INTERNATIONAL JOURNAL OF MULTIDISCIPLINARY: APPLIED BUSINESS AND EDUCATION RESEARCH
2025, Vol. 6, No. 7, 3450 – 3469
http://dx.doi.org/10.11594/ijmaber.06.07.20

Research Article

Improving Science Learning Outcomes Through Stratetic Intervention Materials: A Contextualized Approach for Grade 6 Learners

Aljim B. Lituañas[1]*, Fe M. Dela Cruz[2]

[1]Department of Education, Tud-ol Elementary School, Butuan City, 8600, Philippines
[2]Agusan Colleges Inc., Butuan City, 8600, Philippines

Article history:
Submission 03 June 2025
Revised 31 June 2025
Accepted 23 July 2025

**Corresponding author:*
E-mail:
aljimblituanas@gmail.com

ABSTRACT

A study aimed to develop a Strategic Intervention Material (SIM) in science for Grade 6 learners at Tungao Central Elementary School. Observations showed that many students struggled with core science concepts, specifically differentiating between solutes and solvents, describing suspensions, and understanding mixture separation methods such as decantation and the use of magnets.

Student performance on first-quarter science tests was evaluated, with 91 learners participating. Two experts assessed the SIMs for quality, accuracy, relevance, and contextualization, leading to refinements. The developed SIMs include guide cards, activity cards, assessment cards, enrichment activities, reference cards, and answer keys.

Results highlight the crucial need for context-specific educational interventions to address learning deficits in science. Incorporating contextually relevant materials can significantly enhance teaching effectiveness and student learning outcomes. The contextualized SIMs offer a practical solution for improving student comprehension and performance in challenging scientific concepts, thereby contributing to more effective teaching and learning strategies within the local educational context.

Keywords: *Contextualized SIM, Contextualization, Science*

Background

From the time the Philippine Educational System underwent significant changes brought about by the K-12 Basic Education Curriculum and the challenges that have come along with it. One of these is the Department of Education (DepEd) 2018 National Achievement Test (NAT) result, with the lowest performance of 37.44 percent in the science subject (Arzaga, 2021). Additionally, the Organization for Economic Co-operation and Development's (OECD) Programme for International Student Assessment (PISA) revealed that Filipino learners ranked last out of 79 countries in science (Haw, King & Trinidad, 2021).

How to cite:
Lituañas, A. B. & Dela Cruz, F. M. (2025). Improving Science Learning Outcomes Through Stratetic Intervention Materials: A Contextualized Approach for Grade 6 Learners. *International Journal of Multidisciplinary: Applied Business and Education Research*. *6*(7), 3450 – 3469. doi: 10.11594/ijmaber.06.07.20

But even before the K-12 Basic Education Curriculum reform, elementary learners had been performing poorly in science. Everyone knows that public-school teachers already had several complaints about the shortage of learning materials, particularly textbooks, which is a predicament that still exists. The unavailability of instructional materials, as well as the teachers' lack of knowledge on material development, became prevalent and persisted as lingering problems among educational institutions (Cubillas, 2020).

With the onset of the COVID-19 pandemic, DepEd started to implement modular distance learning to continue the development of the learners at home without attending formal classes in school, which started on October 5, 2020 (DepEd Order No. 30, s. 2020). In the modular distance learning, the teachers prepared learning modules, which were given to the learners for their self-study at home, with the coordination of the parents in facilitating the learning of the children.

Related to this, during the implementation of modular distance learning, the teachers in Tungao Central Elementary School, South Butuan District II, Division of Butuan City, Philippines, received feedback from the parents on their difficulties in facilitating learning with their children. Common complaints were associated with the difficulty on the part of parents in assisting their children. The teachers met the parents twice a week, with the observance of social distancing, to instruct the parents on how to facilitate the learning of their children. The parents identified that poor educational background, busyness at work, non-availability of books or supplemental learning materials, and the lack of internet connection are reasons for their difficulties (Akinrinmade et al., 2021).

Because of these difficulties, DepEd issued the Guidelines on the Progressive Expansion of Face-to-Face Classes (DepEd Order No. 17, s. 2022), in which schools were permitted to conduct limited face-to-face classes upon the approval of the DepEd Regional Office. Under this said DepEd Order, the teaching time for Grade 6 classes was 5 hours. Moreover, DepEd CARAGA Regional Office issued Regional Memorandum No. 300, s. 2022, which included Tungao Central Elementary School in the list of schools to operate the limited face-to-face classes starting on April 18, 2022.

Even with the conduct of limited face-to-face classes, there were still slow learners in the science subjects at Tungao Central Elementary School. If no alternative solutions are pursued, the number of slow learners will stay the same or increase.

