iJRASET
International Journal For Research in Applied Science and Engineering Technology



# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

**Volume:** 13 **Issue:** XII **Month of publication:** December 2025

**DOI:** https://doi.org/10.22214/ijraset.2025.76172

www.ijraset.com

Call: 08813907089 | E-mail ID: ijraset@gmail.com

International Journal for Research in Applied Science & Engineering Technology (IJRASET)
*ISSN: 2321-9653; IC Value: 45.98; SJ Impact Factor: 7.538*
*Volume 13 Issue XII Dec 2025- Available at www.ijraset.com*

# Effects of National Mathematics Program on the Academic Performance of Grade Six Pupils

Marife Q. Malana
*TOMAS CLAUDIO COLLEGES*

***Abstract:*** ***The study examined the extent of the effects of the National Mathematics Program on the academic performance of Grade Six pupils in selected public elementary schools in the Cardona Sub-Office, Division of Rizal, for School Year 2024–2025. A total of 40 mathematics teachers and 210 pupils from seven schools participated. The respondents were described according to various demographic factors, such as teachers' age, sex, civil status, position, educational attainment, length of service, and training attended, as well as pupils' personal and family backgrounds. A descriptive survey design was employed using a researcher-made questionnaire-checklist to assess the program's effects on pupils' performance in number patterns, mathematical concepts, and the four fundamental operations. Documentary analysis of pupils' grades was also conducted.***

***Findings showed that most teacher-respondents were young, female, married, and experienced, while most pupils were male, aged 12–13, and from low-income families. Both teachers and pupils perceived that the National Mathematics Program often affected pupils' performance in key mathematical areas. No significant difference was found between their perceptions, except when grouped by certain demographic variables such as teachers' age and pupils' sex, family size, income, parents' education, and occupation. Pupils' academic performance was rated "Satisfactory," with a mean of 83.65, and a significant correlation existed between the program's perceived effects and pupil performance.***

***The study concluded that demographic factors influence perceptions of the program's impact and emphasized that the National Mathematics Program contributes to pupils' academic achievement. Recommendations included strengthening teacher training, parental involvement, supplemental learning support, and differentiated instruction to enhance mathematics mastery.***

***KEYWORDS: National Mathematics Program, Academic Performance, Mathematical Concepts, NumberPattern, Four Fundamental Operations***

## I. INTRODUCTION

Education plays a vital role in shaping an individual's knowledge, skills, and overall personality, serving as a foundation for becoming a productive and responsible citizen. In the Philippines, various reforms in basic education have been implemented to enhance the quality of teaching and learning. These include the improvement of national learning strategies, school-based management, teacher training, and quality assurance systems. These initiatives reflect the Department of Education's commitment to providing learners with accessible and high-quality education, as mandated in Article XIV, Section 1 of the 1987 Philippine Constitution.

Modern educational practices emphasize that learning must not be confined to textbooks. Learners should experience varied teaching approaches and programs that stimulate interest, develop competencies, and help them meet the demands of a globally competitive environment. Teachers increasingly become facilitators, while learners take more active roles in constructing knowledge. Technological advancements also provide opportunities for interactive classrooms, moving away from traditional lecture-based instruction that often decreases student engagement.

Aligned with these developments, the Department of Education introduced the MATATAG Curriculum through DepEd Order No. 010, s. 2024, later amended by DepEd Order No. 12, s. 2024. The amendment allows continuous school-based mathematics programs beyond regular class hours while awaiting the full national guidelines for the National Mathematics Program (NMP). This policy encourages schools to sustain remedial classes, math tutorials, and enrichment activities to strengthen learners' mathematical foundations. Continuous support ensures that learners, especially those struggling, do not experience setbacks as they build essential skills.

Among elementary subjects, Mathematics is often perceived as difficult due to its abstract nature. Many pupils struggle to connect mathematical ideas to real-life concepts, leading to misconceptions and declining interest. Learning difficulties are also linked to teaching methods, where some educators unintentionally reinforce the notion that mathematics is inherently hard.

©IJRASET: All Rights are Reserved 

Research suggests effective learning occurs when pupils relate new concepts to prior knowledge, receive individualized support, and actively engage in problem-solving tasks. Personalized interaction promotes clarity, improves reasoning skills, and enhances confidence.

In public elementary schools, low performance in Mathematics continues to be a concern. Teachers observe that several pupils lack motivation, foundational skills, and the necessary support to succeed. Programs like the NMP aim to strengthen instruction and improve competencies through structured interventions. The researcher, a Mathematics teacher, sought to determine the effects of the NMP on Grade Six pupils in selected public schools, focusing on understanding number patterns, mathematical concepts, and fundamental operations, while identifying factors affecting performance.

The study was conducted in seven public elementary schools under the Cardona Sub-Office, Division of Rizal, offering complete basic education from kindergarten to Grade Six. These schools operate within the vision and mission of the DepEd, emphasizing learner-centered, equitable, and quality education. Schools implement mathematics-focused programs such as intervention classes, remedial instruction, Math Camps, Mathrathon, and the project "Number Understanding Makes Every Rizaleño Onboard" to improve mathematical competencies.

The study's theoretical foundation is anchored on Bruner's Constructivist Theory, which highlights that effective teaching must align with learners' cognitive levels. Learners actively construct knowledge when exposed to meaningful activities. In the study, the NMP operates under the same principle, enhancing pupils' performance through structured, learner-centered interventions. Teachers serve as facilitators, translating concepts into developmentally appropriate tasks.

A conceptual framework was developed using an Independent Variable–Dependent Variable (IV–DV) model. Independent variables include teacher and pupil profiles, such as age, sex, civil status, educational attainment, length of service, number of children, family income, and parents' characteristics. The NMP's effects on number patterns, mathematical concepts, and fundamental operations also form part of the IV. The dependent variable is pupils' academic performance in Mathematics, while the output is a proposed action plan to enhance NMP implementation.

The study aimed to describe the profiles of teachers and pupils, assess the program's effects on mathematical domains, determine differences in perceptions based on respondent profiles, measure third-quarter academic performance, examine the relationship between the NMP and performance, and propose an action plan. Hypotheses tested whether there is no significant difference between teachers' and pupils' perceptions and no significant relationship between program implementation and academic performance.

Evaluating the NMP benefits multiple stakeholders. School administrators gain insights for planning and implementing mathematics programs. Program implementers can refine action plans to enhance pupils' skills. Teachers improve instructional strategies and professional development. Pupils benefit from programs that support numerical skill development, and parents receive guidance to monitor their children. Community stakeholders can strengthen participation in DepEd programs, and future researchers gain a reference for similar studies.

