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Utilization of Strategic Intervention Material in Teaching Law of Conservation of Mass to Grade 10 Learners

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ABSTRACT

This study investigated the utilization of a Strategic Intervention Material (SIM) in teaching the Law of Conservation of Mass to Grade 10 learners. It aimed to determine the learners' performance before and after the intervention, examine the difference between their pretest and posttest scores, and describe their experiences in using the material. A mixed-methods approach was employed, combining a one-group pretest-posttest pre-experimental design with qualitative descriptive inquiry. Thirty-three Grade 10 learners participated in the quantitative component, while selected learners participated in interviews. Data were analyzed using the mean, mean percentage score, standard deviation, paired-samples t test, and thematic analysis. Findings showed that the learners performed better after using the SIM. The paired-samples t test revealed a statistically significant difference between their pretest and posttest scores, indicating improvement following the intervention. The qualitative findings generated five themes: content-related difficulties, behavior and attitude, language, learning material, and management of learning. Learners viewed the SIM as simplified, engaging, manageable, and supportive of independent learning. However, some experienced difficulties with chemical symbols, complex equations, English instructions, confidence, and activity pacing. The study concludes that the SIM may serve as an intervention for improving learners' understanding and application of the Law of Conservation of Mass.

Keywords: *chemistry, Grade 10 learners, learning performance, Law of Conservation of Mass, Strategic Intervention Material*

INTRODUCTION

Science is a systematic process of understanding phenomena and applying knowledge to explore the world around us. It is one of the most challenging subjects for secondary high school students due to its complex and abstract concepts. Science comprises a well-organized body of knowledge, governed by established laws that arise from the systematic application of the scientific method to phenomena observed in the natural world.

The primary objective of educators is to facilitate meaningful learning experiences for their students. Achieving this objective involves employing pedagogical approaches that align with the specific context in which the curriculum is being delivered (Okebukola, 2020; Oladejo et al., 2021). However, it's observed that despite students grasping the taught concepts to some extent, they often struggle with retaining this knowledge over time, sometimes due to low retention levels, personal oversight, or difficulty internalizing the material. This challenge extends to the application of learned concepts across different

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subjects, such as Biology, Physics, and Agricultural Science, where students encounter difficulty in connecting the principles learned in chemistry (Adebayo et al., 2022). Hence, effective learning involves not only comprehension but also the ability to retain acquired knowledge, as this retention serves as a foundation for building upon previous learning and advancing to new concepts (Abdulhadi et al., 2022; Dansu, 2017).

One of the least mastered by the learners is the Law of Conservation of Mass as reflected in the mean percentage score in the test item analysis during the school year 2024-2025 and the successive years prior. Moreover, during the second quarter engagement of the Nueva Vizcaya Science Coordinators for the school year 2018-2019, it has been reflected that even some schools find out the same phenomena. It can be true to the fact that learners are confused with the process on how to balance equations since there is no specific and the same way on how to balance different chemical equations. In the previous years, teachers teaching Science subjects experienced the same and common scenario: students forget the concept easily. This could be of the following observed reasons: difficulty in identifying reactants and products, lack of recognition to elements and their symbols, confusion with chemical symbols, lack of accuracy in balancing chemical equation, lack of accuracy in counting the number of atoms involved, they cannot make sense of subscripts in a reaction, and lack of accuracy in balancing chemical equations.

As stated in the DepEd Order No. 39 s. 2012, interventions must be made to address learning gaps. Penaflor (2019) as mentioned by Acera (2022) asserts that teachers should think of some teaching materials that are suited to individual needs. The use of Strategic Intervention Material (SIM) is identified as one of the suggested various intervention forms that can bridge learning gaps. SIM is an activity learning kit that is used as learning material to address low performance of learners based on the least mastered competency. It is composed mainly of Guide Card, Activity Cards, Assessment Card, Enrichment Cards and Reference Card.

As stipulated by Bonitez (2021), the purpose of the SIM is to encourage students' interest, learn Science concepts and skills, and apply learned skills and concepts into real life situations and is believed to be an effective strategy in teaching and for teachers in carrying out objectives on least learned lessons.

