

Relationship Between Mathematics and Science Academic Performance of Grade 6 Learners at Lawigan Elementary School, Schools Division of Bislig City: A Descriptive-Correlational Approach

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ABSTRACT

This study determined the relationship between Mathematics performance and Science achievement among Grade 6 learners at Lawigan Elementary School, Schools Division of Bislig City, for School Year 2025-2026. It employed a quantitative descriptive-correlational design using documentary analysis of the learners' final grades in Mathematics and Science. Total enumeration was applied to include all 20 Grade 6 learners. The data were analyzed using frequency, percentage, mean, standard deviation, and Pearson product-moment correlation coefficient. Results showed that the learners' Mathematics performance was Satisfactory ($M = 84.55$, $SD = 5.32$), whereas their Science achievement was Very Satisfactory ($M = 86.40$, $SD = 5.70$). Correlation analysis revealed a very strong positive and statistically significant relationship between Mathematics performance and Science

achievement ($r = 0.938$, $p < .001$). The findings indicate that learners who obtained higher grades in Mathematics also tended to obtain higher grades in Science. Since the design was correlational, the result establishes association rather than causation. An academic enhancement plan is proposed to strengthen numeracy, problem-solving, measurement, data interpretation, and integrated Math-Science learning tasks through remediation, enrichment, peer tutoring, teacher collaboration, and regular progress monitoring.

Keywords: *Mathematics performance, Science achievement, Grade 6 learners, descriptive-correlational research, Pearson correlation, academic enhancement plan*

INTRODUCTION

Mathematics and Science are essential learning areas in basic education because they develop analytical reasoning, problem-solving, measurement, computation, and evidence-based decision-making. Their relationship is especially relevant in the elementary grades, where learners begin to apply mathematical knowledge to scientific tasks such as interpreting tables, reading graphs, comparing measurements, analyzing observations, and drawing conclusions from data.

The interdependence of the two learning areas is supported by transfer-of-learning principles. Thorndike and Woodworth (1901) explained that learning may transfer when tasks share common elements. In the present context, Mathematics and Science draw on overlapping competencies, including logical reasoning, computation, problem-solving, measurement, and data interpretation. Learners who have stronger foundations in these skills may be better positioned to engage with Science activities that require quantitative understanding.

Evidence from larger assessment contexts also shows that Mathematics and Science achievement are closely connected. Wang (2005) reported correlations between Mathematics and Science achievement using TIMSS and TIMSS-R data, while Awang et al. (2021) found a strong positive correlation between composite Mathematics and Science scores among Malaysian learners. These findings suggest that school-level studies are valuable for identifying whether the same pattern is present in specific educational settings.

At Lawigan Elementary School, teachers have observed variations in Grade 6 learners' performance in Mathematics and Science. Some learners who perform well in mathematical tasks also show stronger performance in Science activities involving computation, measurement, and interpretation of data. However, localized evidence is needed before planning targeted interventions. Therefore, this study examined the relationship between Mathematics performance and Science achievement among Grade 6 learners using their final grades for School Year 2025-2026.

Specifically, the study determined the learners' level of Mathematics performance, described their level of Science achievement, tested whether a significant relationship existed between the two variables, and developed an academic enhancement plan based on the findings.

Literature Review

Mathematics Performance and Foundational Skills

Mathematics performance reflects learners' understanding and application of concepts, procedures, reasoning, computation, measurement, and problem-solving. It is not limited to recalling formulas or performing routine operations; it also involves using mathematical knowledge in meaningful situations. In Science learning, these skills are used when learners measure quantities, calculate values, compare results, and interpret tables and graphs.

In the Philippine basic education system, final grades summarize learners' progress in each learning area. DepEd Order No. 8, s. 2015 provides the classroom-assessment guidelines and grading descriptors used to report learner performance. These descriptors allow school records to serve as a practical source of evidence for describing academic performance in a school-based study.

Science Achievement and Quantitative Reasoning

Science achievement refers to learners' understanding and application of scientific concepts, processes, and skills. At the elementary level, Science learning requires observation, comparison, classification, measurement, interpretation of evidence, and logical explanation. Many of these tasks rely on the same analytical processes developed in Mathematics.

Science achievement is strengthened when learners can connect new concepts to prior knowledge. Meaningful learning is supported when learners relate new information to existing cognitive structures (Ausubel, 1968). In this study, Mathematics provides a relevant prior-knowledge base that learners may draw upon when addressing Science activities involving numerical relationships, measurements, and evidence.

Relationship Between Mathematics and Science Achievement

Research consistently indicates an association between Mathematics and Science achievement. Wang (2005) found moderate correlations between the two subjects using international assessment data. More recently, Awang et al. (2021) reported a correlation coefficient of 0.88 between composite Mathematics and Science scores using Malaysia's TIMSS 2015 data. Zhu (2022) likewise identified Mathematics as an important predictor of Science achievement when analyzing PISA data.

These studies support the value of examining the relationship at the school level. However, an association does not establish that performance in one subject directly causes performance in the other. A descriptive-correlational design is therefore appropriate for determining the direction and strength of the relationship while avoiding unsupported causal claims.