The study focused on seven schools, with 40 mathematics teachers and 210 pupils as respondents. Teacher profiles included age, sex, civil status, position, educational attainment, length of service, and in-service trainings. Pupil profiles included age, sex, sibling position, number of children in the family, parents' education and occupation, and monthly family income. A descriptive survey research design was employed using a researcher-made questionnaire-checklist, supplemented by analysis of third-quarter Mathematics grades. Key terms were defined to ensure clarity, including academic performance, civil status, educational attainment, number patterns, mathematical concepts, fundamental operations, and the NMP.

The reviewed literature emphasizes targeted educational interventions. Hawthorne (2021) explained that interventions are structured teaching approaches addressing specific learning needs, delivered individually or in groups, and must support classroom instruction. Bowen (2020) noted that while interventions aim to close learning gaps, many students remain in remediation cycles with limited progress, leading to disengagement. In Mathematics, Willis (2020) highlighted the centrality of the four fundamental operations, warning that reliance on calculators may hinder understanding. Mathematical skills become meaningful when applied to real-life contexts such as budgeting, measurement, and daily problem-solving.

Several authors stressed the growing demand for 21st-century numeracy skills. Randall et al. (2020) noted that literacy and numeracy requirements have evolved in the digital age, demanding critical and analytical thinking. Rainsford (2021) emphasized problem-solving skills, arguing that learners must be trained to think creatively and independently through non-routine tasks aligned with constructivist approaches. McWayne (2021) illustrated how numeracy can be integrated into play using construction toys such as Lego, encouraging measurement, pattern recognition, and spatial reasoning.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

Research also highlights the relationship between language and mathematics. Rinsveld et al. (2020) found bilingual learners face unique challenges in arithmetic due to number-naming differences, although proficiency supports complex tasks. Ball et al. (2020) emphasized that children in developing countries often lack foundational literacy and numeracy skills, making home and school support critical. Zippert et al. (2021) found early numeracy and patterning skills are malleable, though causal links to broader math improvement remain inconsistent.

Local literature highlights persistent challenges. Baquirquir et al. (2025) found teachers struggling with limited resources, insufficient training, and inconsistent support for NMP standards. Perez (2020) and Fajardo (2020) stressed building mastery in basic operations through daily activities, while Sumiquiab (2021) emphasized language's role in problem-solving. Gigante (2020) identified numeracy as a major national concern, noting DepEd programs like All-Numerates aim to strengthen mastery of operations and problem-solving skills through structured remediation.

Foreign studies show instructional innovations' effectiveness. Erkus (2021) demonstrated that math worksheets grounded in Multiple Intelligences Theory enhanced achievement. Effendi (2020) developed literacy-enhanced mathematics worksheets using the Realistic Mathematics Education approach, validated for junior high learners. Yeh and Cheng (2021) found game-based learning improved achievement and interest in Taiwan, especially among low achievers. Bar et al. (2021) observed stronger numeracy–literacy associations among monolingual preschoolers, while Aunio (2020) found early numeracy gaps in Finnish kindergarteners without intervention.

Local studies consistently support strengthened mathematics programs. Guitering (2023) found Project NUMERO effective in improving numeracy, while Sambayon (2020) showed contextualized activity sheets enhanced grade five pupils' performance. Melad (2020) found self-instructional modules improved mastery of quadratic functions. Cabrera (2021) concluded modular cooperative learning increased achievement and positive attitudes toward Mathematics.

Studies on learner habits provide further insight. Guinocor (2020) found study orientation strongly correlates with academic performance among mathematics students. Valderama (2021) noted online-modular instruction benefits high-ability learners but may negatively affect low-ability learners. Paralejas (2024) found high utilization of the Numeracy Assessment Tool (NuMAT) improved academic performance of grade three learners. Satorre (2023) confirmed audio-visual materials enhance grade four pupils' performance. Tallud and Caballes (2023) identified significant numeracy gaps despite an eight-week intervention, recommending longer and more targeted programs.

Collectively, literature highlights key themes. Mathematics learning improves when instructional strategies are engaging, contextualized, and aligned with developmental needs. Interventions are most effective when tailored and delivered alongside quality instruction. Foundational numeracy skills remain critical determinants of performance. Teacher competence, access to resources, and institutional support significantly influence program success. Demographic factors of pupils and teachers show minimal direct impact, while quality of instruction and program utilization are the strongest predictors of outcomes.

Overall, the reviewed literature underscores the need for strengthened, well-supported mathematics programs in Philippine public schools. These insights reinforce the importance of examining how the National Mathematics Program affects grade six pupils' performance, particularly in number patterns, mathematical concepts, and fundamental operations.

## II. METHODOLOGY

This study employed a descriptive research design to examine the effects of the National Mathematics Program (NMP) on the academic performance of grade six pupils. Descriptive research systematically describes conditions, practices, beliefs, and trends while exploring possible causes of observed phenomena (Calmorin, 2020). The study used a researcher-developed questionnaire-checklist and documentary analysis, with third-quarter Mathematics grades as the measure of academic performance. Participants included all Mathematics teachers (n = 40) and grade six pupils (n = 210) from selected public elementary schools under the Cardona Sub-Office. Teacher respondents were described by age, sex, civil status, position, educational attainment, length of service, and in-service training, while pupil respondents were described by parental characteristics, including age, sex, civil status, number of children, educational attainment, monthly income, and occupation.

The questionnaire consisted of two parts: Part I collected demographic data, and Part II assessed perceptions of the NMP's effects on number patterns, mathematical concepts, and the four fundamental operations. Responses were measured using a 5-point Likert scale from 1 (Never) to 5 (Always). Pupils' academic performance was categorized as Outstanding (90+), Very Satisfactory (85–89), Satisfactory (80–84), Fairly Satisfactory (75–79), and Did Not Meet Expectations (<75). The instrument was content-validated by experts, and suggestions were incorporated.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

Permission to conduct the study was obtained from the Office of the Schools Division Superintendent. The questionnaire was administered via Google Forms, following ethical guidelines and the Data Privacy Act. Data were encoded and analyzed using SPSS. Descriptive statistics summarized profiles and performance. Weighted mean determined perceptions of the NMP's effects, independent t-tests and ANOVA examined differences based on respondent profiles, and correlation analysis assessed the relationship between program implementation and pupil performance.