Thus, this study investigated the effect of using strategic intervention material (SIM) in the level of mastery of the Grade 10 students in Law of Conservation of Mass. This strategy aimed to address the challenges encountered by both the learners and teachers in Chemistry or in Physical Science.

METHODS

Research Design

The research methods employed in this study encompassed both quantitative and qualitative techniques. The quantitative component was used to determine the learners' mastery levels before and after the utilization of the Strategic Intervention Material and to test whether a significant difference existed between their pretest and posttest scores. The design may be represented as:

$$O_1 – X – O_2$$

where O_1 represents the pretest, X represents the utilization of the Strategic Intervention Material, and O_2 represents the posttest.

The qualitative descriptive component was used to describe the learners' experiences in using the Strategic Intervention Material. Individual interviews were conducted after the intervention, and the learners' responses were analyzed thematically. Because the quantitative component did not include random assignment or a comparison group, its findings were interpreted as evidence of improvement following the intervention and not as definitive proof that the Strategic Intervention Material alone caused the observed change.

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Research Locale

The study was conducted at Carolotan National High School located at Carolotan, Dupax del Sur, Nueva Vizcaya, Region 2, Philippines. The school is categorized as a small school because of the small number of students. Carolotan National High School was chosen as the locale of the study because it provides an appropriate setting for examining the relationship between students' study habits and academic performance. The school environment allows the researchers to gather relevant data from students who are actively engaged in academic activities and classroom learning.

Sampling Technique

The participants of the study consisted of 33 Grade 10 students enrolled at Carolotan National High School during School Year 2025–2026. One section of the Grade 10 level of Carolotan National High School for the school year 2025-2026 was used as respondents of the study. All grade 10 students are identified as the respondents of this research study consisting of 17 males and 16 females.

Purposive sampling is a commonly used approach in qualitative and mixed-method research because it helps researchers to focus on the rich and detailed understanding. Instead of randomly selecting participants intentionally, selecting respondents by this means could help researchers gain deeper understanding and insights to complex issues. In some scenarios, researchers used this method because the respondents are limited therefore making them available as the target respondents on site.

Research Instruments

The instrument used in data gathering was a teacher-made 30-item pretest and posttest. It was designed to measure the level of mastery of the learners in the Law of Conservation of Mass. The test was developed based on a set of Table of Specifications aligned from the content standards and learning competency.

Content Validation

The instrument was validated by subject area experts consisting of master teacher and head teacher. A 4-point Likert-type scale provided by the Schools Division Office of Nueva Vizcaya was used in validating the material, where 4 indicated very highly valid and 1 indicated not valid at all. The instrument attained a validity rating mean of 3.98 which is interpreted as highly valid. This indicates excellent content, appropriateness and relevance.

Reliability Testing

The reliability test was done through administering a pilot test involving 45 Grade 10 students at Dupax del Sur National High School. After analysis using the Cronbach Alpha, the material attained a reliability coefficient of 0.89 which indicates high internal consistency and appropriateness for research purposes.

Data Collection Procedure

Data were gathered during the first term of the School Year 2025–2026 during the scheduled Science 10 periods. Initially, a pretest was administered the day before the start of the lesson to identify baseline conceptual knowledge and skills.

After the pretest, the intervention was utilized. A month after the end of the intervention, the posttest, which is the same as the validated pretest-posttest material, was administered to determine changes in students' conceptual understanding of the concept.

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Treatment of Data

After data collection, the researchers organized, coded, and tabulated the data. The following statistical and qualitative tools were used:

Mean, Mean Percentage Score, and Standard Deviation. These were used to summarize the learners' pretest and posttest performance. The mean determined the average score, the mean percentage score expressed the average score as a percentage of the total number of items, and the standard deviation measured the variability of scores around the mean.

Paired-Samples t Test. This was used to determine whether a significant difference existed between the pretest and posttest scores of the same 33 Grade 10 learners. The test was conducted at the .05 level of significance. The null hypothesis was rejected when the obtained p value was less than .05.

