose. Teachers reported substantial attention to curricular fit, appropriate symbols and repeated practice. Use of LAS for independent practice and remediation was rated less frequently. This combination suggests that teachers valued LAS as structured supporting materials but could offer pupils greater ownership of practice and feedback cycles.

The study also recorded higher content-alignment and clarity items than learner-sharing activities. For mathematics, discussions in which pupils compare strategies and justify answers can complement direct practice. These activities should be targeted to curriculum content rather than used only as generic engagement devices.

The item values were based on teacher perception and do not indicate that a specified percentage of pupils mastered individual competencies. No individual pupil denominator was attached to the questionnaire ratings in the supplied chapters.

3.5 Detailed item-level results

The following condensed tables retain individual indicator wording and the four corresponding means from the original detailed results tables. They provide a more transparent basis for the domain-level results reported above. Each row reproduces an existing source indicator rather than constituting a new sample or an independently measured student outcome.

Table 7. Frequency-of-use indicator means for LAS

Indicators	Big / large	Medium	Small	Overall
Uses the Learning activity Sheets during regular mathematics classes	4.09	4.03	3.95	4.02
Distributes the Learning Activity Sheets on a weekly basis.	3.91	3.88	4.00	3.93
Integrates the Learning Activity Sheets in daily numeracy lessons.	4.07	3.96	4.25	4.09
Assigns the Learning Activity Sheets as take-home activities.	4.11	4.19	4.00	4.10
Provides the Learning Activity Sheets during remediation sessions	3.80	3.92	3.75	3.82
Utilizes the Learning Activity Sheets for independent practice.	3.84	3.80	3.50	3.71
Employs the Learning Activity Sheets for guided Numeracy activities	4.04	4.00	3.75	3.93
Incorporates the Learning Activity Sheets in formative assessments.	3.96	3.88	4.00	3.95
Implements the Learning Activity Sheets during review lessons.	4.00	4.10	4.00	4.03
Reinforces numeracy concepts using the Learning Activity Sheets.	4.22	4.17	4.25	4.21
Repeats the use of Learning Activity Sheets for skill mastery.	4.20	4.26	4.50	4.32
Applies the Learning Activity Sheets in both classroom and home learning.	4.36	4.41	4.25	4.34

Within this detailed indicator set, the highest displayed overall mean was 4.34 for “Applies the Learning Activity Sheets in both classroom and home learning,” while the lowest was 3.71 for “Utilizes the Learning Activity Sheets for independent practice.” These are source-reported item means. Their relative positions identify topics for observation and instructional planning, not statistically established improvements in learner achievement.

The distribution across the big/large, medium and small school categories should be checked against local teaching conditions and response counts. Similar means across categories indicate a broadly shared reported pattern; even when visible differences occur, the available aggregate tables do not provide the respondent-level variability needed for independent tests of differences among school types.

Table 8. Learner engagement and participation indicators

Source-reported indicator	Big / large	Medium	Small	Overall
Encourages learners to actively participate in numeracy activities	3.71	3.60	3.53	3.61
Motivates learners to complete Learning Activity Sheets independently.	3.88	3.76	3.70	3.78
Stimulates learners’ interest in solving numeracy problems.	3.82	3.79	3.68	3.76
Invites learners to discuss answers and share ideas during activities.	3.68	3.61	3.63	3.64
Promotes collaboration among learners while completing tasks.	3.70	3.63	3.59	3.64
Fosters curiosity in exploring different numeracy strategies.	3.82	3.77	3.71	3.77
Engages learners in hands-on or interactive numeracy exercises.	3.68	3.59	3.63	3.63
Involves learners in reflecting on their performance after activities.	3.90	3.84	3.78	3.84
Supports learners in asking questions to clarify numeracy concepts.	3.74	3.67	3.70	3.70
Encourages persistence in solving challenging numeracy problems.	3.69	3.59	3.61	3.63
Reinforces learners’ engagement through meaningful and relatable math activities.	3.80	3.74	3.63	3.72

Within this detailed indicator set, the highest displayed overall mean was 3.84 for “Involves learners in reflecting on their performance after activities,” while the lowest was 3.61 for “Encourages learners to actively participate in numeracy activities.” These are source-reported item means. Their relative positions identify topics for observation and instructional planning, not statistically established improvements in learner achievement.