## III. RESULT AND DISCUSSION

*1) Profile of the Two Groups of Respondents in Terms of the Selected Variables*

Table 2 presents the profile of the teacher-respondents in terms of age, sex, civil status, position title,length of service, educational attainment, and in-service trainings attended.

It is reflected in the table that the distribution of the teacher-respondents shows that 47.5% of them are 21-30 years old while 7.5% are 51-60 years old. Majority of them at 72.5% are female while 27.5% are male teachers.

Also, in terms of their civil status, 57.5% of them are married while 42.5% are single. As to their position title, 52.5% are holders of Teacher III position while 12.5% are Master Teacher I and Teacher II. Moreover, 27.5% of them have been teaching for 21 – 25 years while 2.5% from 25 years and above.

In addition, as to their educational attainment, 42.5% are MAEd/MATgraduates while 2.5% is a Ph.D/Ed.D.graduate. It is also reflected in the table that 40.0% attended in-service trainings in division level and last in rank at 2.5% attended in the international level.

Table 2
Frequency, Percentage and Rank Distribution of the Teacher-Respondents in Terms of the Selected Variables

| Profile | f | % | Rank |
|---|---|---|---|
| Age | | | |
| 51 – 60 years old | 3 | 7.5 | 4 |
| 41 – 50 years old | 11 | 27.5 | 2 |
| 31 – 40 years old | 7 | 17.5 | 3 |
| 21 – 30 years old | 19 | 47.5 | 1 |
| Total | 40 | 100.0 | |
| Sex | | | |
| Male | 11 | 27.5 | 2 |
| Female | 29 | 72.5 | 1 |
| Total | 40 | 100.0 | |
| Civil Status | | | |
| Single | 17 | 42.5 | 2 |
| Married | 23 | 57.5 | 1 |
| Total | 40 | 100.0 | |
| Position Title | | | |
| Master Teacher I | 5 | 12.5 | 3.5 |
| Teacher III | 21 | 52.5 | 1 |
| Teacher II | 5 | 12.5 | 3.5 |
| Teacher I | 9 | 22.5 | 2 |
| Total | 40 | 100.0 | |
| Length of Service | | | |
| 26 years and above | 1 | 2.5 | 5 |
| 21 – 25 years | 11 | 27.5 | 1 |
| 16 – 20 years | 4 | 10.0 | 4 |
| 11 – 15 years | 8 | 20.0 | 2.5 |
| 6 – 10 years | 8 | 20.0 | 2.5 |

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

| | | | |
|---|---|---|---|
| Total | 40 | 100.0 | |
| Educational Attainment | | | |
| Ph.D/Ed.D. | 1 | 2.5 | 5 |
| With Ph.D/Ed.D.Units | 2 | 5.0 | 4 |
| MAEd/MAT | 17 | 42.5 | 1 |
| With MAEd/MAT Units | 8 | 20.0 | 3 |
| Bachelor's Degree | 12 | 30.0 | 2 |
| Total | 40 | 100.0 | |
| In-Service Training Attended | | | |
| International level | 1 | 2.5 | 5 |
| National Level | 2 | 5.0 | 4 |
| Regional Level | 11 | 27.5 | 2 |
| Division Level | 16 | 40.0 | 1 |
| District Level | 10 | 25.0 | 3 |
| Total | 40 | 100.0 | |

Table 3
Frequency, Percentage and Rank Distribution of the Pupil-Respondents
in Terms of the Selected Variables

| Profile | f | % | Rank |
|---|---|---|---|
| Age | | | |
| 14 – 15 years old | 9 | 4.3 | 2 |
| 12 – 13 years old | 201 | 95.7 | 1 |
| Total | 210 | 100.0 | |
| Sex | | | |
| Male | 110 | 52.4 | 1 |
| Female | 100 | 47.6 | 2 |
| Total | 210 | 100.0 | |
| Sibling Position | | | |
| First | 71 | 33.8 | 2 |
| Second | 81 | 38.6 | 1 |
| Third | 26 | 12.4 | 4 |
| Fourth | 32 | 15.2 | 3 |
| Total | 210 | 100.0 | |
| Number of Children in the Family | | | |
| 1 child | 58 | 27.6 | 1 |
| 2 | 26 | 12.4 | 4 |
| 3 | 41 | 19.5 | 3 |
| 4 | 47 | 22.4 | 2 |
| 5 | 15 | 7.1 | 6 |
| 6 and above | 23 | 11.0 | 5 |
| Total | 210 | 100.0 | |
| Monthly Family Income | | | |
| Php 20, 000 – Php 29, 999 | 76 | 36.2 | 2 |
| Php 15, 000 – Php 19, 999 | 91 | 43.3 | 1 |
| Php 10, 000 - Php 14, 999 | 29 | 13.8 | 3 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Php 9, 999 and below | 14 | | | 6.7 | | 4 |
| Total | 210 | | | 100.0 | | |
| Parent's Educational Attainment | Father | | | Mother | | |
| | | | | | | |
| College Graduate | 15 | 7.1 | 5 | 41 | 19.5 | 4 |
| College Undergraduate | 42 | 20.0 | 4 | 50 | 23.8 | 3 |
| High School Graduate | 44 | 21.0 | 2.5 | 51 | 24.3 | 2 |
| High School Undergraduate | 44 | 21.0 | 2.5 | - | - | - |
| Elementary Graduate | 65 | 31.0 | 1 | 68 | 32.4 | 1 |
| Total | 210 | 100.0 | | 210 | 100.0 | |
| Parent's Occupation | Father | | | Mother | | |
| Government Employee | 23 | 11.0 | 3 | 29 | 13.8 | 3 |
| Private Employee | 40 | 19.0 | 2 | 65 | 31.0 | 2 |
| Self-Employed | 121 | 57.6 | 1 | 88 | 41.9 | 1 |
| OFW | 13 | 6.2 | 4.5 | 28 | 13.3 | 4 |
| Others | 13 | 6.2 | 4.5 | - | - | - |
| Total | 210 | 100.0 | | 210 | 100.0 | |

Table 3 presents the profile of the pupil-respondents in terms of age, sex, sibling position, number of children in the family, monthly family income, parents' educational attainment and parents' occupation.

It is reflected in the table that in terms of their age, 95.7% of them are 12 – 13 years old while 4.3% are 14 – 15 years old. There are more male pupils at 52.4% while the female pupils got 47.6%. In terms of their sibling position, first in rank are second born in the family at 38.6% while 12.4% are third born.

Moreover, 27.6% of them areonly child in their family while 7.1% of them are 5 children in their family. Also, in terms of their monthly family income, first in rank at 43.3% belong to income bracket of Php 15, 000 – Php 19, 999 while 6.7% from the income bracket of Php 9, 999 and below.

