I LOVE VIEW: A Strategic Intervention Material in Mastering Total Magnification of a Compound Microscope A Classroom-Based Action Research

Steven R. Repe

Teacher I, Department of Education, Division of Davao City, F. Bustamante National High School

DOI: https://dx.doi.org/10.47772/IJRISS.2024.802065

Received: 11 January 2024; Accepted: 23 January 2024; Published: 08 March 2024

ABSTRACT

The implementation of K–12 programs in the Philippine educational system is being done to address the widespread failure of science education, with the goal of giving each pupil the best possible instruction. Strategic Intervention Material (SIM) is used by DepEd to improve student performance and reduce the least-mastered science competency. This paper investigates the effectiveness of strategic Intervention Material (SIM) to help Grade 7 students struggling in the classroom. Classroom Action research method used to thirty Grade 7 students. The aim of this intervention material is to enhance the efficiency of the learning process by simplification and self-directed learning methodologies. The Activity Card, Evaluation Card, Enrichment Card, Reference Card, and Answer Key provide learners with competency-oriented tasks, assessments, enrichment exercises, reference cards, and answers. SIM helps students learn and perform better in class when used to assess least-taught competencies. SIM can be used to effectively teach the magnification of microscopes at F. Bustamante National High School, but it requires careful planning and an evaluation of students' skill level to be successful.

Key word: Strategic Intervention Material

CONTEXT AND RATIONALE

I've noticed that my students are struggling to understand concepts in science. One of my class's most challenging courses has been biology. Students still struggle with mastering a lesson, even though it's usually more about understanding and remembering concepts. Despite the country's education system's abrupt upheaval, instructors adapt and invent new ways to educate every child (Repe, 2021). According to the data, biology has a scientific mean percentage score (MPS) of 41.35. The desired score of 75 is 33.65 points away from this. This demonstrated the widespread failure of science education. The implementation of K–12 programs in the Philippine educational system is being done to address the issue with the system. The low achievement scores both nationally and internationally, according to the Department of Education (DepEd), are the justification for when it is appropriate to apply this system in basic education. The Philippine Education System currently faces several challenges, including a lack of classrooms, a reduction in the number of instructional materials required in scientific classes, and a lack of funding.

Giving each pupil the best possible instruction is the main objective of teaching. As a result, a scientific instructor must build a suitable and functional apparatus and supply the necessary supplies (Dy, 2011). When the right instructional resources are readily available, ample, and thoughtfully created for the different student types, biology teaching is more effective. According to Ifeoma's (2013) study, pupils performed better academically when they were taught using instructional materials. The study by Awolajo (2016), which discovered that the usage of instructional materials improved the students' acquisition of knowledge delivered to them, provided support for this. One strategy used by the Department of Education to improve the academic performance of students struggling in science and technology is the use of strategic

intervention material. According to studies, the usage of instructional materials improves students' performance and adds enjoyment to the teaching-learning process. Today's educators blended Strategic Intervention Material (SIM) with innovation, resourcefulness, and technology. One of the resources utilized for reinforcing or reteaching the least-learned ability for a certain topic is this one (Press Reader, 2017).

In accordance with DepEd directive No. 117, series of 2005, which was titled "Training Workshop on Strategic Intervention Materials (SIMS) for Successful Learning," teachers received the necessary instruction on creating SIM. It is one of the treatments recommended by DepEd to enhance student performance and lessen the least-mastered science competency. Numerous studies point to the usefulness of SIM in reducing the least mastered science competency; as a result, subpar achievement was increased. The Department of Education included the creation of SIM as one of the contests during Science Month in divisional, regional, and national-level competitions due to the usefulness of SIM as a component of the teaching-learning process and remediating pupils with low performance in science.

Because of this, the purpose of this paper is to investigate the efficacy of strategic intervention material (SIM) in enhancing students' proficiency in biology's least-learned competency. More specifically, it evaluates the possibilities of using SIM to help Grade 7 students who are struggling in the classroom. Additionally, the following research questions were looked at in this study: Is there a difference between the pre-test score and post test of the learners? Is there a difference between the scores of experimental group and control group after remediation?