The distribution across the big/large, medium and small school categories should be checked against local teaching conditions and response counts. Similar means across categories indicate a broadly shared reported pattern; even when visible differences occur, the available aggregate tables do not provide the respondent-level variability needed for independent tests of differences among school types.

Table 9. Teacher guidance and monitoring indicators

Source-reported indicator	Big / large	Medium	Small	Overall
Provides clear instructions while guiding learners through the Learning Activity Sheets.	4.66	4.58	4.53	4.59
Monitors learners' progress during numeracy activities	4.64	4.61	4.57	4.61
Assists learners in understanding difficult numeracy concepts	4.69	4.66	4.62	4.66
Observes learners as they work on Learning Activity Sheets to ensure Proper completion	4.58	4.54	4.50	4.54
Offers feedback to correct learners' mistakes promptly	4.61	4.54	4.50	4.55
Guides learners in applying the correct procedures in numeracy tasks.	4.60	4.57	4.52	4.56
Encourages learners to ask questions when they encounter difficulties.	4.58	4.50	4.44	4.51
Supervises group activities to maintain focus and collaboration.	4.60	4.56	4.51	4.56
Facilitates learners' self- assessment and reflection on their performance.	4.57	4.50	4.52	4.53
Provides additional support for learners who struggle with specific tasks.	4.63	4.58	4.60	4.60

Within this detailed indicator set, the highest displayed overall mean was 4.66 for “Assists learners in understanding difficult numeracy concepts,” while the lowest was 4.51 for “Encourages learners to ask questions when they encounter difficulties..” These are source-reported item means. Their relative positions identify topics for observation and instructional planning, not statistically established improvements in learner achievement.

The distribution across the big/large, medium and small school categories should be checked against local teaching conditions and response counts. Similar means across categories indicate a broadly shared reported pattern; even when visible differences occur, the available aggregate tables do not provide the respondent-level variability needed for independent tests of differences among school types.

Table 10. Accuracy-in-computation indicators

Indicators	Big / large	Medium	Small	Overall
Improves learners' ability to perform addition accurately.	4.33	4.21	4.15	4.23
Enhances learners' subtraction skills with minimal errors.	4.12	4.00	3.91	4.01
Develops learners' multiplication accuracy in numeracy tasks.	3.84	3.71	3.60	3.72
Strengthens learners' division skills through guided activities.	4.04	3.74	3.67	3.82
Increases learners' precision in solving word problems.	3.90	3.69	3.62	3.74
Promotes careful checking of answers by learners.	4.08	4.00	4.02	4.03
Encourages learners to apply correct procedures in computation.	4.15	4.10	4.04	4.10
Facilitates the mastery of basic operations without mistakes	3.86	3.77	3.80	3.81
Support learners in avoiding common computational errors.	4.20	4.16	4.14	4.17
Reinforces accuracy through repeated practice on LAS activities	4.20	4.09	4.00	4.10

Within this detailed indicator set, the highest displayed overall mean was 4.23 for “Improves learners' ability to perform addition accurately..” while the lowest was 3.72 for “Develops learners' multiplication accuracy in numeracy tasks..” These are source-reported item means. Their relative positions identify topics for observation and instructional planning, not statistically established improvements in learner achievement.

The distribution across the big/large, medium and small school categories should be checked against local teaching conditions and response counts. Similar means across categories indicate a broadly shared reported pattern; even when visible differences occur, the available aggregate tables do not provide the respondent-level variability needed for independent tests of differences among school types.

Table 11. Conceptual-understanding indicators

Indicators	Big / large	Medium	Small	Overall
Clarifies mathematical concepts through structured activities.	4.44	4.38	4.27	4.36
Develops learners' understanding of the relationships between numbers.	4.11	4.04	4.00	4.05
Enhances learners' comprehension of basic numeracy principles.	4.36	4.41	4.31	4.36
Supports learners in applying concepts to different types of problems.	4.28	4.20	4.24	4.24
Encourages learners to explain their reasoning in solving tasks.	4.14	4.10	4.00	4.08
Strengthens learners' grasp of mathematical operations and their purposes.	4.30	4.21	4.18	4.23
Facilitates connections between previously learned and new concepts.	4.15	4.10	4.08	4.11
Promotes Understanding rather than memorization of procedures.	4.12	4.10	4.06	4.09
Guides learners in identifying patterns and relationships in numeracy.	4.26	4.21	4.18	4.22
Improves learners' ability to generalize mathematical concepts.	4.13	4.00	3.94	4.02
Reinforces Conceptual knowledge through step-by-step activities.	4.46	4.38	4.33	4.39

