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EFFECTIVENESS OF "PART OF ME" (STRATEGIC INTERVENTION MATERIAL) IN LEARNING DIVISION FOR GRADE IV MATHEMATICS AT SOLANO NORTH ELEMENTARY SCHOOL

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ABSTRACT

This action research determined the effectiveness of the Strategic Intervention Material (SIM) "Part of Me" in improving the mastery of Grade IV-1 pupils of Solano North Elementary School in dividing 3- to 4-digit numbers by 2-digit numbers with and without remainder (M4NS-If-54.3), one of the least mastered competencies in Mathematics. A descriptive-quantitative design with a one-group pretest–posttest approach was used, supplemented by short interviews on the learners' experiences and recommendations. The participants were 30 pupils (11 male, 19 female), taken purposively as a whole class for School Year 2025-2026. A teacher-made, validated 40-item test, administered before and after a nine-day intervention, measured mastery. Data were analyzed using frequency and percentage distribution, mean, standard deviation, mean percentage score (MPS), the paired-samples *t*-test, and thematic analysis. The pre-test mean was 18.97 (SD = 10.82; MPS = 47.43, Average Mastery), while the post-test mean was 29.83 (SD = 7.05; MPS = 74.58, Moving Towards Mastery). The difference was statistically significant, $t(29) = -9.104$, $p < .01$. Learners described the SIM as easy, varied, colorful, and conducive to independent learning, and suggested more activities and game-based tasks. The findings indicate that the SIM "Part of Me" is an effective strategy for addressing

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difficulty in dividing numbers. Its adoption to improve learners' mastery and engagement is recommended, together with the addition of more activities and replication using a control group.

Keywords: *Strategic Intervention Material; Mathematics; division of whole numbers; Grade 4; level of mastery; action research; pretest–posttest*

INTRODUCTION

Background of the Study

Our educational system is responsible for promoting social change and the progress of schools and teachers (Salandanan, 2005). Schools and teachers are recognized as strong and effective instruments for national development, specifically because of the wide extent of their outreach and the size of their clientele. They are tasked with the major responsibility of providing the best education possible to learners. As contributors to the attainment of development goals, there is an urgent need for schools and teachers to emphasize human resource development strategies. Along this line, the Strategic Intervention Material (SIM), a low-cost, targeted instructional material, is used to help learners master the skills they did not fully understand during regular classroom instruction. SIMs need to be developed to respond to the rising low academic performance in subjects such as Mathematics. The concern is not only local: the Philippines ranked lowest among 58 countries in Mathematics and Science in the 2019 Trends in International Mathematics and Science Study (Magsambol, 2020).

Mathematics is a difficult subject. It is an exact science, and pupils easily become frustrated if they do not get the exact answer to mathematical problems right away. Some pupils are afraid because they do not want to be embarrassed when their answer is incorrect. As teachers equipped with new techniques and strategies in teaching the subject, we should encourage a change in the way we view Mathematics. Mathematics should not be hard; instead, it should be interesting. Mathematics must find significance in the experiences and lives of the pupils, as this allows learners to appreciate the subject. Pupils will be motivated to learn Mathematics because they are able to do it.

It has been observed that Mathematics teaching in the Philippines is conducted mostly through the traditional lecture-discussion method. This approach contradicts the nature of Mathematics, which is activity-oriented and student-centered. Research shows that students learn more and retain more when hands-on, minds-on activities are used.

Policy and Professional Context

DepEd Order No. 39, s. 2012 provides the legal ground for using Strategic Intervention Materials in Mathematics, since it requires teachers to use creative, effective, and learner-centered materials to improve student learning outcomes and, at the same time, encourages teachers to use varied and innovative materials to address learning gaps. Since SIMs are teacher-made instructional materials designed to help learners master the least learned competencies in subjects like Mathematics, Republic Act No. 9155 directly supports their development and use: the law empowers teachers to innovate and adapt materials suited to their learners' needs, which is exactly the purpose of SIMs.

Division Memorandum No. 296, s. 2021 relayed the conduct of the Virtual Pedagogical Retooling in Mathematics, Languages, and Science (PRIMALS) for Grade 4-6 Filipino Teachers Webinar on September 6-8, 2021, in which the researcher was a participant. PRIMALS sought to enhance teachers' content knowledge, pedagogical skills, and attitudes, and to develop their capabilities in mentoring and sharing teaching practices and experiences through a cost-effective, sustainable professional development system that improves instruction and learning outcomes. It also sought to enrich their competencies in providing technical assistance through the conduct of Learning Action Cells, both

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school-based and district-based. The memorandum is cited here to show that teachers need to participate in training in order to provide appropriate strategies and instructional materials in all subject areas, and not only in Mathematics.