In terms of their parents' educational attainment, most of their parents are elementary graduates at 31.0% and 32.4% while last in rank at 7.1% and 19.5% are college graduates.

In addition, as to their parents' occupation, most of them are self-employed at 57.6% and 41.9% while 6.2% and 13.3% are OFWs and have different occupations.

*2) Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils as Perceived by the Two Groups of Respondents With Respect toNumber Patterns, Mathematical Concepts and Knowledge on Four Fundamental Operations*

Table 4 presents the extent of effects of National Mathematics Program on the performance of grade six pupils as perceived by the two groups of respondents with respect to number patterns.

Table 4

Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils as Perceived by the Two Groups of Respondents With Respect to Number Patterns

| Number Pattern<br>National Mathematics Program helps the grade six pupils / me to… | Teachers | | | Pupils | | |
|---|---|---|---|---|---|---|
| | $W\bar{X}$ | VI | Rank | $W\bar{X}$ | VI | Rank |
| 1. learn number sequence. | 3.93 | Often | 7 | 4.03 | Often | 8 |
| 2. identify which number should come first. | 4.60 | Always | 1 | 4.53 | Always | 3 |
| 3. determine whether something is mathematically correct. | 4.53 | Always | 3 | 4.54 | Always | 2 |
| 4. perform simple steps in writing numbers. | 4.57 | Always | 2 | 4.68 | Always | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 5. enhance the knowledge in numbers accurately. | 3.68 | Often | 10 | 3.89 | Often | 10 |
| 6. identify the correct numerical value . | 4.03 | Often | 6 | 4.17 | Often | 6 |
| 7. answers complex, multi-step problem. | 4.25 | Often | 5 | 4.29 | Often | 5 |
| 8. follow sequential rules in numbers. | 4.30 | Often | 4 | 4.42 | Often | 4 |
| 9. apply simple mathematical solutions. | 3.87 | Often | 8 | 4.10 | Often | 7 |
| 10. understand mathematical pattern. | 3.83 | Often | 9 | 3.96 | Often | 9 |
| Overall $W\bar{X}$ | 4.16 | Often | | 4.26 | Often | |

The findings indicate that the National Mathematics Program (NMP) positively affects the performance of grade six pupils in number patterns, as perceived by both teachers and pupils. Teacher-respondents reported an overall weighted mean of 4.16, while pupil-respondents obtained 4.26, both interpreted as “Often.” Among teachers, the highest-rated item was that the NMP helps pupils identify which number comes first (weighted mean = 4.60), while the lowest-rated was enhancing accurate knowledge of numbers (weighted mean = 3.68). For pupils, the top-rated statement was that the program helps them perform simple steps in writing numbers (weighted mean = 4.68), whereas the lowest-rated item was related to accurate knowledge of numbers (weighted mean = 3.89). These results suggest that the NMP supports foundational mathematical skills, including understanding numerical order, sequential rules, and accurate number writing—essential components of strong number sense.

The program appears to foster both procedural fluency and conceptual understanding, promoting logical reasoning and analytical skills. Continued implementation and refinement of the NMP are crucial to strengthen pupils’ mastery of number patterns and basic numeracy. This aligns with Zippert et al. (2021), who reported that knowledge of repeating patterns predicts concurrent and future math performance, although causality requires further experimental evidence.

Table 5

Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils as Perceived by the Two Groups of Respondents With Respect to Mathematical Concepts

| Mathematical Concepts<br>National Mathematics Program helps the grade six pupils / me to… | Teachers | | | Pupil | | |
|---|---|---|---|---|---|---|
| | $W\bar{X}$ | VI | Rank | $W\bar{X}$ | VI | Rank |
| 1. learn to connect Mathematics ideas. | 4.45 | Often | 2.5 | 4.50 | Always | 2.5 |
| 2. learn the difference of mathematical symbols. | 4.10 | Often | 6 | 4.21 | Often | 5.5 |
| 3. analyze the information acquired. | 3.68 | Often | 9.5 | 3.89 | Often | 9.5 |
| 4. relate Mathematics ideas to everyday life. | 3.83 | Often | 7 | 3.96 | Often | 7.5 |
| 5. learn to reason mathematically. | 4.45 | Often | 2.5 | 4.50 | Always | 2.5 |
| 6. apply logical reasoning to make sense in umbers. | 4.13 | Often | 5 | 4.21 | Often | 5.5 |
| 7. show confidence in solving mathematical exercises. | 3.68 | Often | 9.5 | 3.89 | Often | 9.5 |
| 8. express ideas in Mathematics without fear of making mistakes. | 3.80 | Often | 8 | 3.96 | Often | 7.5 |
| 9. articulate their thoughts and add | 4.73 | Always | 1 | 4.75 | Always | 1 |

| | | | | | | |
|---|---|---|---|---|---|---|
| new concepts. | | | | | | |
| 10. focus on the mathematical skills included in the activities. | 4.25 | Often | 4 | 4.29 | Often | 4 |
| Overall W$\bar{X}$ | 4.11 | Often | | 4.22 | Often | |

Regarding mathematical concepts, teacher-respondents obtained an overall weighted mean of 4.11, while pupil-respondents reported 4.22, both interpreted as "Often." These findings indicate that the NMP consistently enhances understanding of mathematical concepts, supporting learners' development of critical skills necessary for advanced mathematics.

The findings indicate that the National Mathematics Program (NMP) often influences the performance of grade six pupils in mathematical concepts, as perceived by both teachers and pupils. Among teacher-respondents, the highest-rated item was that the NMP helps pupils articulate their thoughts and integrate new concepts (weighted mean = 4.73), while the lowest-rated item was aiding analysis and demonstrating confidence in solving exercises (weighted mean = 3.68). For pupils, the top-rated statement was similar, reflecting that the program enables them to express ideas and connect new concepts (weighted mean = 4.75), whereas the lowest-rated item involved analyzing information and showing confidence (weighted mean = 3.89).

These results suggest that the NMP fosters conceptual understanding by encouraging learners to link different mathematical ideas, express reasoning clearly, and integrate knowledge rather than treating concepts in isolation. The program also promotes critical thinking, logical reasoning, and reflective problem-solving, which are essential for comprehension and application. Moreover, it cultivates positive learning attitudes, including confidence in solving problems, openness in expressing ideas, and sustained focus on key skills. Collectively, these findings indicate that the NMP is a crucial component of effective mathematics instruction, supporting the development of both competence and confidence among grade six pupils. This aligns with Sumiquiab (2021), who notes that mathematics instruction progresses from simple arithmetic to complex concepts, fostering deeper understanding and problem-solving abilities.

