

Strategic Intervention Material: Innovative Approach in Learning Addition of Similar and Dissimilar Fractions

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Abstract

The study was conducted to explore and describe students' learning experiences in Addition of Similar and Dissimilar Fractions through Strategic Intervention Material. The study ought to find out the following: (1) the lived experiences of the grade 7 students in learning the addition of similar and dissimilar fractions through strategic intervention material; and (2) the learning insights of the students upon having innovative approach in learning through strategic intervention material. There were five participants in this study. The in-depth face-to-face interview was utilized to gather data. The following were the findings: two categories of participants' experiences using the Strategic Intervention Material. They were: (1) Positive learning Experiences; and (2) Challenging Learning Experiences. The learning insights of the participants upon using the Strategic Intervention Material were arranged into three categories: (1) realizations; (2) advice; and (3) messages. Finally, the researcher created a Model to summarize the themes revealed in analyzing the participants' responses. The researcher recommends the following: (1) Policymakers should consider the creation of Strategic Intervention Material as a curriculum innovation in crafting remediation policies, especially on complicated competencies for successful learning outcomes; (2) school Leaders should intensify the production and usage of strategic intervention material, especially in remedial classes to help learners at risk of failure; and (3) conduct further studies to explore problems of the same scope.

Keywords: Strategic Intervention Material; Learning Experiences; Learning Insights

1. Introduction

Quality education is one of the necessary needs for an individual to be competitive in the field of work, where competition always stays strong. The Department of Education implemented the K to 12 programs to produce globally competitive graduates. Students' performance is expected to improve after implementing the said program. The Department of Education provided the teachers with the necessary training (Regional Mass Training), the curriculum designed student-centered, catering to the level of understanding in each grade level (spiral curriculum), and learning materials were available through technology. Nevertheless, the performance of the students continues to decline significantly in Mathematics.

According to Ordinario (2013), the National Achievement Test (NAT) results for the nation's public high school students have dropped and are much lower than for public elementary pupils. This holds, especially in Mathematics subject. Strategic intervention material has been a practical approach to addressing students' difficulties in learning mathematical concepts. In the study by Dumigsi (2019),

findings showed that the proficiency level of Grade 9 students in the post-test when remediated using the Strategic Intervention Material was "satisfactory"; in contrast, the students remediated using the Grade 9 Learner's Material was described as "did not meet expectations."

The use of intervention material had been evident internationally. Intervention materials were employed in Europe to encourage healthy school behavior and discourage overeating and obesity. The ToyBox intervention targeted the social and physical environments of preschoolers and their parents, carers, and instructors. The outcomes of the intervention-development experience offered knowledge that was helpful for the creation of more extensive intercultural treatments for preschoolers. According to Dy (2011), they are stimulating the gaining of factual expertise and mastery competency on specific themes. When used with low-achieving students, instructional tools such as SIMs be successful educational involvement techniques. Numerous studies, both locally and internationally, produced positive findings.

Moreover, intervention material has been helpful nationally. Herrera and Soriano (2016) sought to ascertain the effectiveness of Strategic Intervention Materials (SIM) on the Physics accomplishment of a chosen sample of fourth-year students in public schools in Mat-i, Las Nieves, and Agusan del Norte. The study's findings showed that using SIMs successfully enhanced learners' least-learned ability in physics, as demonstrated by a considerable improvement in their post-test scores. Furthermore, rather than math remediation, introducing SIM in the classroom significantly impacted the improvement in physics performance.

In the researchers setting, the division office has acknowledged the use of strategic intervention material for its effectiveness in helping students learn complicated topics in mathematics. Although quantitative research has been made to investigate its efficacy, more effort has yet to be made to look into the actual experiences of the learners while using the material. Exploring learners' experiences while using the SIM would deepen the understanding of how this material contributed to the success of learning the competency. As such, this paper was determined to illuminate the remaining shadow of the innovative practice.

1.1 Review of Related Literature

Presented in this section is the review of related literature. This embeds existing studies, which served as a basis for discussion relative to the results of this specific study.