Thematic Analysis. This was used to describe the learners' experiences in using the Strategic Intervention Material. Following Creswell (2007), the researchers used open coding to identify meaningful statements and group similar responses into categories. Axial coding was then used to examine the relationships among the categories and organize them into broader themes. Representative learner responses were used to support the themes

Table 1. *Mastery Level Description Equivalent*

Mean Percent	Descriptive Interpretation
96-100	Mastered
86-95	Closely Approaching to Mastery
66-85	Moving Towards Mastery
35-65	Average Mastery
15-34	Low Mastery
5-14	Very Low Mastery
0-4	No Mastery

RESULTS AND DISCUSSION

Table 2. *Level of Learners' Mastery Before and After the Intervention*

Learning Competency	Pretest SD	Pretest MPS	Descriptive Rating	Posttest SD	Posttest MPS	Descriptive Rating	Mean Percentage-Point Difference
Apply the principles of conservation of mass to chemical reactions (S10MT-IVe-g-23)	3.23	34.14	Low Mastery	1.99	86.77	Closely Approaching Mastery	52.63

As presented in Table 2, the learners obtained a pretest mean percentage score (MPS) of 34.14, with an SD of 3.23, descriptively rated as Low Mastery. After the implementation of the Strategic Intervention Material, the posttest MPS increased to 86.77, with an SD of 1.99, descriptively rated as Closely Approaching Mastery.

The difference between the pretest and posttest mean percentage scores was 52.63 percentage points suggest that the targeted and sequential activities contained in the SIM may have helped address some of the learners' initial learning gaps. The decreased SD from 3.23 to 1.99 further indicates that the learners' posttest scores were less dispersed and that their performance became more consistent following

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the intervention. The increase in the learners' MPS from 34.14 in the pretest to 86.77 in the posttest indicates substantial improvement in their mastery of the competency on applying the Law of Conservation of Mass to chemical reactions. Before the intervention, the learners demonstrated Low Mastery, suggesting that they had trouble understanding and applying the targeted concepts and procedures. After using the SIM, their performance reached the Closely Approaching Mastery level.

The findings show that the learners obtained a higher level of mastery after the intervention. The lower posttest SD also indicates that the posttest scores were less dispersed than the pretest scores.

The finding supports Bonitez (2021), who stated that Strategic Intervention Materials assist learners in understanding and applying scientific concepts and skills. It is also consistent with Peñaflor (2019, as cited in Acera, 2022), who emphasized the importance of providing instructional materials suited to learners' individual needs.

Although the learners demonstrated substantial improvement, their posttest performance was classified as Closely Approaching Mastery rather than full mastery. Additional instruction, practice, reinforcement, and regular progress monitoring may therefore be necessary. Teachers may continue using competency-based intervention materials alongside differentiated instruction and immediate feedback until learners demonstrate full mastery of the competency

Difference Between the Pretest and Posttest Scores

Table 3. *Significant Difference Between the Learners' Pretest and Posttest Mean Scores*

Variable	Mean	SD	t-Value	Critical t-value	p-Value	df	Decision	Interpretation
Pretest	10.24	3.23	24.93	2.04	<.001	32	Reject null Hypothesis	Significant
Posttest	26.03	1.99						

Note. A paired-samples t test was used. Level of significance: α = .05.

Table 3 shows that the learners' mean score increased from 10.24 in the pretest to 26.03 in the posttest, resulting in a mean difference of 15.79 points. The computed t-value of 24.93 was greater than the critical t-value of 2.04 at 32 degrees of freedom. The probability value was less than .001, which was below the .05 level of significance. Therefore, the null hypothesis was rejected. A statistically significant difference existed between the learners' pretest and posttest mean scores.

The statistical result indicates that the observed difference between the pretest and posttest scores was unlikely to have occurred through random sampling variation alone. The posttest scores were obtained following the learners' exposure to the Strategic Intervention Material, providing evidence that the intervention was associated with improved performance in applying the Law of Conservation of Mass.