Table 6 presents the extent of NMP effects on grade six pupils' knowledge of the four fundamental operations.

Table 6

Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils as Perceived by the Two Groups of Respondents With Respect to Knowledge on the Four Fundamental Operations

| Knowledge on the Four Fundamental Operations<br>National Mathematics Program helps the grade six pupils / me to… | Teachers | | | Pupil | | |
|---|---|---|---|---|---|---|
| | W$\bar{X}$ | VI | Rank | W$\bar{X}$ | VI | Rank |
| 1. one digit numbers. | 4.30 | Often | 5 | 4.42 | Always | 4.5 |
| 2. add two to three digit numbers. | 4.38 | Often | 3 | 4.47 | Often | 3 |
| 3. subtract numbers using borrowing. | 4.33 | Often | 4 | 4.42 | Often | 4.5 |
| 4. multiply numbers and find the product. | 4.27 | Often | 6 | 4.40 | Often | 6 |
| 5. divide numbers. | 4.75 | Always | 1 | 4.86 | Always | 1 |
| 6. find the total of the given numbers | 4.23 | Often | 7 | 4.29 | Often | 7 |
| 7. find the difference of the given data. | 3.90 | Often | 10 | 4.00 | Often | 10 |
| 8. find the product of simple equations. | 4.45 | Often | 2 | 4.60 | Always | 2 |
| 9. find the quotient of the divided numbers. | 4.03 | Often | 8.5 | 4.17 | Often | 8 |
| 10. get the correct answer for the given equations. | 4.03 | Often | 8.5 | 4.08 | Often | 9 |
| Overall W$\bar{X}$ | 4.26 | Often | | 4.37 | Often | |

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

The findings indicate that the National Mathematics Program (NMP) often influences the performance of grade six pupils in terms of knowledge on the four fundamental operations, as perceived by both teachers and pupils. Teacher-respondents reported an overall weighted mean of 4.26, while pupil-respondents obtained 4.37, both verbally interpreted as "Often." Among both groups, the highest-rated item was that the NMP helps pupils always divide numbers (weighted mean = 4.75 for teachers; 4.86 for pupils), whereas the lowest-rated item involved finding the difference of given data (weighted mean = 3.90 for teachers; 4.00 for pupils). These results suggest that the program supports mastery of essential arithmetic operations, including addition, subtraction, multiplication, and division, which serve as foundational skills for higher-level mathematical problem-solving. Through structured activities and repeated practice, pupils are given opportunities to develop both procedural fluency and logical reasoning, such as borrowing in subtraction, multiplying simple equations, or accurately dividing numbers. The NMP also promotes accuracy, consistency, and confidence in performing computations, which are crucial for achieving proficiency in Mathematics. Overall, the findings imply that the program effectively reinforces fundamental skills, thereby preparing pupils for more complex mathematical concepts and applications. This is consistent with Willis (2020), who notes that providing opportunities to apply basic concepts and operations in everyday activities strengthens students' skills and motivates continued progress in Mathematics.

Table 7 presents the extent of effects of National Mathematics Program on the performance of grade six pupils as perceived by the two groups of respondents with respect to the different aspects.

Table 7

Composite Table on Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils as Perceived by the Two Groups of Respondents With Respect to the Different Aspects

| Aspects | Teachers | | | Pupils | | |
|---|---|---|---|---|---|---|
| | WX | VI | Rank | WX | VI | Rank |
| Number Pattern | 4.16 | Often | 2 | 4.26 | Often | 2 |
| Mathematical Concepts | 4.11 | Often | 3 | 4.22 | Often | 3 |
| Knowledge on the Four Fundamental Operations | 4.26 | Often | 1 | 4.37 | Often | 1 |
| Composite WX | 4.18 | Often | | 4.28 | Often | |

The composite table shows that with the teacher and pupil-respondents, it obtained a composite weighted mean of 4.18 and 4.28 verbally interpreted as Often. For both respondents, first in rank at 4.26 and 4.37 is the knowledge on the four fundamental operations, followed by 4.16 and 4.26 is the number pattern and last in rank at 4.11 and 4.22 is the mathematical concepts.

This indicates that National Mathematics Program often affects the performance of grade six pupils with respect to number pattern, mathematical concepts and knowledge on the four fundamental operations as perceived by the teachers and pupils.Both teacher and pupil respondents recognize that the program helps pupils gain a deeper understanding of mathematical ideas and improves their ability to solve problems using basic operations. The lessons and activities within the program appear to strengthen pupils' numerical reasoning and computational fluency, enabling them to confidently apply these skills in classroom tasks and real-life situations.

This implies that the National Mathematics Program serves as a support system in developing core mathematical competencies at the elementary level. Its positive impact on pupils' understanding of number patterns, essential concepts, and operations suggests that the program effectively builds the foundational knowledge required for higher-level mathematics. Furthermore, it enhances pupils' confidence and engagement in the subject, which are key factors in long-term academic success. Therefore, continued implementation and improvement of the National Mathematics Program could lead to even greater gains in student performance and mathematical literacy among elementary pupils.

Findings are in relation with the citation of Gigante (2020) that one of the most important skills for a student to master is numeracy. Thus, there is a need to have a project that assesses students' problem-solving abilities as well as their number recognition.

*3) Significant Difference Between the Perceptions of the Two Groups of Respondents on the Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils With Respect to the Cited Aspects*

Table 8 presents the significant difference between the perceptions of the two groups of respondents on the extent of effects of National Mathematics Program on the performance of grade six pupils with respect to the cited aspects.

Table 8
Computed t-values on the Significant Difference Between the Perceptions of the Two Groups of Respondents on the Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils With Respect to the Cited Aspects

| Aspects | t-value | p-value | Decision | Verbal Interpretation |
|---|---|---|---|---|
| Number Pattern | -1.511 | .132 | Accepted | Not Significant |
| Mathematical Concepts | -1.246 | .214 | Accepted | Not Significant |
| Knowledge on the Four Fundamental Operations | -1.807 | .072 | Accepted | Not Significant |

As reflected in the table, the significant differences between the perceptions of teachers and pupils regarding the effects of the National Mathematics Program (NMP) on number patterns, mathematical concepts, and knowledge of the four fundamental operations were not statistically significant, with p-values exceeding the 0.05 level. This indicates that the null hypothesis is accepted, meaning both groups share similar perceptions of the program's effects. Such alignment suggests that teachers, who deliver instruction, and pupils, who experience learning firsthand, consistently observe and validate the positive outcomes of the NMP. This shared understanding reflects a well-coordinated educational experience in which the program's goals and implementation are clearly perceived by all participants. The results imply that the NMP is viewed as effective and beneficial, reinforcing its relevance in classroom practice. Consistent perceptions also indicate that the program's strategies are well-adapted to pupils' learning needs, providing a strong foundation for sustaining and enhancing the program, in line with the findings of Guitering (2023).