The Strategic Intervention Material

One way to begin addressing the low performance that results from not mastering a specific skill is remedial teaching using an intervention material. One remedial teaching pedagogy is the Strategic Intervention Material, which can be given to learners who did not master a certain skill, in soft or hard copy. It has five parts: a guide card, activity cards, an assessment card, an enrichment card, and a reference card. The guide card gives the pupils an overview of the content of the SIM. The activity cards address the not-mastered learning competencies. The assessment card measures the extent of learning of the pupils and determines whether or not they grasped the skills addressed by the activities. The enrichment card increases or augments the skill provided by the activity cards. The reference card informs the pupils about the references used in developing the SIM. SIMs have been reported as a tool for enhancing learners' mathematical performance (Arpilleda, 2021).

Review of Related Literature and Studies

Intervention studies in Mathematics. Shin and Bryant (2015) synthesized intervention studies focusing on instruction to improve skills in fractions. Results indicated that interventions consisting of evidence-based instructional components (e.g., concrete and visual representations; explicit, systematic instruction; range and sequence of examples; heuristic strategies; and use of real-world problems) led to improved mastery on measures of fraction concepts and skills. Limitations and directions for future research were also discussed. Liggett (2017) discussed the possibility of using mathematical manipulatives to improve student test scores and students' attitudes towards mathematics. Findings supported the hypothesis that students in the treatment group who received the math intervention obtained higher post-test scores than their classmates in the control group. These studies support the view that interventions improve learners' mastery. They are similar to the present study in including intervention materials or activities to increase the performance, interest, and participation of learners in Mathematics, but differ in modality, since both were conducted face-to-face.

Instructional practices and achievement. Gragasin (2008) looked into the instructional practices in Mathematics Education of secondary mathematics teachers and the School Mathematics Achievement of public secondary schools in Nueva Vizcaya, with the aim of coming up with a teacher development program. The study concluded that: (1) the majority of the secondary mathematics teachers were female, belonged to the age bracket 30-39 years old, were mostly BSE or BSED graduates with mathematics as their major, and had master's units as their highest educational attainment; most respondents were permanent teachers who had been teaching for 10-19 years with very satisfactory performance ratings and 5-6 classes of teaching load; (2) the instructional practices in teaching mathematics of the secondary mathematics teachers of Nueva Vizcaya were much practiced; (3) the level of mathematics achievement of the schools of Nueva Vizcaya in general was low; (4) there was a significant difference in the instructional practices of the teachers when grouped according to number of years teaching mathematics; (5) there was a significant relationship between the instructional practices of the teachers and the mathematics achievement of the school; (6) four variables were determinants of mathematics achievement in the Division Achievement Test (Recent Development in Mathematics Education, Status of Appointment, Highest Educational Attainment, and Current Teaching Position), while the determinant in the National Achievement Test was the number of mathematics teaching loads and, in the National Career Assessment Examination, the instructional practices; and (7) for general mathematics achievement, the determinant was recent development in mathematics education.

The study offered the following recommendations: (1) assess the needs of mathematics teachers in terms of in-service trainings, focusing on instructional practices and school achievement and taking into consideration other factors such

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as marital status and seminars already attended; (2) enhance the positive instructional practices of mathematics teachers through constant monitoring and observation by the school administration; (3) conduct school-level review sessions as reinforcement of mathematics instruction to improve school achievement; (4) conduct a series of departmental educational sessions among mathematics teachers by tapping master teachers to mentor younger teachers; (5) assess the existing services offered by the division office in terms of in-service trainings, whether the offerings suit the needs of mathematics teachers with emphasis on instructional practices and school achievement; (6) assess whether the existing programs of the Department of Education are geared towards enhancing the instructional skills of mathematics teachers; (7) encourage the deep involvement of Mathematics Head Teachers and District Mathematics Supervisors in the planning and implementation of development programs for mathematics teachers; (8) conduct further study involving another aspect of school achievement, such as results in Mathematics contests; and (9) conduct further study on other factors that may affect school achievement side by side with instructional practices, such as the learning styles of students and the teaching styles of teachers. Gragasin's study is similar to the present study in that the school head and staff should be actively involved in the implementation of the research to ensure its effectiveness.