INNOVATION, INTERVENTION AND STRATEGY

My proposed action research involves the development of an interactive content piece that considers the contextual factors of its intended usage. As per the findings of a study carried out at the University of Bristol, the term "interactive learning materials" refers to educational resources that are interactive in nature and are intended to impart a particular learning outcome. The documents can vary in length, ranging from a single page to multiple pages, and may comprise of both unchanging content and interactive features such as assessments and recreational activities. The aim of this intervention material is to enhance the efficiency of the learning process by means of simplification. The implementation of self-paced and self-directed learning methodologies allows students to interact with educational materials at their own discretion, leading to a more engaging and dynamic learning encounter. The intervention material provided is versatile and can be utilized in diverse educational environments, such as conventional classroom teaching, distance learning, and both individual and collaborative learning scenarios. The following will be the part of my strategic intervention material:

1.The Guide Card. The Guide Card presents the big picture. It gives an overview of the lesson, presents the focus skill, introduces the activity/ activities, engages the learner's interest, and leads the learner in performing the tasks.

2.The Activity Card. The Activity Card defines the task(s) that the learner should undertake to develop the skill. The task is competency-oriented and may be individual or group work. The purpose of the task is to provide enough practice for the learner so he/she can perform the skill automatically.

3.The Evaluation or Assessment Card. The Assessment Card helps the learner measure his/her level of mastery of the skills upon completion of the tasks. The result of the assessment identifies the knowledge/skill(s) that the learner may need to develop further or enhance. The score of the learners will not be used as basis for his/her grade.

4.The Enrichment Card. The Enrichment Card extends learning by providing additional exercises for further application of knowledge or skill.

5.The Reference Card. The Reference Card provides additional content to the coverage of the textbook. It may also list of resources that the learner may refer to for further reading.

6.The Answer Key. The answer key shall provide answers to all exercises and activities. This is a self-learning material where the learners will study and answer with less assistance and supervision from the teacher. The teacher will just give instruction on what to do and let the students study and answer the self - learning materials during vacant time or remediation period.

Action Research Question

The research questions that guided this study are the following:

1. What is the mean score of students in the pretest?
2. What is the mean score of students in the post-test?
3. What insight can the teacher share to the academe in general?

Furthermore, it has been observed that these students are encountering challenges uncomprehending the topic of microscope focusing, particularly regarding magnification and the resulting image formed under each objective. This prompted me to undertake a research study aimed at bridging the disparity between learners and competencies through the creation of a strategic intervention material, which I anticipate will enhance learners' motivation, retention, and performance.

ACTION RESEARCH METHOD

My research predominantly employed quantitative approaches within a classroom-based action research design. The purpose of my study is to evaluate the efficacy of the instructional material- strategic intervention material in addressing the challenges faced by learners in acquiring the necessary skills. As a researcher, my primary goal is to gather primary data to uncover verifiable information and empirical evidence in this investigation.

Participants, Other Sources of Data, and Information

The primary objective of the study was to conduct action research aimed at aiding seventh-grade students who experienced challenges by utilizing Strategic Intervention Material to enhance their proficiency in the field of science. Therefore, the present research study solely concentrated on a viable and pragmatic intervention that is believed to be a superior aid in assisting learners who experience difficulties. The study employed purposive sampling as the sampling technique. Only the 30 learners who were identified and described in the research were included in this study. The individuals were intentionally chosen based on the specific traits outlined in the rationale of the problem. Notwithstanding the fact that the intervention was administered to all pupils in the class, it is noteworthy that the scope of this action research was exclusively directed towards those learners who were identified as facing challenges in attaining mastery of the competency.

1. **Data Gathering Methods**

I primarily deploy a classroom-based action research strategy that incorporates quantitative methodologies. It is critical to always assure the sufficiency and accuracy of the data gathered and processed. As a result, every information acquired was processed and recorded fairly and honestly to respect the sense of integrity of the data result in terms of agreements, objectivity, and bias-free assessments. Furthermore, the necessity of consistency was reinforced by having a lengthy engagement with the same participants during the suggested intervention's conduct within the given period and by validating truths in the data acquired

through the checking and rechecking process.

Furthermore, it was ensured that the data acquired was not tainted by prejudices and personal judgments related to the study's issue. It is because I, as the researcher for this study, should act as the data gatherer. Finally, keep in mind that the conclusions of this study were the result of the research's emphasis, not of personal biases and prejudices.