This result supports Bonitez (2021), who stated that SIMs help learners develop their understanding and application of scientific concepts and skills. The result implies that Science teachers may use SIMs as targeted interventions for competencies in which learners demonstrate low mastery. Materials that contain guided examples, sequenced activities, sufficient practice, immediate feedback, and opportunities for independent application may help learners address specific conceptual and procedural difficulties.

Nevertheless, the result should be interpreted within the limitations of the research design. If the study used a one-group pretest-posttest design without a control or comparison group, the findings establish a significant improvement after the intervention but do not eliminate other possible explanations for the observed increase. Consequently, conclusions regarding effectiveness should be limited to the learners and conditions included in the study.

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Learners' Experiences with the Strategic Intervention Material

Table 4. *Themes and Sub-Themes on Learners' Experiences With the Strategic Intervention Material*

Themes	Sub-Themes
Content-Related Difficulties	Writing chemical equations; balancing complex equations; interpreting chemical symbols; distinguishing coefficients from subscripts; translating written situations into symbolic equations
Behavior and Attitude	Learning independence; confidence in answering; uncertainty; peer help-seeking
Language	Familiarity with the instructional language; comprehension of directions; unfamiliar English vocabulary; peer assistance
Learning Material	Simplified presentation; relatable activity titles; manageable amount of text; learner-friendly language; clear directions; varied activities
Management of Learning	Time allocation; pacing; segmentation of complex tasks; sequencing of activities

As shown in Table 4, five themes emerged from the learners' responses: content-related difficulties, behavior and attitude, language, learning material, and management of learning. These themes describe the learners' experiences while completing the activities in the Strategic Intervention Material.

Content-Related Difficulties

The learners' responses indicate that their difficulties were both conceptual and procedural. Procedural difficulties involved the steps required to balance chemical equations, particularly when the equations contained several substances or large coefficients. Conceptual difficulties involved interpreting element symbols, differentiating coefficients from subscripts, representing compounds, and understanding chemical formulas.

The learners experienced difficulties in writing chemical equations, balancing complex equations, and interpreting chemical symbols. Respondent 29 stated: "Mahirap kapag mahaba na yung equation. Ang daming ibabalance. Lalo kapag malaki na rin yung numbers, coefficient and subscript."

The response indicates that equations became more difficult when they involved several substances and larger coefficients or subscripts. Longer and more complex equations may have increased the cognitive demands of the activity because the learner needed to identify several elements and determine the number of atoms on both sides of the equation. This finding is supported by Hamerska et. al. (2024) revealing that students often confuse subscripts and coefficients in chemical equations, indicating a gap between solving mathematical problems and understanding underlying chemical principles.

The learners also experienced difficulty translating written situations into symbolic chemical equations. Respondent 9 explained: "Sobrang mahirap doon sa last na may kahoy o sa photosynthesis kasi kailangan pang isulat ang chemical equation mula sa paragraph. Kung hindi mo iintindihin ng maayos ang word problem, posibleng mamali ang isusulat ng chemical formula."

The response suggests that the learner had difficulty identifying the reactants and products from the written situation and representing them using appropriate chemical formulas. The activity required the learner to understand the paragraph, construct the chemical equation, and balance it correctly. Furthermore, it highlights the difficulty of the learners in reading worded problems and converting them into chemical equations.

Respondent 25 also stated: "Nakakalito ang symbols kung mag-isa, dalawa o magkakasama. Kailangang tingnan ng maayos at baka pagsamahin ang symbols o kaya ay paghiwalayin sila."

This response reflects confusion in identifying and interpreting chemical symbols when elements appeared individually, in pairs, or as parts of compounds. The finding suggests that some learners'

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difficulties in balancing equations may have originated from gaps in their foundational understanding of element symbols, chemical formulas, coefficients, and subscripts.

Taken together, the responses indicate that the learners experienced both conceptual and procedural difficulties. They struggled not only with the steps involved in balancing equations but also with interpreting chemical symbols, representing compounds, and translating written information into symbolic equations.

Instruction should therefore begin with simple and familiar examples before progressing to longer and more complex equations. Learners may benefit from guided activities involving the identification of elements, differentiation between coefficients and subscripts, counting of atoms, construction of chemical formulas, and translation of worded situations into symbolic equations.