Teaching methods, instructional materials, and pupil performance. Tagure (2015) established the extent of teachers' usage of teaching methods and instructional materials, performance in the Competency-Based Performance Appraisal System for Teachers (CB-PAST), and the performance of Grade VI pupils in the National Achievement Test (NAT) for School Years 2012-2013 and 2013-2014 in Dupax del Norte I and II Districts, Division of Nueva Vizcaya. The descriptive-correlation method was employed: the descriptive method described the extent of teachers' usage of teaching methods and instructional materials and the level of pupil performance in the NAT, while correlation determined the extent to which the variables were related. Stratified proportionate random sampling, the Slovin formula, and the fishbowl technique were used to determine the sample, the sample size, and the respondents, respectively. A structured questionnaire gathered the data, which were analyzed using the mean and standard deviation to describe the extent of usage and level of performance, and the Pearson *r* to determine relationships between variables.

The performance levels of pupils in public elementary schools of Dupax del Norte Districts in the NAT for 2012-2013 and 2013-2014 were moving towards mastery. The higher the extent of teachers' usage of collaborative and cooperative learning methods and problem-based learning methods, the higher the level of pupil performance in the 2012-2013 NAT. Further, the greater the extent of usage of problem-based learning, multi-sensory learning, and the overall extent, the higher the level of performance in the 2013-2014 NAT. Likewise, the higher the extent of teachers' usage of audio-visual aids, the higher the level of pupil performance in the 2012-2013 NAT, and the higher the extent of usage of different instructional materials (audio aids, audio-visual aids, multi-sensory aids, and overall extent), the higher the performance in the 2013-2014 NAT. When teachers were categorized as experienced in communicating learning goals, using appropriate instructional materials, making good use of time, and promoting study, pupils were likely to manifest a moving-towards-mastery performance in the NAT, particularly in Science, English, HEKASI, and Filipino. Tagure's study is important to the present study through its focus on the use of instructional materials to increase learner performance, although the present study concentrates only on the Mathematics learning area.

Anxiety, confidence, and mathematical skills. Bumidang (2016) found that respondents were at the beginning level in their overall cognitive skills in Mathematics, including the knowledge, comprehension, and application areas, and that they were "anxious" when doing or encountering Mathematics. Nervousness in asking questions in class had a negative influence on mathematical cognitive skills in the areas of knowledge and comprehension and on overall cognitive skills, while worrying about not being able to complete every assignment had a negative influence on cognitive skills in the area of knowledge. The belief of being able to do Mathematics had a positive influence on cognitive skills under application. Parental educational attainment had a significant positive influence on the

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respondents' belief of getting an "A" in a Mathematics course; the educational attainment of the father had a significant positive relationship to the confidence of a Grade VI pupil in taking a Mathematics exam; and monthly family income had a positive relationship with the pupil's confidence in using Mathematics outside school. Gender had a significant relationship with the cognitive skills of Grade 6 pupils in the area of understanding and with overall cognitive skills in Mathematics, and the highest educational attainment of both parents had a significant positive relationship with these same skills. The study concluded that activities that can enhance students' confidence in doing mathematical activities must be given to students. It plays an important role in the present study because the enhancement of students' confidence through the use of instructional material was discussed.

Parental involvement. Guinsayan (2017) studied parents' involvement in children's education as one way of increasing students' academic achievement that Mathematics teachers and schools need to address. The study determined the contribution of parents' initiatives to students' Mathematics performance at Santa Fe National High School (SFNHS), Santa Fe, Nueva Vizcaya, by identifying parents' after-class initiatives and the discriminators of high and low Mathematics performance, and by establishing mathematical models to predict performance and its classifications. A descriptive survey design with correlational analysis was adopted from February to May 2017. The respondents were the parents of SFNHS students enrolled in Mathematics 7, 8, 9, and 10 who were above 15% and below 15% based on the students' academic performance. The researcher developed a parents' after-class initiative questionnaire as the main instrument, administered it one-on-one to ensure 100% retrieval, and conducted face-to-face interviews to gather qualitative data. Mean, standard deviation, and rank were used to present the parents' after-class initiatives, and discriminant analysis was used to determine the significant discriminators of high and low Mathematics performance.

The following discriminated high-performing from low-performing groups: sharing knowledge or ideas while assisting the child with the assignment; letting the child read the assignment and teaching how to answer it; letting the child do the assignment and checking it afterwards; giving commendation or appreciation after the assignment; talking to the child about what he or she is learning; giving examples; helping the child when he or she asks questions about the assignment; checking whether the child has assignments; making sure the child understands the lesson; following up the child's school attendance; instructing the child to study first before playing with friends and sleeping; and limiting the use of gadgets at home, whether cellphone or tablet. The study is relevant here because the introduction of the intervention material to the learners requires parental help or guidance as they go through the material, as stressed in that study.