Within this detailed indicator set, the highest displayed overall mean was 4.39 for “Reinforces Conceptual knowledge through step-by-step activities..” while the lowest was 4.02 for “Improves learners' ability to generalize mathematical concepts..” These are source-reported item means. Their relative positions identify topics for observation and instructional planning, not statistically established improvements in learner achievement.

The distribution across the big/large, medium and small school categories should be checked against local teaching conditions and response counts. Similar means across categories indicate a broadly shared reported pattern; even when visible differences occur, the available aggregate tables do not provide the respondent-level variability needed for independent tests of differences among school types.

Table 12. Speed-and-efficiency indicators

Source-reported indicator	Big / large	Medium	Small	Overall
Increases learners' speed in performing basic mathematical operations.	3.90	3.81	3.77	3.83
Enhances learners' efficiency in solving numeracy exercises.	3.96	3.84	3.74	3.85
Develops learners' ability to complete computations accurately within a short time.	3.88	3.80	3.69	3.79
Encourages learners to perform calculations more quickly.	4.00	3.89	3.76	3.88
Facilitates faster problem-solving through repeated practice.	3.92	3.77	3.71	3.80
Promotes fluency in addition, subtraction, multiplication, and division.	3.90	3.83	3.79	3.84
Strengthens learners' ability to solve exercises without unnecessary delays	3.88	3.81	3.76	3.82
Supports learners in applying strategies to complete tasks efficiently.	4.10	3.96	4.00	4.02
Reduces hesitation or errors during computation.	4.00	3.93	3.87	3.93
Reinforces timed practice to improve calculation speed	3.94	3.90	3.81	3.88
Guides learners to work systematically for quicker problem- solving.	3.90	3.85	3.78	3.84

Within this detailed indicator set, the highest displayed overall mean was 4.02 for “Supports learners in applying strategies to complete tasks efficiently..” while the lowest was 3.79 for “Develops learners' ability to complete computations accurately within a short time..” These are source-reported item means. Their relative positions identify topics for observation and instructional planning, not statistically established improvements in learner achievement.

The distribution across the big/large, medium and small school categories should be checked against local teaching conditions and response counts. Similar means across categories indicate a broadly shared reported pattern; even when visible differences occur, the available aggregate tables do not provide the respondent-level variability needed for independent tests of differences among school types.

Table 13. Critical-thinking and reasoning indicators

Source-reported indicator	Big / large	Medium	Small	Overall
Develops learners' ability to analyze numerical problems critically.	4.09	4.02	3.98	4.03
Encourages learners to justify their answers in numeracy exercises	3.91	3.88	3.82	3.87
Promotes logical reasoning when selecting appropriate strategies.	4.05	4.00	3.98	4.01
Supports learners in evaluating different methods to solve problems.	4.16	4.08	4.11	4.12
Enhances learners' ability to make connections between mathematical ideas	4.10	4.05	3.96	4.04
Guides learners in identifying errors in their own solutions.	4.00	3.90	3.83	3.91
Stimulates learners to ask “why” and “how” questions in numeracy tasks.	4.08	3.97	4.02	4.02
Fosters learners' ability to draw conclusions based on numerical evidence.	4.00	3.89	3.80	3.90
Builds analytical skills for solving multi-step problems.	3.91	3.85	3.79	3.85
Encourages learners to compare alternative solutions and select the best one.	4.04	3.96	3.88	3.96

Within this detailed indicator set, the highest displayed overall mean was 4.12 for “Supports learners in evaluating different methods to solve problems..” while the lowest was 3.85 for “Builds analytical skills for solving multi-step problems..” These are source-reported item means. Their relative positions identify topics for observation and instructional planning, not statistically established improvements in learner achievement.

The distribution across the big/large, medium and small school categories should be checked against local teaching conditions and response counts. Similar means across categories indicate a broadly shared reported pattern; even when visible differences occur, the available aggregate tables do not provide the respondent-level variability needed for independent tests of differences among school types.