Strategic Intervention Material and Students' Performance in Chemistry

Espinosa (2014) study looked at the methodology used and tried to determine how Strategic Intervention Material-Based Instruction (SIM-BI) affected students' performance in high school chemistry. It made use of the pre-experimental pretest-post-test design. One of the least comprehended concepts in the study's topic, chemical bonding, was covered by the SIM-BI utilized as a therapy. The study's findings indicated that using SIM-BI to improve students' performance and learning methods is helpful. The survey's favorable outcome revealed that both categories of learners valued and found the SIM appealing. Moreover, Gultiano (2012) investigated the impact of strategic intervention material on the academic performance of Chemistry students. The study's experimental design revealed that the group in which SIM was implemented performed significantly better on the post-test.

Strategic Intervention Material in Science

In addition, Romero (2021) studied how he could raise his students' academic performance by separating mixtures via strategic intervention material (SIM) with grade 6 science students. Based on

the result of the study, it was determined that the usage of Strategic Intervention Material (SIM) had significantly improved the learners' academic performance. According to the participants' affirmative responses to the perception survey questionnaire, it was also assumed that they showed interest in and liked using the Strategic Intervention Material (SIM).

Further, Villonez (2018), an author of "Use of Strategic Intervention Material (SIM) as Strategy and the Academic Achievement of Grade Seven (7) Students" on selected topics in Earth Science, conducted a research study on 120 participants in F. Bangoy National High School, Davao City, Philippines, in to determine whether using SIM would enhance the academic performance of Grade Seven (7) students on selected topics in Earth Science. He decided that SIM was more successful and efficient than traditional methods in teaching several Science courses. He advocated using SIM as an instructional resource or approach to teaching Science and other topics.

Strategic Intervention Material in Social Studies

In the other subject, Lazo and De Guzman's (2021) study evaluated Strategic Intervention Material's (SIM) success in Social Studies. The results showed that the student's academic performance significantly changed. This study made several recommendations, including the preparation of SIM to enhance the development of desirable values and traits and free from biased contents; more active learning activities intended to increase motivation and understanding as well as the result of higher-order and critical thinking; and improved effectiveness of its assessment tools and techniques.

Strategic Intervention Material in Physical Education

According to Sadsad's (2022) study, the student's perceptions of the acceptability of the prepared Competency-Based Strategic Intervention Materials indicate their performance. A positive response to the material can result in the practical application of the material and performance enhancements. It is essential to identify the disciplines and topics in which students are deficient, provide them with the necessary material for improvement, and consider objectives, content, and suitability.

Strategic Intervention Material as Reading Remediation

Pocan et al. (2022) used strategic intervention material in reading remediation in English subjects. The Phil-IRI Manual 2018, Dolch's actual sight words, and reading tales have been used in this study's quantitative observational research approach to evaluate the reading proficiency of thirty struggling readers regarding word recognition, reading comprehension, and reading speed. The post-tests demonstrate that the participants' reading abilities advanced to instruction and independent levels following the remedial program. The study produces strategic reading intervention resources to help instructors and students during the vital programs. It is essential to ascertain the student's capacity to create successful intervention materials. It was proposed that school administrators and program experts create staff and student assistance programs to improve students' literacy.

Strategic Intervention Material in English

In addition, Flores and Cacho (2020) evaluated the efficacy of strategic intervention material in developing the English abilities of the Grade 6 students at Pao Elementary School during the SY 2019–2020. Teachers can use SIM as a strategic teaching tool to help students improve their least-mastered competencies. The circumstances described above served as the study's inspiration. The findings demonstrated that the respondents had low levels of competence in the targeted abilities but had improved following the intervention.

Summary

In summary, the studies above explored Strategic Intervention Material's effectiveness in improving student performance in different learning areas. The intervention material had been used as a remediation tool and an innovative approach to learning complicated competencies. The studies employed a quantitative approach to investigate such effectiveness in different subject areas. These studies claimed that there had been an improvement in students' performance after using the material. However, results were limited to these quantitative data analyses.

1.2 Research Objectives

This study aimed to explore and describe students' learning experiences in Addition of Similar and Dissimilar Fractions through Strategic Intervention Material. This reflected the importance of strategic intervention material in providing innovative learning experiences among the grade 7 students.