Statement of the Problem and Rationale

The least mastered competency of Grade IV-1 pupils, the lesson on dividing 3- to 4-digit numbers by 2-digit numbers with and without remainder, will surely affect their general class performance in Mathematics. If not addressed properly, the problem may cause them to fail and, worse, to become frustrated with the subject itself. There is therefore great importance in taking immediate action. The research was timely because it aimed to improve the mastery of Grade 4 pupils in Mathematics: it has been observed every year that the mastery level of Grade 4 in Mathematics is low, possibly because it is the transition period of the pupils from the Primary to the Intermediate grades. The work would help enrich the mastery of Grade 4 pupils in Mathematics and, at the same time, equip them with a better understanding of dividing 3- to 4-digit numbers by 2-digit numbers with and without remainder (M4NS-If-54.3).

This research sought to find out how the Strategic Intervention Material "Part of Me" would help pupils master the competency they had not mastered. Specifically, it sought to answer the following questions:

1. What were the levels of mastery of the Grade IV-1 learners in dividing whole numbers before and after the use of the SIM?

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2. Was there a significant difference between the pre-test and post-test levels of mastery of the learners?
3. What were the learners' significant experiences in using the SIM?
4. What recommendations did the learners offer for the improvement of the SIM?

The study tested the null hypothesis that there is no significant difference between the pre-test and post-test mean scores of the learners after the use of the SIM.

METHODS

Research Design

The study used the descriptive-quantitative research design, applied as a one-group pretest–posttest action research. This design was chosen since the researcher attempted to describe the levels of mastery of the learners in division of whole numbers based on the results of the test, before and after the intervention. A teacher-made pre-test and post-test were administered to measure the levels of mastery of the pupils. The tests consisted of parallel items based on the competency targeted by the SIM, and were checked and validated by the mathematics coordinator and the school head. The researcher also gathered qualitative data, specifically the learners' significant experiences in the use of the SIM and their recommendations for its improvement.

Participants and Sources of Data

The target participants were the enrolled Grade IV-1 learners of Solano North Elementary School for School Year 2025-2026 under the advisory class of the researcher. The participants were purposely taken by the researcher as a whole class (total enumeration) and numbered 30. Table 1 shows the distribution of the participants according to sex.

Table 1. Distribution of the Participants of the Study

Sex	Frequency	Percentage
Male	11	36.67
Female	19	63.33
TOTAL	**30**	**100.00**

There were more female participants (63.33%) than male participants (36.67%).

Instruments

Three instruments were used: the pre-test, the post-test, and the "Part of Me" Strategic Intervention Material. The pre-test and post-test consisted of 40 items each, which included routine problems and worded problems. The SIM "Part of Me" comprised a guide card, five activity cards, one assessment card, and one enrichment card (Table 2). The instruments were utilized following the steps in teaching a Mathematics lesson. The SIM had been approved by the Division of Nueva Vizcaya.

The Intervention

Table 2 shows the set of actions accomplished to attain the objectives of the study.

Table 2. Activities for the Conduct of the Strategic Intervention Material (SIM)

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Day	Part of the SIM	Title of Card	Part of the Lesson Where Strategy Was Used
Day 1	Orientation and Pre-Test		
Day 2	Guide Card	—	Preliminary Activity (Motivation)
	Activity Card 1	Ravan in Division	Activity Proper (Individual Activity)
Day 3	Activity Card 2	Help Louie, the dog	Activity Proper (Individual Activity)
Day 4	Activity Card 3	Missing Me	Activity Proper (Individual Activity)
Day 5	Activity Card 4	Color My World	Activity Proper (Individual Activity)
Day 6	Activity Card 5	Drink My Nectar	Activity Proper (Individual Activity)
Day 7	Assessment Card	Test Yourself	Activity Proper (Individual Activity)
Day 8	Enrichment Card	I'm Puzzled	Post-Activity (Individual Activity)
Day 9	Post-Test		

Procedure and Ethical Considerations

This study observed ethical considerations during its conduct. After approval of the proposal, the following steps were followed:

1. Permission was asked from the Professional Development Committee at the school level, the district level, and the Division of Nueva Vizcaya for the conduct of the research.
2. A request letter to the school principal, allowing the researcher to conduct the study, was sought. The study was aligned with the Annual Improvement Plan and the School BE-LCP for School Year 2025-2026.
3. A 40-item pre-test was administered to the participants. The results were collected and analyzed by the researcher.
4. The SIM "Part of Me" was used after the pre-test as an intervention tool. The intervention was implemented over about one week (Days 2-8 of Table 2), from 11:30 to 12:00 in the morning, via Google Meet, Zoom, or Messenger for those who were absent.
5. After implementing the SIM, a post-test of 40 items was given to the same participants.
6. The learners' significant experiences and their recommendations for the improvement of the SIM were obtained through a short interview. To maintain confidentiality, the learners were given code names, which were used in reporting the findings.