As a result, participants should be informed about where and how long their data will be held, as well as how the data will be treated. Furthermore, the Implementing Rules and Regulations of Republic Act No. 10173, often known as the Data Privacy Act of 2012, were strictly obeyed. There is a requirement to protect the security of the participants' personal information. As a result, every precaution was made to ensure the anonymity of the data sources and the identification of any personal information transmitted or read.

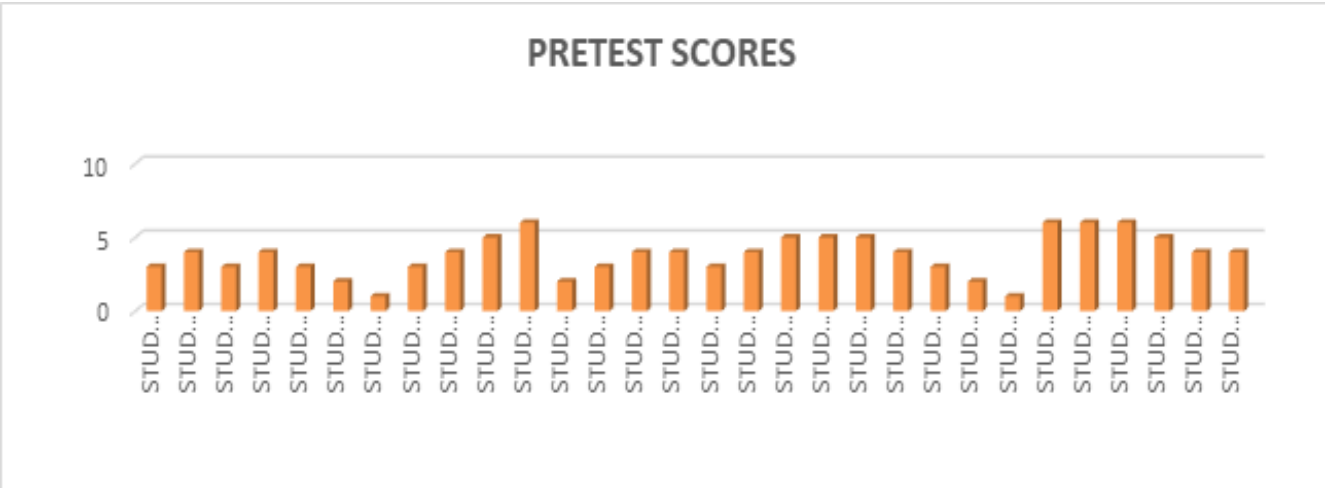
As a result, I made certain in this study that the intervention would not hurt anyone in my classroom. Informed permission was totally gained at the start, the data and information gathered were treated with the strictest confidentiality. Furthermore, I acquired accurate data from their pretest and post-test scores for the generation and analysis, as well as to gain a full knowledge of students' learning problems on the competency.

1. **Data Analysis Plan**

Noble and Smith (2013) posit that the procedure of data analysis involves the consolidation and/or reconstruction of collected data in a manner that is both transparent and rigorous, while also remaining faithful to the accounts provided by the participants. The end goal is to create a meaningful and comprehensible representation of the data. The collected data were subjected to suitable descriptive statistical analysis and will be displayed in textual, tabular, and graphical formats. The purpose of my inquiry is to investigate and elucidate the issue at hand, as well as to propose a feasible resolution that can enhance the learners' proficiency in the given competency.