*4) Significant Difference Between the Perceptions of the Two Groups of Respondents on the Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils With Respect to the Cited Aspects in Terms of Their Profile*

Table 9 presents the significant difference on the perceptions of the teacher-respondents on the extent of effects ofNational Mathematics Program on the performance of grade six pupils with respect to the cited aspects in terms of their profile.

The table illustrates that with respect to the different aspects for teachers' perception, the probability values in terms ofsex, civil status, position title, length of service, educational attainment and in-service trainings attended, are greater than .05 level of significance. This fails to reject the null hypothesis stating that there is no significant difference on the perceptions of the teacher-respondents on the extent of effects of National Mathematics Program on the performance of grade six pupils with respect tonumber pattern, mathematical concepts and knowledge on the four fundamental operationsin terms of the cited profile. However, when it comes to age withrespect toall aspects, the p-valuesare lower than .05 level of significance, thus the null hypothesis is rejected.

Table 9
Significant Difference on the Perceptions of the Teacher-Respondents on the Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils With Respect to the Cited Aspects in Terms of Their Profile

| Variables/ Aspects | F-comp | p-values | Ho | VI |
|---|---|---|---|---|
| Age | | | | |
| Number Pattern | 4.162 | .009 | Rejected | Significant |
| Mathematical Concepts | 4.434 | .009 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | 4.334 | .010 | Rejected | Significant |
| Sex | | | | |
| Number Pattern | .073 | .788 | Accepted | Not Significant |
| Mathematical Concepts | .000 | .989 | Accepted | Not Significant |
| Knowledge on the Four Fundamental Operations | .011 | .917 | Accepted | Not Significant |
| Civil Status | | | | |
| Number Pattern | .087 | .770 | Accepted | Not Significant |
| Mathematical Concepts | .304 | .585 | Accepted | Not Significant |

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

| | | | | |
|---|---|---|---|---|
| Knowledge on the Four Fundamental Operations | .796 | .378 | Accepted | Not Significant |
| Position Title | | | | |
| Number Pattern | .279 | .840 | Accepted | Not Significant |
| Mathematical Concepts | .830 | .486 | Accepted | Not Significant |
| Knowledge on the Four Fundamental Operations | 1.033 | .390 | Accepted | Not Significant |
| Length of Service | | | | |
| Number Pattern | 2.053 | .108 | Accepted | Not Significant |
| Mathematical Concepts | 1.459 | .236 | Accepted | Not Significant |
| Knowledge on the Four Fundamental Operations | 1.328 | .221 | Accepted | Not Significant |
| Educational Attainment | | | | |
| Number Pattern | .909 | .500 | Accepted | Not Significant |
| Mathematical Concepts | 1.090 | .389 | Accepted | Not Significant |
| Knowledge on the Four Fundamental Operations | .776 | .595 | Accepted | Not Significant |
| In-service Trainings Attended | | | | |
| Number Pattern | 1.175 | .339 | Accepted | Not Significant |
| Mathematical Concepts | .754 | .562 | Accepted | Not Significant |
| Knowledge on the Four Fundamental Operations | 1.561 | .206 | Accepted | Not Significant |

Findings indicate that the perceptions of teacher-respondents on the extent of effects of the National Mathematics Program (NMP) on the performance of grade six pupils with respect to number patterns, mathematical concepts, and knowledge of the four fundamental operations do not significantly differ in terms of sex, civil status, position title, length of service, educational attainment, and in-service trainings attended. However, a significant difference exists when teachers are grouped according to age. This suggests that teachers' demographic and professional backgrounds generally do not influence their perceptions of the program, as it is implemented consistently with standardized curriculum, teaching materials, and guidelines from the Department of Education. Age-related differences may reflect generational variations in teaching style, familiarity with innovative strategies, or experience in handling curriculum reforms, consistent with Paralejas (2024).

Similarly, the perceptions of pupil-respondents show no significant differences with respect to age and sibling position. In contrast, significant differences emerge when pupils are grouped according to sex, number of children in the family, monthly family income, parents' educational attainment, and parents' occupation. These results indicate that certain socio-demographic factors of pupils and their families influence how they perceive the effects of the NMP on their mathematical performance.

Table 9

Significant Difference Between the Perceptions of the Pupil-Respondents on the Extent of Effects of National Mathematics Program on the Performance of Grade Six Pupils With Respect to the Cited Aspects in Terms of Their Profile

| Variables/ Aspects | F-comp | p-values | Ho | VI |
|---|---|---|---|---|
| Age | | | | |
| Number Pattern | 2.214 | .113 | Accepted | Not Significant |
| Mathematical Concepts | 2.060 | .153 | Accepted | Not Significant |
| Knowledge on the Four Fundamental Operations | .550 | .459 | Accepted | Not Significant |
| Sex | | | | |
| Number Pattern | 13.188 | .006 | Rejected | Significant |

| | | | | |
|---|---|---|---|---|
| Mathematical Concepts | 10.478 | .001 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | 6.567 | .011 | Rejected | Significant |
| Sibling Position | | | | |
| Number Pattern | 1.744 | .159 | Accepted | Not Significant |
| Mathematical Concepts | .539 | .656 | Accepted | Not Significant |
| Knowledge on the Four Fundamental Operations | 1.094 | .353 | Accepted | Not Significant |
| Number of Children in the Family | | | | |
| Number Pattern | 18.693 | .000 | Rejected | Significant |
| Mathematical Concepts | 10.479 | .000 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | 5.278 | .000 | Rejected | Significant |
| Monthly Family Income | | | | |
| Number Pattern | 5.278 | .000 | Rejected | Significant |
| Mathematical Concepts | 11.633 | .000 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | 13.581 | .000 | Rejected | Significant |
| Father's Educational Attainment | | | | |
| Number Pattern | 12.003 | .000 | Rejected | Significant |
| Mathematical Concepts | 6.128 | .001 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | 3.773 | .011 | Rejected | Significant |
| Mother's Educational Attainment | | | | |
| Number Pattern | 15.152 | .000 | Rejected | Significant |
| Mathematical Concepts | 11.782 | .000 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | 7.380 | .000 | Rejected | Significant |
| Father's Occupation | | | | |
| Number Pattern | 9.164 | .000 | Rejected | Significant |
| Mathematical Concepts | 7.122 | .000 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | 9.377 | .000 | Rejected | Significant |
| Mother's Occupation | | | | |
| Number Pattern | 7.408 | .000 | Rejected | Significant |
| Mathematical Concepts | 5.383 | .001 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | 3.106 | .028 | Rejected | Significant |