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Data Analysis

Descriptive statistical tools were used to determine the level of mastery of the Grade IV-1 learners before and after the use of the SIM. Pupils' raw scores were converted to mean percentage scores (MPS), and the mean and standard deviation were computed. The same conversion was applied to the means of males and females and of the whole class. Frequencies and percentage distributions were presented to summarize the level of mastery of the pupils in the pre-test and post-test. The levels of mastery were described using the scale in Table 3.

Table 3. Mastery Level Description

Mastery Level	Range
Mastered	96%-100%
Closely Approximating Mastery	86%-95%
Moving Towards Mastery	66%-85%
Average Mastery	35%-65%
Low Mastery	15%-34%
Very Low Mastery	5%-14%
Absolutely No Mastery	0%-4%

Source: DepEd Order No. 8, s. 2015, Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program.

To determine the significant difference between the mastery levels of the Grade IV-1 pupils before and after the utilization of the SIM, the *t*-test for dependent (paired) samples was used. To determine the learners' significant experiences with the SIM and their recommendations for its improvement, their opinions were obtained through a short interview, and the responses were analyzed thematically.

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RESULTS

Levels of Mastery in Dividing Whole Numbers

Table 4 shows the levels of mastery of the learners in dividing whole numbers with or without remainder, classified according to the mean percentage score.

Table 4. The Levels of Mastery of Grade IV-1 Learners in Dividing Whole Numbers in the Pre-test and Post-test

Levels of Mastery	Pre-test		Post-test	
	n	%	n	%
Absolutely No Mastery (0%-4%)	1	3.33	0	0.00
Very Low Mastery (5%-14%)	4	13.33	0	0.00
Low Mastery (15%-34%)	4	13.33	0	0.00
Average Mastery (35%-65%)	13	43.33	9	30.00
Moving Towards Mastery (66%-85%)	4	13.33	12	40.00
Closely Approximating Mastery (86%-95%)	3	10.00	3	10.00
Mastered (96%-100%)	1	3.33	6	20.00
Total	**30**	**100.00**	**30**	**100.00**

In the pre-test, one learner (3.33%) had absolutely no mastery, four had very low mastery, and four had low mastery. Thirteen learners (43.33%) had average mastery, four were moving towards mastery, three were closely approximating mastery, and only one (3.33%) had mastered the division of whole numbers with or without remainder. In total, nine learners (30%) were at the low, very low, or no-mastery levels, and eight (26.67%) were at the moving-towards-mastery level or higher.

In the post-test, no learner remained at the absolutely no, very low, or low mastery levels. Nine learners (30%) had average mastery, twelve (40%) were moving towards mastery, three (10%) were closely approximating mastery, and six (20%) had mastered the lesson. Twenty-one learners (70%) were thus at the moving-towards-mastery level or higher.

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Table 5. Mean Percentage Score of the Pre-test and Post-test

Test	Mean	MPS	Level of Mastery
Pre-test	18.97	47.43	Average Mastery
Post-test	29.83	74.58	Moving Towards Mastery

The mean of the pre-test was 18.97 (SD = 10.82), or an MPS of 47.43, which is Average Mastery. The mean of the post-test was 29.83 (SD = 7.05), or an MPS of 74.58, which is Moving Towards Mastery. The class mean thus rose by 10.86 points (27.15 percentage points), and the dispersion of scores narrowed from an SD of 10.82 to 7.05.

Effectiveness of the Strategic Intervention Material

The paired-samples *t*-test showed a significant difference between the levels of mastery before and after the use of the SIM in teaching division of whole numbers with or without remainder, $t(29) = -9.104$, $p < .01$. The mean of the post-test scores was significantly higher than the mean of the pre-test scores, and the null hypothesis of no significant difference was rejected. Computed from the reported t value ($dz = t/\sqrt{n}$), the standardized mean difference was approximately 1.66, a very large effect.