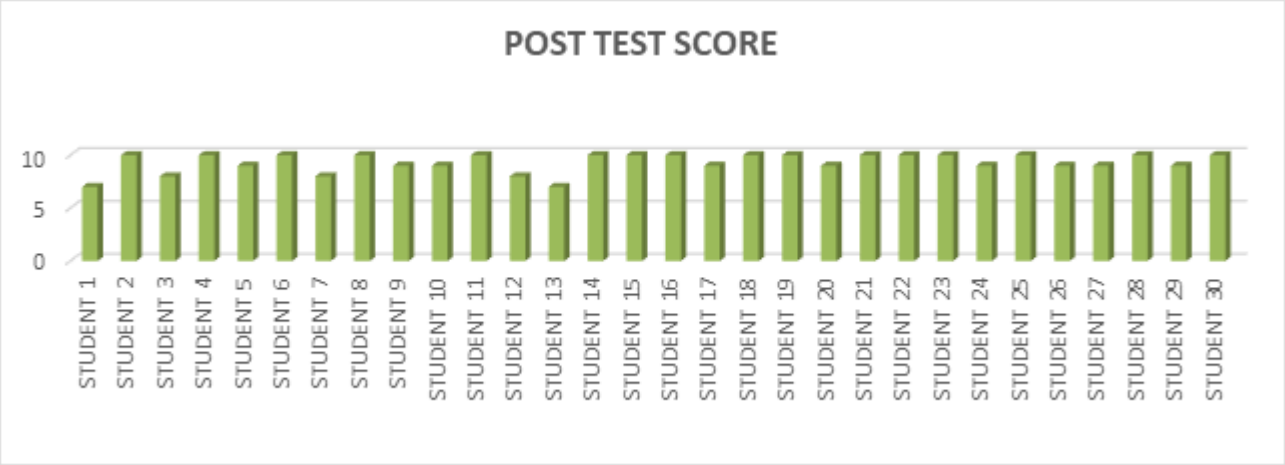
RESULT AND DISCUSSION

Table 1: The Pre-Test of the thirty identified pupils of grade seven prior to the intervention.



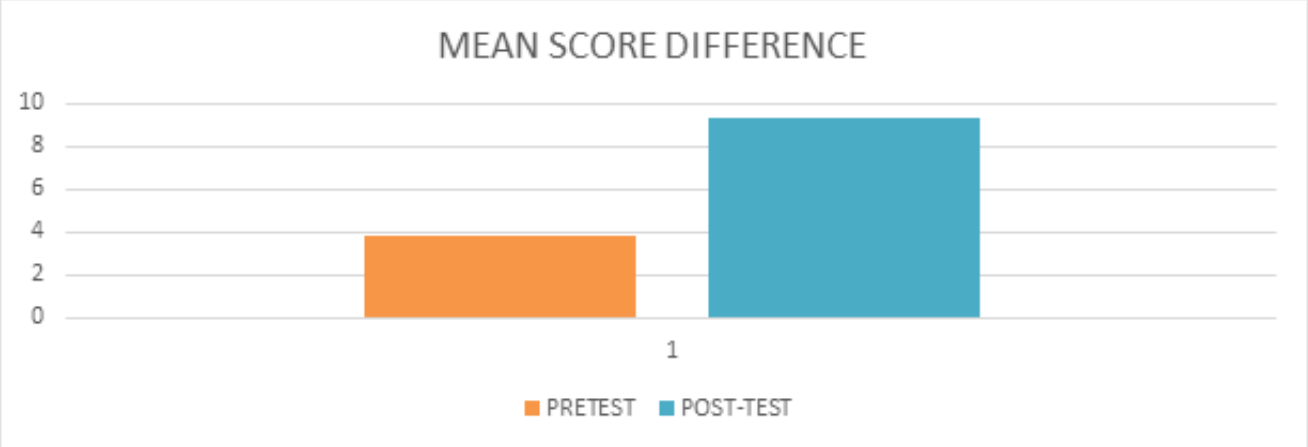
The table above show the pre-test results of the thirty identified pupils. This has a mean score of 3.80 which shows a very low range of scores between learners. The graph above displays their poor performance before the intervention was taken place. This may be due to multiple factors leading to difficulty in understanding the concept.

Table 2. The Post-Test Results of the five identified learners after applying the intervention.



It was displayed in Table 2 the detailed presentation of the student's performance after the intervention was conducted. This has the mean score of 9.30 which shows a high score range between the learners. This clearly indicates that the identified learners were able to cope with their difficulty and have improved their scores and performance which signifies that using the strategic intervention material (SIM) can have a positive impact on mastering competency in the seventh grade and biology subject.

Table 3: Mean score difference between pretest and post-test.



Observable from the table 3 that there is a large increase in mean score between the two tests before and after the intervention. The pretest has the mean score of 3.80 and the post-test has the mean score of 9.30. The study's findings indicate a rise in scores between the two periods of testing. The result is consistent with Awolajo's (2016) research, which found that using instructional materials helped students learn the information being taught to them. Students perform better in class when SIM is used to assess their least-taught competencies.