METHODS

Research Design

The study employed a quantitative descriptive-correlational research design. The descriptive component summarized the learners' final grades and performance levels in Mathematics and Science. The correlational component determined the strength and direction of the association between the two variables without manipulating the learners' academic conditions. Documentary analysis was used because the data were obtained from existing school records rather than from a newly administered examination, questionnaire, or interview (Bowen, 2009; Creswell & Creswell, 2018).

Research Locale

The study was conducted at Lawigan Elementary School, a public elementary school located in Barangay Lawigan, City of Bislig, Surigao del Sur, under the Schools Division of Bislig City. The school was selected because it was the setting in which the Grade 6 learners' official Mathematics and Science grades were available for analysis.

Participants and Sampling Technique

The participants were 20 Grade 6 learners enrolled at Lawigan Elementary School during School Year 2025-2026. They consisted of 10 male and 10 female learners. Total enumeration was used because the Grade 6 population was manageable and all learners with available official final grades were included in the analysis.

Research Instrument

A researcher-made Documentary Analysis Form was used to record each learner's code, sex, final Mathematics grade, Mathematics performance level, final Science grade, Science achievement level, and remarks. Learner codes were used instead of names. The final grades were interpreted using the grading descriptors provided in DepEd Order No. 8, s. 2015.

Data Gathering Procedure

The researcher secured permission from the school head to access the authorized academic records required for the study. After approval, the final Mathematics and Science grades were encoded in the Documentary Analysis Form using learner codes. The entries were checked against the original school records before statistical analysis. The data were used only for the stated research purpose.

Data Analysis

Frequency and percentage were used to describe the distribution of learners across the performance categories. Mean and standard deviation were computed to summarize the overall levels of Mathematics performance and Science achievement. Pearson product-moment correlation coefficient was used to determine the strength, direction, and significance of the relationship between the paired Mathematics and Science grades at the .05 level of significance.

Ethical Consideration

The study used only authorized school records. Confidentiality was maintained by replacing learner names with codes in the data-gathering sheet and in all analyses. The results were reported in aggregate form, and access to the encoded data was limited to the research process. No learner was subjected to additional testing, interviews, or classroom interventions during data collection.

RESULTS AND DISCUSSION

The findings are presented according to the research questions: the level of Mathematics performance, the level of Science achievement, the relationship between the two variables, and the proposed academic enhancement plan.

Level of Mathematics Performance

Table 1. *Level of Mathematics Performance of Grade 6 Learners*

Grade Range	Descriptive Equivalent	Frequency	Percentage
90-100	Outstanding	5	25%
85-89	Very Satisfactory	5	25%
80-84	Satisfactory	6	30%
75-79	Fairly Satisfactory	4	20%
Below 75	Did Not Meet Expectations	0	0%
Total		20	100%

The learners obtained a mean Mathematics grade of 84.55 (SD = 5.32), which corresponds to a Satisfactory level. Five learners (25%) were Outstanding, five (25%) were Very Satisfactory, six (30%) were Satisfactory, and four (20%) were Fairly Satisfactory. No learner obtained a grade below 75. The distribution indicates that the group generally met the expected Mathematics competencies, although focused assistance remains necessary for learners within the Fairly Satisfactory category.

Level of Science Achievement

Table 2. *Level of Science Achievement of Grade 6 Learners*

Grade Range	Descriptive Equivalent	Frequency	Percentage
90-100	Outstanding	6	30%
85-89	Very Satisfactory	7	35%
80-84	Satisfactory	3	15%
75-79	Fairly Satisfactory	4	20%
Below 75	Did Not Meet Expectations	0	0%
Total		20	100%

The learners obtained a mean Science grade of 86.40 (SD = 5.70), interpreted as Very Satisfactory. Six learners (30%) were Outstanding, seven (35%) were Very Satisfactory, three (15%) were Satisfactory, and four (20%) were Fairly Satisfactory. No learner obtained a grade below 75. Compared with the Mathematics distribution, a larger proportion of learners performed within the upper Science categories. Nevertheless, learners within the Fairly Satisfactory category may benefit from additional support in scientific reasoning and application.

Relationship Between Mathematics Performance and Science Achievement

Table 3. *Correlation Between Mathematics Performance and Science Achievement*

Variables Correlated	N	Pearson r	p-value	Decision	Interpretation
Mathematics performance and Science achievement	20	0.938	< .001	Reject H0	Very strong positive significant relationship

The Pearson correlation coefficient was $r = 0.938$, with $p < .001$. Since the p-value was below the .05 level of significance, the null hypothesis was rejected. The result indicates a very strong positive significant relationship between Mathematics performance and Science achievement. Learners who obtained higher Mathematics grades also tended to obtain higher Science grades, while learners with lower Mathematics grades tended to obtain lower Science grades.

This finding is consistent with the pattern reported by Wang (2005) and Awang et al. (2021). The association is educationally meaningful because both learning areas involve overlapping skills, including computation, measurement, logical reasoning, graph interpretation, and analysis of data. However, the result should not be interpreted causally. The study establishes that the two variables are strongly associated within the examined Grade 6 group.