3.6 Additional tabulated indicators for validation

These supplementary results tables reproduce further individual indicators from the uploaded source. The indicators allow readers to evaluate whether the relative domain priorities were driven by consistently similar items or by a small subset of highly rated practices. They were not created from hypothetical or reconstructed participant records.

Table 14. Clarity and appropriateness of LAS content

Indicators	Big / large	Medium	Small	Overall
Presents numeracy concepts in a clear and understandable manner.	4.41	4.33	4.28	4.34
Explains instructions using simple and appropriate language.	4.15	4.09	4.00	4.08
Provides examples that are easy for Grade 6 learners to follow.	4.54	4.48	4.50	4.51
Uses terms and symbols appropriate to the learners' level.	4.66	4.53	4.58	4.59
Organizes content logically from simple to complex concepts.	4.51	4.45	4.48	4.48
Avoids unnecessary or confusing information in numeracy tasks.	4.49	4.44	4.38	4.44
Clarifies learning objectives at the beginning of each activity.	4.41	4.30	4.38	4.36
Matches the difficulty level of activities to the learners' abilities	4.40	4.32	4.28	4.33
Illustrates numeracy concepts using relevant and meaningful examples.	4.51	4.47	4.42	4.47
Ensures that content is age- appropriate for Grade 6 learners	4.61	4.58	4.50	4.56

This item-level table gave the highest overall rating to “Uses terms and symbols appropriate to the learners' level.” (4.59), while “Explains instructions using simple and appropriate language.” received the lowest (4.08). The contrast refines the broader domain finding: a favorable overall score may coexist with specific instructional practices that are less well established or more demanding. The researcher should examine these indicators through actual classroom artifacts and a documented scoring procedure.

Differences among school-size groups are best interpreted as descriptive patterns, because this table supplies aggregate means rather than the respondent-level scores and variances required to estimate confidence intervals or test group effects. For subsequent evaluation, teachers could link the most relevant indicators to short performance tasks, collect repeated examples of pupil work, and track the quality of implementation over time.

Table 15. Retention and transfer of numeracy learning indicators

Indicators	Big / large	Medium	Small	Overall
Enhances learners' ability to remember previously learned numeracy concepts.	4.18	4.13	4.15	4.15
Encourages learners to recall mathematical procedures accurately.	4.00	3.94	4.00	3.98
Promotes the retention of skills after completing Learning Activity Sheets.	4.15	4.07	4.01	4.08
Supports learners in applying learned concepts to new problems.	4.20	4.13	4.08	4.14
Strengthens the ability to transfer numeracy skills to real- life situations.	3.98	3.92	3.90	3.93
Facilitates long- term understanding of mathematical operations.	4.00	3.83	3.91	3.91
Reinforces previously Learned numeracy topics through practice.	4.24	4.11	4.07	4.14
Develops learners' ability to generalize concepts across different exercises.	4.10	4.05	3.96	4.04
Encourages learners to use learned strategies in unfamiliar tasks.	4.00	4.09	3.89	3.99
Guides learners in connecting new numeracy concepts with prior knowledge	4.08	4.11	4.00	4.06
Builds confidence in applying learned skills in various contexts.	4.13	4.10	4.04	4.09

This item-level table gave the highest overall rating to “Enhances learners’ ability to remember previously learned numeracy concepts.” (4.15), while “Facilitates long- term understanding of mathematical operations.” received the lowest (3.91). The contrast refines the broader domain finding: a favorable overall score may coexist with specific instructional practices that are less well established or more demanding. The researcher should examine these indicators through actual classroom artifacts and a documented scoring procedure. Differences among school-size groups are best interpreted as descriptive patterns, because this table supplies aggregate means rather than the respondent-level scores and variances required to estimate confidence intervals or test group effects. For subsequent evaluation, teachers could link the most relevant indicators to short performance tasks, collect repeated examples of pupil work, and track the quality of implementation over time.

4. Discussion

The study offers a detailed description of how LAS were being used in the five Naga North schools. Teacher guidance and content preparation emerged as relative strengths, while pupil engagement and fluency were less highly rated. This combination is pedagogically interpretable: structured materials can support understanding but may require redesign for deeper participation and efficient independent problem solving.