The following were the objectives of the study:

- Describe the lived experiences of the grade 7 students in learning to add similar and dissimilar fractions through strategic intervention material; and
- Provide insights gained by the students upon innovative learning approaches through strategic intervention material.

1.3 Scope and Delimitation

This study is delimited to Don Esteban Dasalla National High School grade 7 students who were identified to be at getting failing scores in addition of similar and dissimilar fractions.

The researchers explored the students' experiences using the strategic intervention material as an innovative approach to learning the specified competency. The researchers further delimited this study to "Indigenous People" (IP) students, specifically those who belonged to SAMA Tribe, as the language contextualization applied in the strategic intervention material was designed for these specific learners.

2. Methodology

2.1 Research Design

This study used a qualitative phenomenological research study. The qualitative research approach known as phenomenology seeks to comprehend and describe the overarching nature of a phenomenon to arrive at a complete understanding of it. The process investigates the everyday experiences of human beings while suspending the researchers' preconceived assumptions about the phenomenon (Limpaecher, 2022). The fundamental goal of the approach is to describe the nature of the particular phenomenon. "What contexts or situations have typically influenced your experiences of the phenomenon?" (Creswell, 2013).

2.2 Participants and Sampling

The study participants came from the grade seven students of one of the Island Garden City of Samal Division schools. There were five participants in this study. They were currently enrolled in the school year 2022 – 2023. The inclusion of the participants was based on the record of the subject teachers. As such, they were the learners who failed on the specified competency. Participants were labeled P1, P2, P3, P4, and P5.

2.3 Research Instrument

The researchers used an interview guide in data gathering. Interviews are beneficial for uncovering the story behind a participant's experiences and pursuing in-depth information about a topic. Interviews may be helpful to follow up with individual respondents after questionnaires, e.g., further investigating their responses (McNamara, 1999)—the questions in the interview guide aligned with the study's objectives. The researchers made the interview guide which was validated before being used in the data gathering. This ensured that the interview guide was free from conceptual and grammatical errors.

2.4 Data Gathering Procedure

The in-depth face-to-face interview was used to gather data. In this study, the researchers followed the following steps for data gathering. The researchers gave the school head a letter asking permission to conduct the study. This was followed by a thorough explanation of the purpose of the interview and the ethical considerations to eliminate hesitation and ensure full participation from the participants. After the discussion and all the queries of the participants were addressed, the semi-structured interview began. Lastly, the responses of the participants from the interview were collated for data analysis.

The interview was done face-to-face with the participants, observing health protocols. The researchers wrote down the responses and, at the same time, used an audio recorder during the face-to-face interview. Often audiotapes are utilized to allow for more consistent transcription (Creswell, 2013). The researchers took the role of the interviewer while the research participants were the interviewee. This was done during the preferred time of the research participants.

2.5 Theoretical Lens

This study is anchored on the constructivism theory of learning. Constructivists believe that learners actively create their knowledge rather than passively absorbing information. People construct their representations of the world and add new information to their preexisting knowledge (schemas) when interacting with it and thinking back on it. The teacher ensures they understand the learners' preexisting conceptions and then guides the activity to resolve and build upon them (Oliver, 2000). It tied explicitly to Jerome Bruner's notion of discovery learning. It is an inquiry-based method where learners independently find linkages and facts. The learner draws on prior knowledge and experience to develop new insights when challenged.

Additionally, Constructivism is an approach to education that aims to maximize learner comprehension. It is defined by Woolfolk et al. (2013) as instruction that emphasizes the learner's active participation in developing understanding and making sense of information. The constructivist perspective on learning can inform a variety of classroom instructional strategies. The teacher ensures that he comprehends the student's preexisting beliefs, guides the activity to address them, and builds upon them.

2.6 Ethical Considerations

Ethical considerations form a significant element in research (Chetty, 2016). In this study, it was a priority that the appropriate ethical standards were maintained and followed. According to World Health Organization, it is essential to adhere to ethical principles to protect research participants' dignity, rights, and welfare. In addition, the Department of Science and Technology - Philippine Health Research Ethics Board (DOST – PHRB) emphasized three purposes of ethical considerations in human research.