The pre-test and post-test scores of students who took the SIM significantly change from each other, according to the study's findings, which support the following conclusion. This supports the conclusion that there was a notable change in scores. The utilization of SIM may effectively aid science teachers at F. Bustamante National High School in teaching the concept of microscope magnification. An additional investigation is required to corroborate the applicability of SIM in diverse subjects or contexts, given that the current study solely concentrates on the domain of magnification. Furthermore, it is recommended that educators utilize the Strategy Instruction Model (SIM) when working with their pupils, either as a means of

reinforcing a specific subject matter or as a tool for remediation. Prudent strategizing is imperative when employing SIM to fulfill the needs of learners and cater to the competencies that are to be assessed. To ensure the efficacy of this pedagogical approach, it is recommended that a comprehensive assessment of the students' proficiency level be carried out.

Teachers of science in Grade 7 would be wise to use SIM in their lessons. A different study that will support the usage of SIM in other lectures or on other topics is needed, though, as this one just focuses on the microscope, magnification. Additionally, it is advised that teachers employ SIM with their students or as a tool for reteaching a particular topic. Careful planning is required while utilizing SIM to meet the demands of the students and accommodate the skills that will be evaluated. A careful evaluation of the students' ability levels was also advised for this teaching method to be successful.

REFLECTION

Upon examining the issue of my students, I have come to recognize several factors that hinder their ability to acquire knowledge in the field of biology. These school-aged individuals exhibit a commendable effort in surmounting the challenges posed by this difficulty. As an educator in the field of science, it is imperative to identify the underlying factors contributing to these issues and comprehend the ways in which these challenges impede the child's capacity for further learning. Over the course of my teaching career, I have predominantly employed traditional teaching methods. However, upon reflection, I have come to recognize the tedious, unstimulating, and ineffectual nature of this approach for my students. The implementation of this intervention has provided insight into the importance of pattern knowledge in fostering the cognitive abilities of students, facilitating their comprehension of concepts through an inductive and cohesive approach. It facilitated their ability to cultivate self-reliance in the acquisition of knowledge.

In addition, it has come to my attention that basic pedagogical approaches aimed at assessing learners' coping and managerial skills can yield optimal results solely when educators demonstrate a willingness to extend themselves and allocate additional resources, time, and opportunities to assist students in overcoming their challenges. Interventions aimed at teaching and learning have the potential to significantly maintain and improve pedagogical approaches and educational outcomes. The utilization of strategic intervention material has the potential to serve as a diverse learning platform that caters to the educational requirements of the contemporary cohort of young learners in the millennial generation. By doing so, we are not only facilitating their learning process but also engaging their attention.

ACTION PLAN

This research study's outcomes will function as a reference for educators, school officials, and community members who have faced comparable issues and concerns regarding their children's education within the learning environment. In addition, this will function as a mechanism for promoting opportunities and suggested strategies to enhance the language curriculum and implementation of the educational policy of the educational institution, ultimately benefiting the students.

REFERENCE

1. April 13, 2005 DM 117, s. 2005 – Training Workshop On Strategic Interventions For Successful Learning | Department of Education. (2005, April 13). https://www.deped.gov.ph/2005/04/13/april-13-2005-dm-117-s-2005-training-workshop-on-strategic-interventions-for-successful-learning/
2. Awolaju, B. A. (2016). Instructional materials as correlates of students' academic performance in biology in senior secondary schools in Osun State. International Journal of Information and Education Technology, 6(9), 705-708.
3. Dy, L. (2011). http://jhody.hubpages.com/hub/Teachin Physics-Through-Strategic Intervention-

Materials-SIM

4. Ifeoma, M. M. (2013). Use of instructional materials and educational performance of students in integrated science (A case study of Unity Schools in Jalingo, Taraba State, Nigeria). Journal of Research and Method in Education, Vol. 3 Issue 4, pp.07-11.
5. National Privacy Commission. (2022, February 17). Implementing Rules and Regulations of the Data Privacy Act of 2012 – National Privacy Commission. https://privacy.gov.ph/implementing-rules-regulations-data-privacy-act-2012/
6. Noble, H., & Smith, J. (n.d.). Qualitative data analysis: a practical example – ProQuest. https://www.proquest.com/docview/1784000570
7. Press Readeer. (2017, March 24). Strategic Intervention Materials (SIM) For a Change. Sun Star Pampanga.
8. Repe, S. R., & Student, M. S. T. (2021). Phenomenological Inquiry on Science Educators in Administering Self-Directed Learning Modules under New Normal Education.
9. Villareal, the effectiveness of Intervention Materials in Improving Learners' Competence in Grade 7 Students in Biology.