Significant Experiences of the Learners in Using the SIM

After the learners had used the SIM, they were asked about their significant experiences with it, and they expressed different views. Three themes emerged: (1) the activities in the SIM were easy and varied; (2) the colors enhanced the SIM; and (3) the activities promoted independent learning. Learner responses are code-named in accordance with the ethical safeguards in Section 2.5.

Enjoyable, easy, and varied activities. Learner 1 claimed that the activities brought enjoyment to him (Figure 1). Learners 2 and 3 claimed that the activities given were easy and that they could do them independently (Figure 2). Learner 5 likewise found the activities enjoyable and easy to answer (Figure 4). Learner 6, like Learner 5, highlighted the presence of several and varied activities, all of which revolved around dividing whole numbers. According to Learner 7, the different activities were appealing and enjoyable and, although they targeted the same learning competency, their variety encouraged her to accomplish all tasks (Figure 5).

Figure 1. Response of Learner 1 to the question "What did you feel while doing the activities?"

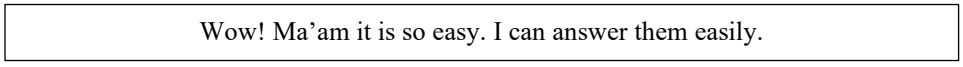
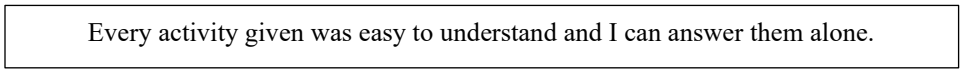
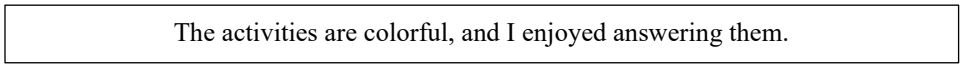


Figure 2. Response of Learner 2 to the question "What did you feel while doing the activities?"



Colorful design. According to Learner 4, she liked the book because of its lively colors and because it was easy to read (Figure 3).

Figure 3. Response of Learner 4 to the question "What did you feel while doing the activities?"



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Figure 4. Response of Learner 5 to the question "What did you feel while doing the activities?"

There are different activities in dividing and I enjoyed answering them with ease.

Figure 5. Response of Learner 7 to the question "What did you feel while doing the activities?"

Magaganda po lahat ng activities, tapos iba-iba pa po ang gagawin kahit na pare-pareho pong dividing numbers lahat.

Learners' Recommendations for the Enhancement of the SIM

Aside from their experiences with the SIM, the learners were asked about their recommendations for its enhancement. Most of the learners answered "None." Only a few mentioned the small number of activities, and the recommendations were: (1) there should be more activities on dividing whole numbers; and (2) game-based activities focused on dividing whole numbers should be introduced. Learner 8 mentioned that there should be more activities so that he would have more items to practice on (Figure 6). Learner 9 hoped to have a game-based activity on dividing numbers, such as a quiz bee (Figure 7). Learner 10 echoed the thoughts of Learner 9; Learner 11 also wished for a game-based activity that could assess her knowledge of dividing whole numbers; and Learner 12's response implied that she enjoyed the lesson and wanted more activities on it (Figure 8).

Figure 6. Response of Learner 8 to the question "What do you want to improve on the Strategic Intervention Material?"

More activities in dividing numbers

Figure 7. Response of Learner 9 to the question "What do you want to improve on the Strategic Intervention Material?"

Sana may quiz bee sa pagdi-divide ng numbers.

Figure 8. Responses of Learners 10 to 12 to the question "What do you want to improve on the Strategic Intervention Material?"

I hope we can have “Who Wants to be a Millionaire/Mathionaire?”

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DISCUSSION

This section interprets the levels of mastery of the Grade IV-1 learners in dividing whole numbers with or without remainder, the effectiveness of the SIM, and the learners' significant experiences in using the SIM as a means of improving their mastery of the competency.

Levels of Mastery of the Learners

Before the intervention, the learners showed only average mastery of dividing whole numbers with or without remainder (MPS = 47.43), with a wide spread of performance, from absolutely no mastery to mastery. After the intervention, the learners were moving towards mastery (MPS = 74.58), no learner remained at the low levels, and the spread of scores narrowed. These results show a clear improvement in the mastery levels of the learners and support the finding of Liggett (2017) that the use of intervention materials can greatly improve students' test scores and enhance their performance, interest, and participation in class.