The following are protecting human participants, responsible conduct of research, and application of research outcomes. This research was anchored on the National Ethical Guidelines set by DOST – PHRB to ensure that appropriate ethical standards were followed. Thus, this paper strictly followed the nine elements of research ethics. These elements were social value; informed consent; risks, benefits, safety; privacy and confidentiality of information; justice; transparency; adequacy of the facilities, qualification of the researcher, and community involvement.

2.7 Data Analysis Plan

Data analysis in qualitative research systematically searches and arranges the interview transcripts, observation notes, or other non-textual materials that the researcher accumulates to increase the understanding of the phenomenon (Wong, 2008). The researchers started by categorizing the responses of the participants into codes. A 'code' can be a word or a short phrase representing a theme or an idea. Then it was followed by finding meaningful insights and identifying themes, patterns, and relationships from each code. Lastly, the researcher summarized the result. At this last stage, the researchers linked research findings to the study's objectives.

3. Results and Discussion

The ten interview questions utilized in the study were used for detailed data analysis. The information gathered through individual student interviews was then categorized to reflect students' experiences using the strategic intervention materials. Themes were taken from these responses. Lastly, a framework for further quantitative exploration was offered based on the derived themes.

Research Question Findings

1. What are the lived experiences of the grade 7 students in learning the addition of similar and dissimilar fractions through strategic intervention material?

The study's findings revealed in the analysis of the participants' responses categorized the experiences of the participants into two sub-headings: Positive learning Experiences and Challenging Learning Experiences. Below is a detailed discussion of each category.

Positive Learning Experiences

Easy

Three themes were taken from the participants' responses under this subheading. First, the participants revealed that the material was accessible. This means that they could comprehend the information from the material independently. In the study of Norris and Brown (2002), the findings revealed a relationship between task difficulty estimates and examinee performances. Since the strategic intervention material was intended for students at risk of failure, the difficulty level should be appropriate. Moreover, according to Lynch, Patten, and Hennessy's (2013) research, teachers must provide plenty of opportunities for student success when creating activities to support student learning, especially self-directed tasks like homework.

Subsequent to this, P3 expressed his thoughts in this manner:

“Ang akong mahinumduman pag gamit nako sa SIM kay lingaw siya gamiton ug sayon ra sad sabton.”

(I remember that I enjoyed using the Strategic Intervention Material, and it was easy to understand.)

Contextualization

Second, the participants declared that the material was relatable. They highlighted that the problem situations and the language were contextualized. They could also recognize how the idea could be used daily. Contextualization has been a practical approach to increasing learners' performance. As students realize the concept's existence in their daily lives through contextualization, learners are motivated to learn it.

The work of Cordova and Lepper (2016) revealed that students' motivation, as well as their degree of engagement in learning, how much they learned in a certain period, their perception of their level of competence, and their levels of desire, all dramatically increased as a result of contextualization, customization, and choice. In addition, the study of Bottge (1999) supported the use of contextualized tasks to improve students' problem-solving abilities in general education and remedial classes is supported by the results. Further, the findings of Rivet and Krajcik (2007) support claims that contextualizing instruction can help students learn and relate to future research investigations and the planning of science learning environments that will take this instructional strategy into account.

Aligned with this, P5 expressed his response as follows:

“Makalingaw unya ang mga example kay naa ra sa among palibot. Lingaw kayo basahon sir. Unya mahagit sad ko ug answer kay parihas ra jud sa nahitabo sa among balay ang mga problem.”

(It was enjoyable, then the examples were just around us. I enjoyed reading it. It also ignited my interest to answer since the problem happened in our house.)

Mixed Emotions

Lastly, they had mixed emotions while using the said material. They felt afraid at the beginning, yet it was replaced with enjoyment as they went on with the parts of the material. Concerning the study of Espinosa (2014), which revealed that learners valued and found the SIM appealing, and Romero (2021), who assumed that the students showed interest and liked using the Strategic Intervention Material (SIM), the result of this study stipulated students' SIM feelings and interest while using the material.