Behavior and Attitude

The learners demonstrated varying levels of confidence and independence while completing the SIM activities. Some learners preferred working independently because they perceived the activities as clear and manageable. Respondent 10 stated: "Gusto kong gawin mag-isa kasi kayang-kaya ko naman. Madali lang kasi naisa-isa ang pagkakagawa."

The response suggests that presenting the activities in smaller and clearly organized steps helped the learner complete the tasks independently. The structure of the SIM may have contributed to the learner's confidence and sense of competence.

In contrast, other learners expressed uncertainty about the accuracy of their answers. Respondent 23 stated:"Hindi kasi ako sigurado sa aking mga sagot kung tama o mali."

Similarly, Respondent 18 explained: "Hindi ako sure sa sagot ko kaya napapatanong ako sa mga classmates ko.Baka kasi mali ang sagot ko."

These responses indicate that some learners needed assistance or confirmation from their classmates. Although peer support helped them continue the activities, their responses also demonstrate that they were not yet fully confident in their understanding and answers.

The contrasting experiences suggest that the learners' confidence and independence were influenced by their understanding of the content and their ability to follow the directions. Learners who understood the procedures were more willing to work independently, while learners who were uncertain tended to seek assistance or validation from their peers. In line with this, Syahrial et. al. (2020) posits that students who have high learning independence will try to complete all the exercises or assignments given by the teacher with their own abilities. However, it was also discussed further that a learner who does not have confidence in the lesson will continue to seek validation from their classmates. This dependence could lead them to cheat on examinations.

This finding is consistent with Saidah (2024), who emphasized the role of academic self-confidence in learners' engagement and participation in academic activities. The responses indicate that the SIM should provide guided examples, immediate corrective feedback, independent practice, and structured peer support. These features may help learners become more confident in answering activities involving chemical equations.

Language

Language influenced the learners' ability to understand the directions and complete the activities. Some learners were able to work independently because they understood the instructions. Respondent 27 stated: "Madali lang naman kahit walang nagtuturo kasi naiintindihan ko. Magbasa lang sa instruction."

The response indicates that clear and understandable directions supported the learner in completing the activities without continuous assistance from the teacher.

However, other learners experienced difficulty because of the English language used in the SIM. Respondent 22 shared: "Mahirap ang English kaya ako nagtatanong lagi sa classmates ko."

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Respondent 30 similarly stated: “Hindi ko maintindihan ang ibang English kaya nahihirapan ako na tapusin.”

These responses indicate that unfamiliar English words and expressions served as barriers to understanding the activities. Instead of focusing immediately on the chemistry concepts, the learners first needed to interpret the language used in the directions. When they could not understand the instructions, they sought help from their classmates or had difficulty completing the activities.

The learners’ responses show that language may either support or hinder independent learning. Familiar and clearly written directions allowed some learners to work independently, while unfamiliar language increased their dependence on classmates or the teacher.

The findings indicate that SIM should use short sentences, familiar vocabulary, clearly defined scientific terms, and step-by-step directions. Contextualized explanations and appropriate Filipino translations of difficult terms may also be included when necessary. These language supports may help learners focus on understanding the chemistry concepts rather than struggling to interpret the instructions.

Learning Material

The learners responded positively to the simplified presentation, relatable activity titles, manageable amount of text, and clear directions in the Strategic Intervention Material. Respondent 20 stated, “May privacy ako kapag may sarili akong material lalo at nakasimplify na. Walang maraming nakalagay na nakakatakot basahin.”

The response suggests that having an individual copy of the SIM gave the learner a sense of comfort and ownership. The simplified presentation and manageable amount of text also made the material appear less intimidating.

Respondent 14 emphasized the engaging nature of the activity titles: “Nag-eenjoy akong sumagot kasi nachachallenge ako sa mga activities na may cute na titles.”

The response indicates that relatable and appealing activity titles increased the learner’s interest and willingness to complete the activities. The titles made the tasks appear approachable while maintaining an appropriate level of challenge.