Effectiveness of the SIM

The significant difference between the pre-test and post-test scores, $t(29) = -9.104$, $p < .01$, together with the very large standardized effect, indicates that the intervention was effective in increasing the level of mastery of the learners. This result is similar to the findings of Tagure (2015), in which the higher the extent of teachers' usage of audio, audio-visual, and multi-sensory materials, the higher the level of pupil performance in an achievement test. It is also consistent with Shin and Bryant (2015), whose synthesis found that interventions built on evidence-based instructional components led to improved mastery. The concentration of the intervention on a single least mastered competency, delivered through short, structured daily sessions that moved from guided to independent practice, may have contributed to this result, although the present design cannot isolate which feature of the SIM was responsible.

Learners' Experiences in Using the SIM

Mathematics activities should aim to teach learners and not to scare them with the complexity of Mathematics. The activities in the SIM can be said to be within the ability of the learners, as the learners found them easy. When learners can answer activities independently, they feel that the activities are fun, as illustrated by Learners 2 and 3, who said the activities were easy and could be done independently. Like Learner 4, who liked the book for its lively colors, young learners are fond of colorful materials: colors appeal to learners' senses, and they enjoy books that are colorful, which is why most books for young learners are rich in color. Learner 5 likewise found the activities enjoyable and easy to answer, which suggests that the SIM served its purpose, that is, to assist learners in mastering a previously taught lesson that they found difficult. When learners enjoy working on problems related to the competency, the anxiety associated with the lesson is removed. This is relevant to Bumidang's (2016) findings that anxiety in Mathematics is associated with weaker cognitive skills and that confidence-building activities must be given to students. Learners 6 and 7 pointed to the number and variety of the activities, which, although they targeted the same competency, encouraged learners to accomplish all tasks. Based on the responses of the learners, the SIM brought them enjoyment while learning.

Learners' Recommendations

Most learners had nothing to recommend, and the few who did asked mainly for more activities. When learners have just gained the knowledge and skills for a task, they tend to look for more examples to work on, which means that they are eager to learn and to further master the skill (Learner 8). The wish of Learner 9 for a game-based activity such as a quiz bee could mean that she had mastered the skill in dividing numbers and wanted to challenge herself further. The recommendations of the learners all pointed to a desire for more activities related to the division of whole

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numbers. This indicates that the learners enjoyed the activities in the SIM and learned the skills in dividing whole numbers well enough that they were not afraid to be tested in any way possible.

Implications for Practice

Two points from the related literature bear on practice. First, as Guinsayan (2017) showed, parents' after-class initiatives are associated with students' Mathematics performance, and a take-home SIM benefits from parental help and guidance. Second, as Gragasin (2008) indicated, the school head and staff should be actively involved in the implementation of an intervention to ensure its effectiveness. The training emphasis of Division Memorandum No. 296, s. 2021 (PRIMALS) likewise suggests that teachers should be capacitated to design and use SIMs for other least mastered competencies.

Limitations

The findings should be interpreted with caution. The study used a single group of 30 learners in one class and school, without a control or comparison group, so the improvement cannot be attributed to the SIM alone; maturation, the effects of regular classroom instruction during the nine days, familiarity with the test items, and the researcher's dual role as the learners' adviser may also have contributed. The tests were teacher-made and content-validated, but no reliability coefficient was reported. The qualitative data came from short responses of a few learners, and most learners had no recommendations to offer. Future studies may use a control group, a larger and more varied sample, a delayed post-test to check retention, and other SIM-targeted competencies.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Based on the findings, the study concludes that:

1. The levels of mastery of the learners in the pre-test ranged from Absolutely No Mastery to Mastered, while the levels of mastery in the post-test ranged from Average Mastery to Mastered.
2. The SIM "Part of Me" significantly improved the mastery levels of learners in dividing whole numbers, from Average Mastery (MPS = 47.43) to Moving Towards Mastery (MPS = 74.58); within the limits of the one-group design, it was effective.
3. The activities in the SIM were easy, appealing, and promoted independent learning.

Recommendations

In light of the findings, the following are recommended:

1. Include more activities on dividing whole numbers in the SIM, as the learners recommended, and introduce game-based activities such as a quiz bee.
2. Adopt the SIM "Part of Me" in teaching the least mastered competency on dividing 3- to 4-digit numbers by 2-digit numbers, with the support of parents and the school head.
3. Capacitate teachers through training and Learning Action Cells to develop and use SIMs for other least mastered competencies.
4. Replicate the study with a control group, a larger sample, and a delayed post-test to verify the findings and test their retention.