To concretize this, here is the transcribed note from P1:

“Katong gitagaan mi ni Teacher ug SIM, nahadlok ko kay basin dili ko kasabot sa gihatag niya pero pag gamit nako, nausab akong gibati. Sayon lang di ay ug lingaw pud. Ganahan ko sa iyang gihatag nga SIM.”

(When they gave us the Strategic Intervention Material, I was afraid I might not understand it, but when I used it, my feeling changed. It was easy and enjoyable. I liked the material he gave.)

The themes revealed in this study precisely illustrated how the material helped in raising learners' performance. The participants declared that the reasons why the material was accessible, relatable, and enjoyable were the content presentation and the topic application. They discovered that the process employed in the material was systematized and translated into vernacular language. The participants also stated that applying the idea in real life made some SIM components attractive. Because the SIM's situations were drawn from their community, the participants could relate to them.

The purpose of Strategic Intervention Material, according to Lazo et al. (2021), is to re-teach concepts and skills (least learned). It is a tool provided to students to assist them in acquiring competency-based skills that they could not obtain during conventional classroom instruction. It incorporates both student learning methodologies and material improvement (for instructors). It is an all-encompassing strategy designed to help students become independent and effective learners.

These findings opened up possible quantitative explorations with the previous studies revealing the material's effectiveness in improving students' performance. New variables were identified, specifically "content presentation" and "topic application," which may be explored to add up to the existing body of knowledge.

Challenging Learning Experiences

Aside from the exciting experiences of the participants while using the SIM, challenges were encountered. The participants enumerated some parts of the material that they found challenging. The following were the preliminaries, guide cards, and assessment cards. The participants revealed two reasons for these challenges: "the nature of the parts" and "the use of the English language as the medium of the written instructions. In support of this, Brock-Utne (2007) shows a substantially broader range in test performance across learners when a foreign language is employed, such as English. This means that while most students fail, only a few succeed. Further, they overcame these challenges through peer and teacher assistance.

To be evaluated using performance assessment, students must engage in activities that enhance them to develop specific performance abilities and produce results that meet specific quality standards. These skills and procedural quality measures should be defined and evaluated to evaluate actions and outcomes consistently and critically, representing specified levels and tracking learners' progress.

2. What are the learning insights of the students upon having an innovative approach to learning through strategic intervention material?

The learning insights of the participants upon using the SIM were arranged into three categories: realizations, advice, and messages.

Realization

The students realized they could learn complex competencies through perseverance (using the SIM). In addition, the participants realized that the language gap is one of the reasons for their difficulty in understanding concepts in mathematics. Lastly, the participants revealed that through the material, they realized the relevance of competency in their daily lives.

SIM is material provided to students to assist them in mastering a competency they were unable to acquire through conventional classroom instruction. Participants' responses regarding their insights that can be shared with others led to the conclusion that SIM is advantageous and advantageous. This became one of the predominant themes.

Following this, P2 expressed his thoughts in this manner:

“Akong na realize nga kaya nako masabtan ang mga lisod na topic sa math pinaagi sa pag kugi ug subay sa mga proseso.”

(I realized that I could understand complex topics in mathematics by diligently following the process.)

Advice

As the participants became successful in understanding the competency through the SIM, participants advised the use of the material, especially for those who had difficulties in learning the addition of similar and dissimilar fractions. The participants were hopeful that the strategic intervention material could help other learners who found adding similar and dissimilar fractions challenging. Typically, students who do not meet the expected learning standards receive additional instruction, practice time, and academic support to achieve competency and meet the criteria. The Department of Education identifies SIM as one of the suggested intervention materials that can bridge learning disparities. SIM is a remediation tool for students at their current level of comprehension, increasing their academic achievement.

In connection with this, P2 firmly stated that,

“Katong mga naglisod sa pag add ug fraction, gamiton jud nila tong SIM ni teacher. Sayon ra jud to kay naay translation. Tapos makalingaw pa jud.”

(Those learners who had difficulties adding fractions should use our teacher's SIM. It was easy because there is a translation.)

Message

Moreover, the participants pleaded with teachers to create more SIM, especially for complex topics, not just in mathematics but also for their subjects like Science and English.