Proposed Academic Enhancement Plan

Table 4. *Proposed Academic Enhancement Plan*

Key Finding	Objective	Activities / Strategies	Persons Involved	Time Frame	Success Indicator
Satisfactory Mathematics performance; 20% Fairly Satisfactory	Strengthen basic numeracy and problem-solving	Weekly drills, guided practice, remediation, and problem-solving exercises	Math teacher, adviser, school head	Weekly / Quarterly	Learners improve grades or move to a higher category
Some learners need additional Science support	Improve understanding and application of science concepts	Review sessions, simple experiments, concept maps, and guided learning tasks	Science teacher, adviser, learners	Weekly / Quarterly	Improved quiz, activity, and final-grade performance
Very strong Math-Science association	Apply Mathematics skills in science activities	Measurement, graph reading, data interpretation, estimation, and computation tasks	Math and Science teachers	Monthly / Quarterly	Improved performance in integrated Math-Science tasks
Need for common analytical skills	Develop reasoning and problem-solving	Data tables, graphing experiments, word problems, and group investigations	Teachers and learners	Quarterly	Active participation and improved analytical performance
Learners requiring closer monitoring	Provide targeted academic assistance	Peer tutoring, individualized exercises, progress checks, and parent communication	Teachers, parents, adviser, school head	Monthly	Gradual improvement among learners receiving support

The enhancement plan prioritizes Mathematics support while sustaining Science achievement. Because the relationship between the subjects was very strong, the plan emphasizes integrated tasks that allow learners to apply numeracy, measurement, data interpretation, and problem-solving in scientific contexts. It also provides focused interventions for learners who obtained Fairly Satisfactory grades.

CONCLUSION

The Grade 6 learners at Lawigan Elementary School demonstrated Satisfactory Mathematics performance and Very Satisfactory Science achievement. The analysis revealed a very strong positive and statistically significant relationship between the learners' Mathematics and Science grades. Thus, learners who performed better in Mathematics also tended to perform better in Science. The finding reinforces the importance of shared competencies such as computation, measurement, logical reasoning, problem-solving, and data interpretation. While the correlational design does not establish causation, the results provide a sound school-based basis for implementing an academic enhancement plan that integrates Mathematics and Science learning activities and gives focused support to learners requiring intervention.

Recommendations

1. The school head may support the implementation and periodic evaluation of the proposed academic enhancement plan by providing time, learning materials, and monitoring mechanisms for remediation and enrichment activities.
2. Mathematics teachers may conduct regular numeracy drills, guided practice, and problem-solving activities, with additional support for learners within the Fairly Satisfactory category.
3. Science teachers may integrate measurement, graph reading, data recording, estimation, computation, and interpretation tasks into Science activities to reinforce the application of Mathematics skills.
4. Mathematics and Science teachers may collaborate in preparing integrated classroom tasks and monitoring learner progress across both subject areas.
5. Parents and guardians may be encouraged to support consistent study habits, completion of learning tasks, and regular communication with teachers.
6. Future researchers may examine larger samples, additional grade levels, other schools, and related variables such as attendance, study habits, reading comprehension, instructional strategies, and learner attitudes.

References

- Ausubel, D. P. (1968). *Educational psychology: A cognitive view*. Holt, Rinehart and Winston.
- Awang, H., Hashim, F., Haji Salleh, A. L., & Tan, L. Y. (2021). The influence of mathematics score and student factors on science achievement using TIMSS data. *Eurasia Journal of Mathematics, Science and Technology Education*, 17(6), Article em1976. <https://doi.org/10.29333/ejmste/10931>
- Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2), 27-40. <https://doi.org/10.3316/QRJ0902027>
- Bruner, J. S. (1960). *The process of education*. Harvard University Press.
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE Publications.
- Department of Education. (2015, April 1). DepEd Order No. 8, s. 2015: Policy guidelines on classroom assessment for the K to 12 Basic Education Program. <https://www.deped.gov.ph/2015/04/01/do-8-s-2015-policy-guidelines-on-classroom-assessment-for-the-k-to-12-basic-education-program/>
- Organisation for Economic Co-operation and Development. (2023). *PISA 2022 results (Volume I): The state of learning and equity in education*. OECD Publishing. <https://doi.org/10.1787/53f23881-en>
- Thorndike, E. L., & Woodworth, R. S. (1901). The influence of improvement in one mental function upon the efficiency of other functions (I). *Psychological Review*, 8(3), 247-261. <https://doi.org/10.1037/h0074898>
- Wang, J. (2005). Relationship between Mathematics and Science achievement at the 8th grade. *International Journal of Science and Mathematics Education*, 5, 1-17.
- Zhu, Y. (2022). Reading matters more than mathematics in science learning: An analysis of the relationship between student achievement in reading, mathematics, and science. *International Journal of Science Education*, 44(3), 1-17. <https://doi.org/10.1080/09500693.2021.2007552>