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REFERENCES

Arpilleda, A. (2021). Strategic intervention material: A tool in enhancing grade nine students' mathematical performance. *International Journal of Research Studies in Education, 10*(5). https://doi.org/10.5861/ijrse.2021.5051

Bumidang, M. (2016). *Perceived anxiety in mathematics and its relationships to mathematical cognitive skills of grade 6 pupils in Lamut District, Ifugao* [Graduate program thesis]. College of Teacher Education, Nueva Vizcaya State University, Bayombong, Nueva Vizcaya.

Bunagan, F. (2012). *Strategic intervention material*. https://www.slideshare.net/felixbunagan/strategic-intervention-aterial

Department of Education. (2015). *Policy guidelines on classroom assessment for the K to 12 Basic Education Program* (DepEd Order No. 8, s. 2015).

Division of Nueva Vizcaya. (2021a). *Pedagogical retooling in Mathematics, Languages and Science (PRIMALS) for Grade 4-6 Filipino teachers* (Division Memorandum No. 296, s. 2021). http://deped-nv.com.ph/memo_files/2021_296/DM%20No.%20296,%20s.%202021.pdf

Division of Nueva Vizcaya. (2021b). *Conduct of 2021 Division IMS Showdown cum launching of lesson exemplars in elementary Mathematics* (Division Memorandum No. 322, s. 2021). http://deped-nv.com.ph/memo_files/2021_322/DM%20No.%20322,%20s.%202021.pdf

Fernandez, A. (2013). *Standards-based assessment: DepEd's perspective*. National Education Testing and Research Center, Department of Education. https://www.ceap.org.ph/upload/download/20136/31131995_1.pdf

Gagani, R., & Diano, F. (2019). Characterizing the difficulty in fraction operation. *International Journal of Advanced Research and Publications, 3*(6). http://www.ijarp.org/published-research-papers/june2019/Characterizing-The-Difficulty-In-Fraction-Operation.pdf

Gragasin, V. A. (2008). *Instructional practices of secondary mathematics and predictors of school achievement in mathematics* [Graduate school thesis]. Nueva Vizcaya State University, Bayombong Campus, Bayombong, Nueva Vizcaya.

Guinsayan, J. B. (2017). *Parents' after-class initiatives as discriminations of high and low students' mathematics performance group of Santa Fe National High School* [Graduate school thesis]. Nueva Vizcaya State University, Bayombong Campus, Bayombong, Nueva Vizcaya.

Liggett, R. (2017). The impact of use of manipulatives on the math scores of grade 2 students. *Brock Education Journal*. https://files.eric.ed.gov/fulltext/EJ1160704.pdf

Little, M. (2009). Teaching mathematics: Issues and solutions. *TEACHING Exceptional Children Plus, 6*(1), Article 1. https://files.eric.ed.gov/fulltext/EJ875420.pdf

Magsambol, B. (2020). *PH lowest among 58 countries in math, science – global assessment*. Rappler. https://www.rappler.com/nation/filipino-students-lagging-behind-math-science-timms-international-results-2019

Michael, I. (2015). *Factors leading to poor performance in mathematics subject in Kibaha secondary schools* [Master's thesis]. Open University of Tanzania. https://core.ac.uk/download/pdf/44684738.pdf

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Volume 1 Issue 4 Pages 1010-1024 ISSN: 3155-7546 (Online)

Mutai, J. (2010). *Attitudes towards learning and performance in mathematics among students in selected secondary schools in Bureti District, Kenya* [Master's thesis]. Kenyatta University. https://ir-library.ku.ac.ke/bitstream/handle/123456789/609/JACKSON%20KIPRONOH.pdf

Salandanan, G. G. (2005). *Teaching and the teacher*. Lorimar Publishing Company.

Shin, M., & Bryant, D. (2015). Fraction interventions for students struggling to learn mathematics: A research synthesis. *ResearchGate*. https://www.researchgate.net/publication/276124407_Fraction_Interventions_for_Students_Struggling_to_Learn_Mathematics_A_Research_Synthesis

Silao, I. (2018). Factors affecting the mathematics problem solving skills of Filipino pupils. *International Journal of Scientific and Research Publications, 8*(2). http://www.ijsrp.org/research-paper-0218.php?rp=P747229

Tagure, J. (2015). *Extent of usage of teaching methods and instructional materials and pupils' performance in the National Achievement Test* [Graduate thesis]. College of Teacher Education, Nueva Vizcaya State University, Bayombong, Nueva Vizcaya.

Wallit, L. (2016, October). *Enhancing the performance of Grade VI-C pupils of Buyagan Elementary School through the use of Arts in Math (AIM)* [Paper presentation]. 13th National Convention on Statistics (NCS). Philippine Statistics Authority.

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