LAS utilization and perceived effectiveness were measured on different response scales. The utilization mean of 4.17 cannot be subtracted from a perceived effectiveness mean of 4.01 to infer an intervention gap or causal shortfall. The useful comparison is between categories within each scale and their implications for lesson planning.

Teacher guidance and monitoring (4.57) was notably high. Teachers may be providing clear procedures and feedback. The next stage of improvement is not necessarily to reduce guidance, but to phase assistance appropriately—model an operation, support a guided attempt, check understanding, then assign independent practice and review error patterns. The IES mathematics intervention guidance supports systematic instruction and meaningful mathematical representations (Fuchs et al., 2021).

Learner engagement (3.70) was the lowest-rated utilization domain. Future LAS revisions could provide prompts requiring pupils to explain how an answer was obtained, compare two solution methods or reflect on why a mistaken answer was plausible. Teachers could then use pupil explanations as formative evidence, not merely mark completion.

Conceptual understanding (4.20) was the most positively perceived numeracy dimension. This may reflect the value of sequential examples and written scaffolds. Yet the claim should be confirmed by asking pupils to transfer concepts across novel item formats rather than reproduce routines immediately after instruction.

Speed and efficiency (3.86) was the lowest-rated numeracy dimension. Appropriate fluency work should focus on accurate and increasingly automatic recall while preserving conceptual understanding. Schools can set brief practice goals and monitor accuracy together with response time to avoid rewarding speed at the cost of reasoning.

Availability and accessibility (3.96) remained an implementation concern. The data suggested a lower rating in medium and small schools than in big schools. Local procedures for printing, distributing and collecting LAS could be examined, together with class size, financial resources and regularity of monitoring, to determine whether barriers differ materially.

The original chapter called the questionnaire’s outcomes “effectiveness,” but objective achievement measures were absent. A journal article can faithfully report perceived effectiveness while recommending a more rigorous follow-up. A pretest–posttest evaluation using common numeracy tasks and implementation-fidelity records would allow stronger claims, though a comparison group would be needed to isolate a treatment effect.

The reported reliability coefficient .87 requires special attention. KR-21 generally models dichotomously scored items and makes assumptions not automatically met by a five-category rating instrument. A modern analysis should inspect coding, item distributions and an appropriate ordinal or internal-consistency coefficient. Any claim that a t test makes a reliability estimate “significant” should be reviewed with a measurement specialist.

Lastly, the Kendall W tests operated on just three ranked school-category profiles; this is a different sample structure from the 31 teacher questionnaires. The manuscript preserves the source’s tests but explicitly identifies their limited inferential scope. The ability to reproduce the rankings from raw category means, including tied-rank adjustments, would materially improve transparency.

5. A proposed LAS improvement cycle

Table 16. Priority actions and evaluation measures

Source priority	School action	Evidence to collect
Engagement (3.70)	Add explanation, peer discussion and reflection prompts	Participation and quality-of-reasoning rubric
Independent practice item (3.71)	Sequence supported to independent tasks	Completion accuracy without teacher prompts
Remediation item (3.82)	Assign differentiated LAS based on errors	Pupil-level mastery checks
Speed and efficiency (3.86)	Embed short fluency practice alongside reasoning	Accuracy and response-time trends
Accessibility (3.96)	Audit printing/distribution schedules and storage	Receipt logs and missed-lesson counts
Instrument reliability concern	Recheck scale coding and reliability approach	Item-level reliability report

6. Conclusion

The study reported widespread utilization of LAS in Naga North District (overall 4.17, Much Utilized) and favorable teacher judgments of their effectiveness for Grade 6 numeracy (4.01, Much Effective). Teacher guidance and monitoring was highest among utilization domains (4.57), whereas learner engagement and participation was lowest (3.70). Conceptual understanding led perceived numeracy effectiveness (4.20), while speed and efficiency was lowest (3.86).

The reported concordance findings indicated substantial similarity in indicator rankings across three school-category profiles, but they do not demonstrate causality or measured pupil achievement improvement. Future study should pair the use of LAS with objective numeracy assessments, strengthen reliability reporting and clearly specify analysis units and tie-corrected Kendall calculations. The immediate instructional priorities were greater independent practice, targeted remediation and cognitively meaningful engagement.

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