These insights furthered the effectiveness of Strategic Intervention Material as an innovative approach to the curriculum. The material was not only effective in letting learners learn the complicated competencies in mathematics. It reached the affective domain of the learners who could realize the relevance of the competency in real life. Moreover, it ignited the participants' reflective thinking, enabling them to place trust within themselves that they could learn complicated topics through perseverance (while using the SIM). Further, participants enhanced their interpersonal skills by advising fellow learners having the same problem and pleading with teachers to create more material for learners like them.

In line with this, P2 shared his thought, saying,

“Maayo unta nga naay SIM ang mga lisod na topic dili lang sa math, apil sad ang science og English. Nindot jud kung naay ingon ani para matabangan mi mga slow learners.”

(We wish there were Strategic Intervention Materials for all complex Mathematics, Science, and English topics. It is excellent if there are materials like this to help us slow learners.)

These findings led the researchers to create a Model to summarize the themes revealed in the analysis of the participant's responses. As such, the schematic diagram is presented below, which may serve as starting point for future quantitative explorations to investigate the variables uncovered in this study.

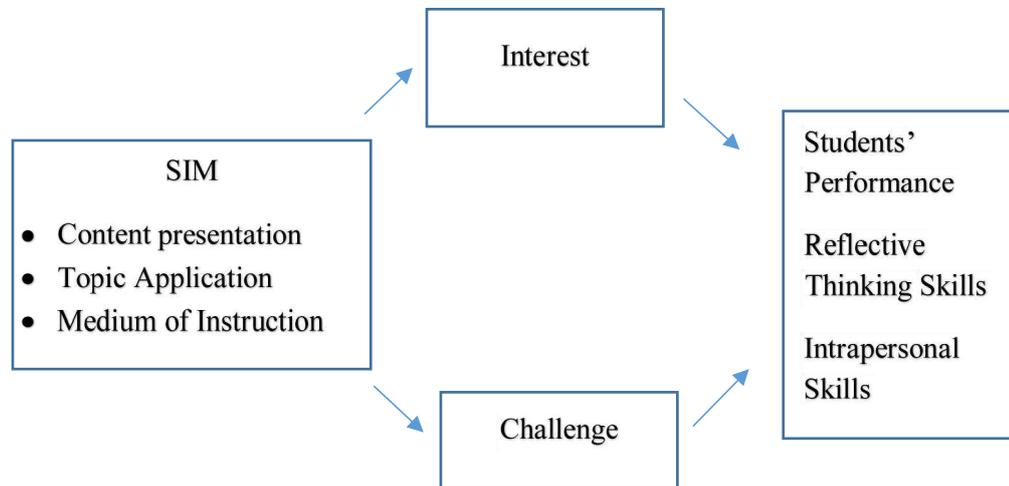


Figure1: A Framework for Quantitative Exploration

4. Conclusion

Based on the findings, the researchers reached the following conclusions:

- The participants' learning experiences in using the Strategic Intervention Material were: (a) Positive learning Experiences (accessible, relatable, and involving mixed emotions); and (b) Challenging Learning Experiences (the nature of the parts and medium of the written instructions).
- The learning insights of the participants upon using the Strategic Intervention Material were arranged into three categories: (a) realizations (perseverance, language gap, and relevance of the competency in their daily lives); (b) advice (utilization); and messages (production).

5. Recommendations

Based on the above conclusions, the researchers recommend the following:

- Policymakers should consider the creation of Strategic Intervention Material as a curriculum innovation in crafting remediation policies, especially on complicated competencies for successful learning outcomes.
- School Leaders should intensify the production and use of strategic intervention material, especially in remedial classes, to help learners at risk of failure.
- As a means of minimizing the least-learned competencies in a subject, teachers may develop SIMs for lessons. This may encourage them to proceed with the implementation despite potential obstacles.

- In addition, this may assist the students who utilize the material to recognize and appreciate the teacher's efforts. This would motivate them to work harder on their learning, knowing that their teacher went above and beyond to aid their education.
- Conduct further studies to explore problems of the same scope.

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