These findings suggest that pupils' age and sibling position do not significantly influence their perceptions of the National Mathematics Program (NMP), as all pupils are exposed to the same lessons, activities, teaching strategies, and assessments. Conversely, pupils' sex, number of children in the family, monthly family income, parents' educational attainment, and parents' occupation are significant predictors. Pupils from higher-income or more educated families may receive greater academic support, enhancing engagement with the program, while those from larger or lower-income families may have fewer resources. Differences may also reflect variations in confidence, interest, or classroom participation, influenced by social or cultural factors, contrasting Satorre (2023).

*5) Level of Academic Performance in Mathematics of the Grade Six Pupils as Revealed by Their Average Grades in Mathematics in the Third Quarter*

Table 11 presents the level of academic performance in Mathematics of the grade six pupils as revealed by their average grades in Mathematics in the third quarter.

Table 11
Level of Academic Performance in Mathematics of the Grade Six Pupils as Revealed by Their Average Grades in Mathematics in the Third Quarter

| Grade | Interpretation | Frequency | Percentage | Rank |
|---|---|---|---|---|
| 90 and above | Outstanding | 7 | 3.3 | 4 |
| 85-89 | Very Satisfactory | 43 | 20.5 | 2 |
| 80-84 | Satisfactory | 135 | 64.3 | 1 |
| 75-79 | Fairly Satisfactory | 20 | 9.5 | 3 |
| Below 75 | Did not meet expectations | 5 | 2.4 | 5 |
| | Total | 210 | 100 | |
| | Mean | 83.65 (Satisfactory) | | |
| | Std. Deviation | 2.190 | | |

The table shows the academic performance of grade six pupils based on their third-quarter average grades. Most pupils (64.3%) scored 80–84, categorized as Satisfactory, followed by 20.5% scoring 85–89 (Very Satisfactory), 9.5% scoring 75–79 (Fairly Satisfactory), 3.3% achieving 90 and above (Outstanding), and 2.4% below 75 (Did Not Meet Expectations). The mean grade of 83.65 with a standard deviation of 2.190 indicates that most pupils' grades clustered closely around the average, reflecting minimal variation. These results suggest that the majority perform at a Satisfactory to Very Satisfactory level, while a small proportion still struggles. This highlights the need for targeted academic support to help lower-performing pupils improve. The findings imply that the National Mathematics Program contributes to overall satisfactory performance but requires additional interventions to ensure all pupils benefit equally, supporting confidence, skill development, and mastery of numeracy, aligning with Tallud and Caballes (2023).

*6) Significant Relationship Between the Extent of Effects of National Mathematics Program and Pupils' Level of Academic Performance*

Table 12 presents the significant relationship between the extent of effects of National Mathematics Program and pupils' level of academic performance.

Table 12
Computed r-value on the Significant Relationship Between the Extent of Effects of National Mathematics Program and Pupils' Level of Academic Performance

| Aspects | r-values | p-value | Ho | VI |
|---|---|---|---|---|
| Number Pattern | .782 | .001 | Rejected | Significant |
| Mathematical Concepts | .891 | .000 | Rejected | Significant |
| Knowledge on the Four Fundamental Operations | .390 | .000 | Rejected | Significant |

The table shows the significant relationship between the perceived extent of effects of the National Mathematics Program (NMP) in terms of number patterns, mathematical concepts, and knowledge of the four fundamental operations, and the academic performance of grade six pupils. The computed results reveal that all p-values are below the 0.05 level of significance, leading to the rejection of the null hypothesis. This indicates a significant positive correlation: the more effective and well-perceived the NMP is, the higher the pupils' academic performance tends to be. When lessons are engaging, concepts are clearly explained, and activities are supportive, pupils demonstrate better understanding and application of mathematical skills. These findings imply that refining the implementation of the NMP—through meaningful activities, clear instructions, and responsive teaching—can further enhance learning outcomes.

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |

Regular evaluation of the program based on teacher and pupil feedback ensures it continues to foster academic growth, aligning with Guinocor (2020), who reported a positive correlation between students' study orientations and their mathematics performance.

Based on the findings, it can be concluded that both teachers and pupils share similar perceptions regarding the extent of effects of the National Mathematics Program (NMP) on the performance of grade six pupils in terms of number patterns, mathematical concepts, and knowledge of the four fundamental operations. Certain demographic factors such as teachers' sex, civil status, position title, length of service, educational attainment, and in-service trainings, as well as pupils' age and sibling position, do not significantly influence these perceptions. However, teachers' age, along with pupils' sex, number of children in the family, monthly family income, parents' educational attainment, and parents' occupation, were found to have a significant bearing. Furthermore, the study established that the National Mathematics Program is positively correlated with the academic performance of grade six pupils, indicating that greater engagement with and effectiveness of the program lead to higher learning outcomes.

In light of these conclusions, several recommendations are offered. School administrators may provide age-specific professional development programs to bridge gaps in pedagogical strategies among younger and more experienced teachers, particularly in teaching number patterns, mathematical concepts, and fundamental operations. Parental involvement should be strengthened through home-based Mathematics activities, parent orientation programs, and community support initiatives to reinforce learning at home. Additional interventions, such as supplementary materials, tutorials, or after-school programs, may be provided to support pupils from lower-income families who have limited access to academic resources. Teachers are encouraged to develop inclusive and engaging instructional strategies that promote confidence and participation among both boys and girls, ensuring equitable learning opportunities. Continuous standardized and structured implementation of the National Mathematics Program is recommended to maintain consistency and effectiveness. Differentiated tasks and scaffolded support can help both advanced and struggling learners engage meaningfully with foundational mathematical skills. Finally, the proposed action plan may be implemented, and similar studies exploring other variables are encouraged to further enhance the understanding and effectiveness of Mathematics programs in basic education