Respondent 21 also stated: “Madali lang kahit mag-isa ko kasi parang kinakausap ako ng activity material.”

The response suggests that the material used direct, clear, and learner-friendly language. Its conversational presentation gave the learner a sense of guidance even without the teacher’s continuous assistance.

Taken together, the responses indicate that the learners valued a learning material that was simplified, engaging, manageable, and easy to follow. The organization and wording of the SIM influenced how the learners approached and completed the activities.

The learners’ responses primarily provide evidence of the SIM’s perceived acceptability, accessibility, and usefulness. These qualitative responses should not, by themselves, be used to establish the effectiveness of the intervention. Evidence of improvement in performance must be based on the quantitative results reported under Objectives 1 and 2.

The findings suggest that intervention materials should contain simplified explanations, manageable amounts of information, relatable activity titles, clear directions, and activities arranged from simple to complex. These features may reduce feelings of intimidation and encourage learners to participate more actively and independently.

Intervention materials should therefore include simplified explanations, manageable amounts of information, relatable activity titles, clear directions, and activities arranged from simple to complex. Pictures and visual elements should not be included as a confirmed sub-theme unless supported by actual participant responses or other qualitative evidence.

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Management of Learning

Management of learning was reflected in the learners' experience with the pacing, time allocation, and sequencing of the activities. Respondent 7 stated: "Hindi mabilis ang activity. Nakakasunod ako lalo at nahati-hati ang mga gagawin."

The response indicates that the learner was able to follow the activity because the tasks were not rushed and were divided into smaller components. Instead of completing one long and complex task, the learner was guided through a sequence of manageable activities.

The pacing and organization of the SIM may have helped the learner concentrate, process information, and complete the activities without feeling overwhelmed. The response also suggests that dividing complex activities into smaller tasks can make the learning process more manageable.

The finding indicates that instructional materials should provide sufficient completion time and organize complex activities into smaller, clearly sequenced tasks. Teachers should also consider differences in learners' readiness and working pace when implementing the SIM.

However, the management-of-learning theme is supported by only one quotation in the available findings. Therefore, it should be interpreted cautiously as an individual learner's experience and should not be generalized to all participants. Additional responses concerning activity time, pacing, and organization are needed to establish this category as a well-supported major theme.

Integration of Quantitative and Qualitative Findings

Table 5. *Joint Display of Quantitative and Qualitative Findings on Learners' Mastery and Experiences With the Strategic Intervention Material*

Themes	Sub-Themes	Quantitative Findings	Qualitative Findings and Verbatim Responses	Integration of Quantitative and Qualitative Findings
Content-Related Difficulties	Writing chemical equations; balancing complex equations; interpreting chemical symbols; distinguishing coefficients from subscripts; translating written situations into symbolic equations	The learners obtained a pretest MPS of 34.14, with an SD of 3.23, interpreted as Low Mastery. Following the intervention, the posttest MPS increased to 86.77, with an SD of 1.99, interpreted as Closely Approaching Mastery. The results indicate a difference of 52.63 percentage points.	Learners reported difficulties in balancing lengthy and complex equations, interpreting symbols, and distinguishing coefficients from subscripts. Respondent 29 stated, "Mahirap kapag mahaba na yung equation. Ang daming ibabalance. Lalo kapag malaki na rin yung numbers, coefficient and subscript."Respondent 9 explained, "Sobrang mahirap doon sa last na may kahoy kasi kailangan pang isulat ang chemical equation mula sa paragraph." Respondent 25 stated, "Nakakalito ang symbols kung mag-	The qualitative findings provide contextual support for the Low Mastery recorded in the pretest. The substantial increase in posttest MPS indicates improved mastery, but the responses show that difficulties with complex equations and symbolic representations remained. The findings demonstrate partial convergence.