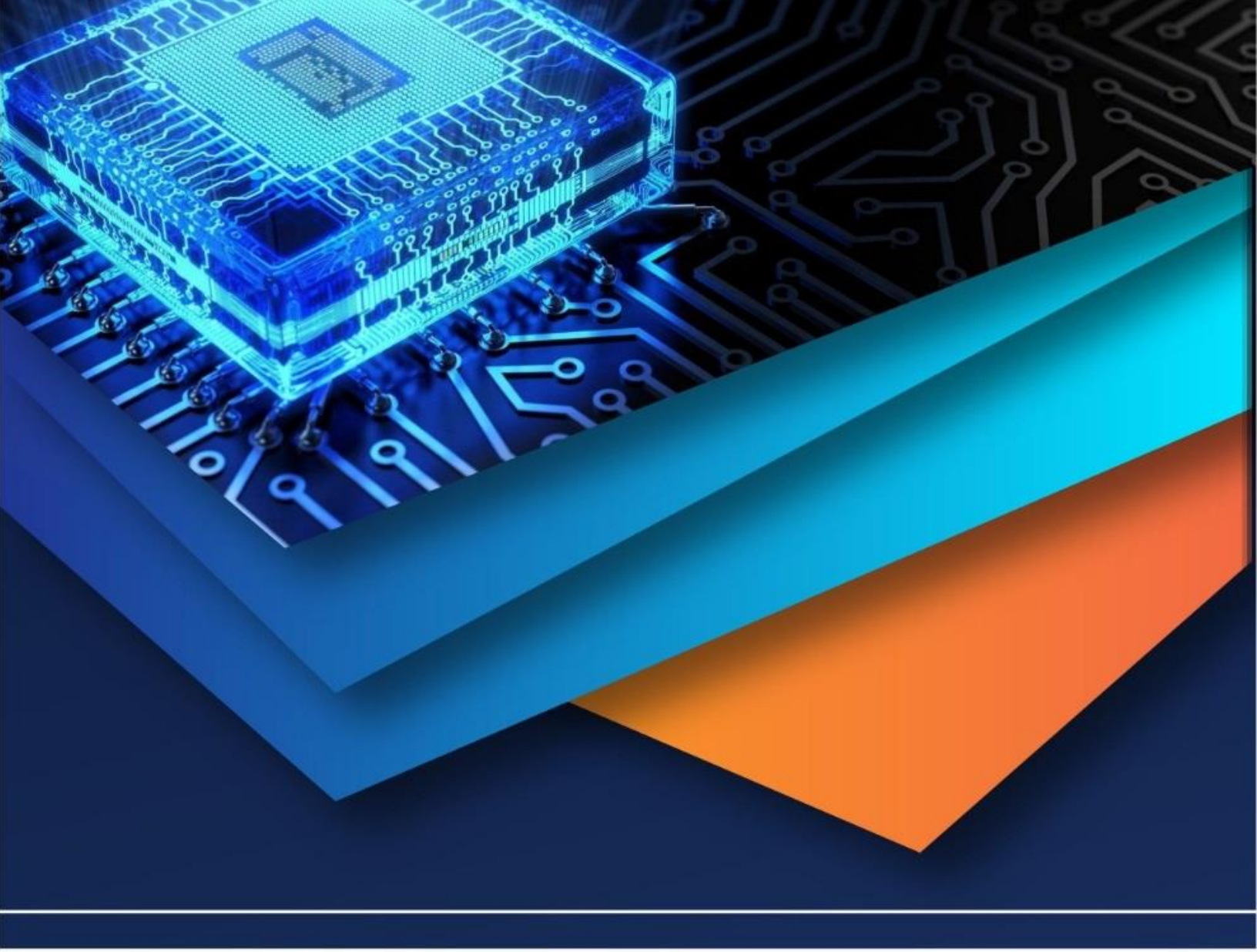
*7) Action Plan to Enhance the Implementation of National Mathematics Program and Improve the Level of Academic Performance of Grade Six Pupils*

Based on the findings, an action plan is hereby proposed to enhance the implementation of National Mathematics Program and improve the level of academic performance of grade six pupils.

| Objective | Activities | Target Participants | Timeline | Expected Outcome | Responsible Person/Unit |
|---|---|---|---|---|---|
| Strengthen teachers' pedagogical skills in delivering NMP content | Conduct professional development workshops on number patterns, mathematical concepts, and four fundamental operations | Grade Six Mathematics Teachers | Quarterly | Improved teaching strategies and consistent program delivery | School Administrators & Master Teachers |
| | Peer mentoring and collaborative lesson planning sessions | Grade Six Mathematics Teachers | Monthly | Enhanced instructional quality and collaboration | School Administrators & Senior Teachers |
| Enhance pupils' engagement and mastery of foundational mathematics skills | Implement supplementary tutorials and after-school programs | Grade Six Pupils (struggling learners) | Weekly | Improved mastery of number patterns and fundamental operations | Teachers & Learning Support Staff |
| | Provide additional learning materials and practice exercises | Grade Six Pupils | Continuous | Reinforced learning and higher academic performance | Teachers & School Librarian |
| Promote parental and community | Organize parent orientation sessions and | Parents/Guardians | Biannual | Increased parental support and | School Administrators & |

| | | | | | |
|---|---|---|---|---|---|
| involvement | workshops on home-based math activities | | | reinforcement at home | Teachers |
| | Establish community-based learning support programs | Parents, Community Volunteers | Ongoing | Strengthened community support and learning environment | School Administrators & PTA |
| Ensure inclusive and equitable instruction | Develop gender-sensitive and interactive classroom activities | Grade Six Pupils | Throughout academic year | Higher participation and confidence in mathematics | Teachers |
| | Incorporate differentiated and scaffolded learning tasks | Grade Six Pupils | Continuous | Engagement of both advanced and struggling learners | Teachers |
| Monitor and evaluate program effectiveness | Conduct periodic assessment of pupils' performance | Grade Six Pupils | Quarterly | Data-informed improvement in teaching and learning | Teachers & School Administrators |
| | Gather feedback from teachers and pupils for refinement | Teachers & Pupils | Quarterly | Continuous program enhancement and responsiveness | Teachers & Administrators |

©IJRASET: All Rights are Reserved | SJ Impact Factor 7.538 | ISRA Journal Impact Factor 7.894 |



10.22214/IJRASET

45.98

IMPACT FACTOR: 7.129

IMPACT FACTOR: 7.429

# INTERNATIONAL JOURNAL FOR RESEARCH

IN APPLIED SCIENCE & ENGINEERING TECHNOLOGY

Call : 08813907089 (24*7 Support on Whatsapp)