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			isa, dalawa o magkakasama."	
Behavior and Attitude	Learning independence; confidence in answering; uncertainty; peer help-seeking	The increase in MPS from 34.14 to 86.77indicates substantial descriptive improvement. The decrease in SD from 3.23 to 1.99 indicates that the posttest scores were less dispersed.	Respondent 10 stated, "Gusto kong gawin mag-isa kasi kayang-kaya ko naman. Madali lang kasi naisa-isa ang pagkakagawa."Respondent 23 stated, "Hindi kasi ako sigurado sa aking mga sagot kung tama o mali." Respondent 18 similarly explained, "Hindi ako sure sa sagot ko kaya napapatanong ako sa mga classmates ko."	The confidence and independence expressed by some learners are consistent with the higher posttest performance. However, the reported uncertainty and peer help-seeking show that learners experienced the intervention differently. The findings demonstrate complementarity.
Language	Familiarity with the instructional language; comprehension of directions; unfamiliar English vocabulary; peer assistance	The learners' MPS increased by 52.63 percentage points, from 34.14 in the pretest to 86.77 in the posttest.	Respondent 27 stated, "Madali lang naman kahit walang nagtuturo kasi naiintindihan ko. Magbasa lang sa instruction." Respondent 22 shared, "Mahirap ang English kaya ako nagtatanong lagi sa classmates ko."Respondent 30 stated, "Hindi ko maintindihan ang ibang English kaya nahihirapan ako na tapusin."	Understandable directions may have supported independent learning, whereas unfamiliar English vocabulary remained a barrier for some learners. The findings demonstrate partial convergence.
Learning Material	Simplified presentation; relatable activity titles; manageable amount of text; learner-friendly language; clear directions; varied activities	The increase from a pretest MPS of 34.14 to a posttest MPS of 86.77represents a descriptive difference of 52.63 percentage points.	Respondent 20 stated, "May privacy ako kapag may sarili akong material lalo at nakasimplify na. Walang maraming nakalagay na nakakatakot basahin."Respondent 14 explained, "Nag-eenjoy akong sumagot kasi nachachallenge ako sa mga activities na may cute na titles."Respondent 21 added, "Madali lang kahit mag-isa ko kasi	The learners' favorable perceptions of the material are consistent with the improved posttest performance. The simplified presentation, manageable content, engaging activity titles, and clear directions may have supported activity completion. The findings demonstrate convergence. However, the

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			parang kinakausap ako ng activity material."	qualitative findings establish perceived accessibility, acceptability, and usefulness, not effectiveness by themselves
Management of Learning	Time allocation; pacing; segmentation of complex tasks; sequencing of activities	The posttest MPS of 86.77 was higher than the pretest MPS of 34.14, resulting in a difference of 52.63 percentage points.	Respondent 7 stated, "Hindi mabilis ang activity. Nakakasunod ako lalo at nahati-hati ang mga gagawin."	The learner's positive experience with pacing and task sequencing is consistent with the improved posttest performance. However, because the theme is supported by only one quotation, the integration demonstrates limited convergence and should not be generalized to all participants

The joint display demonstrates different relationships between the quantitative and qualitative findings. Partial convergence occurred in the themes of content-related difficulties and language. Complementarity was observed in behavior and attitude, while convergence was evident in the learners' perceptions of the learning material. Limited convergence was observed in management of learning because the theme was supported by only one participant statement.

CONCLUSION

The findings indicate that the Strategic Intervention Material (SIM) enhanced Grade 10 learners' understanding and mastery of the competency in Law of Conservation of Mass, as demonstrated by the significant difference between their pre-intervention and post-intervention mean scores. Learners generally perceived the Strategic Intervention Material in Conservation of Mass as clear, engaging, and manageable, although difficulties concerning chemical symbols, complex equations, English-language instructions, confidence, and activity pacing were reported. These findings confirm the achievement of the study's objectives and establish SIM's value as a supplementary instructional resource for teaching challenging science concepts. Accordingly, science teachers and schools may continue using the validated SIM alongside guided instruction and regular monitoring of learner progress. The material may be further improved by incorporating simplified or bilingual instructions, scaffolded examples, visual supports, immediate feedback, confidence-building activities, and adequate completion time. Future studies should involve larger samples, employ comparison groups, and examine the effects of the SIM on long-term learning retention and other science competencies.

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