Aware of this problem, this study was conceived to develop contextualized intervention materials for the least learned science competencies for Grade 6 pupils of Tungao Central Elementary School.

Methods

This study is pursued to determine the following objectives: (1) identify the least learned competencies of the Grade 6 learners in science for the 1st quarter of school year 2021-2022; (2) design and develop a contextualized Strategic Intervention Material (SIM) for Grade 6 science; (3) evaluate the contextualized SIMs in terms of quality assurance, content, accuracy and recency of information, and contextualization; and (4) enhance the developed contextualized SIMs for Grade 6 science learners based on the evaluators' findings.

Result and Discussion

This part starts with the data on the least competencies of the learners based on the four summative tests for the first quarter of the school year 2021-2022 as the basis for the design of the contextualized strategic learning materials.

Data in Table 1 shows the data on the least competencies of the learners based on the four summative tests for the first quarter of the school year 2021-2022. In summative test I, most learners need help getting the correct answer in item 15, differentiating solutes from solvents. This result means that the learners need more knowledge on identifying solutes and solvents in a solution. The study of Lotivio and Bercasio (2022) entitled "Game-based Learning Using Indigenized Instructional Material in Grade VI Science" showed that learners' lack of background knowledge in science subjects is nationwide in scope. They attributed it to the scarcity of modern and updated science facilities. They emphasized

that out of ten elementary schools in the Philippines, only three have a science laboratory. Additionally, Insorio and Macandog (2022) and Eviota and Boyles (2022) found that the least learned science competencies increased recently, mainly due to the implementation of modular distance learning.

Table 1. The Least Learned Competencies based on the Four Summative Tests of the First Quarter for School Year 2021-2022

Summative Test No.	Freq. of Incorrect Response	%	Item #	Least Learned Competencies
I	50	55	15	Differentiating solutes from solvents
II	48	53	3	Describing the appearance of suspension
III	49	54	15	Separating mixtures through Decantation
IV	53	58	19	Describing how to separate mixtures using a Magnet

In summative test II, most learners needed to get the correct answer in item 3, describing the appearance of a suspension. This result means that the learners need more background on the characteristics of a suspension. The study by Barantes and Tamoria (2021) entitled "LARO (Learners Active Response to Operant) lessons in improving the basic science process skills of elementary pupils" emphasized some factors contributing to pupils' low background in science, such as poor study habits, negative attitudes towards the subject, lack of motivation in learning science, non-engaging teaching strategies, and scarcity of relevant instructional materials.

The study of Cruz and Rivera (2022) titled "Development and Validation of Project-Based Module for Selected Topics in Biology" found that developing intervention materials based on the identified least learned competencies ensures that the learning intervention material will be done for its purpose, thus becoming more efficient, relevant, and valuable. The study of Suarez and Casinillo (2020) titled "Effect of Strategic Intervention Materials (SIMS) on Academic Performance: Evidence from Learners of Science VI" concluded that SIMs introduced into the teaching methods aid in teaching, stimulate the activity of the learners, and thereby increase their level of understanding, leading to their conclusion that SIMs are effective teaching strategies to improve learners' achievement levels on the least mastered topics in science. Furthermore, the study of Verano and Comighud (2020) titled "Level of Science Achievement: Basis for the Production of Strategic Intervention Materials (SIMs)" concluded that developing and utilizing SIMs deepens learners' knowledge and understanding of the least mastered concepts in science.

Another study by Pasion (2019) titled "The Efficacy of Strategic Intervention Materials (SIMs) in Teaching Social Studies among Third-Year High School Learners" found that the use of SIMs upgraded learners' retention of the subject's content and sustained their interest in learning. In addition, the study by Villonez (2018) titled "Use of SIM (Strategic Intervention Material) as Strategy and the Academic Achievement of Grade 7 Learners on Selected Topic in Earth Science" concluded that SIMs help students master the concepts, easily comprehend questions related to the idea, and answer these questions correctly. Furthermore, the study by Gabucan and Sanchez (2021) titled "Strategic Intervention Material (SIM)-based instruction in teaching global warming concepts in 9th Grade Science" found that SIMs help reduce the least learned topics and, at the same time, improve the learners' performance.

Thus, this research crafted a contextualized IM entitled "Revealing Nema," which contains not just science vocabulary but also exercises to enable learners to gain deeper insights into the topic characteristics of a suspension.

In summative test III, most learners (n=91, 54%) did not correctly comprehend decantation (item 15). It means that the learners were not exposed to activities where mixtures undergo separation by the use of a magnet.

In summative test IV, most learners (n=91, 58%) were not able to describe how to separate mixtures using a magnet (item 15). It means that the learners were not exposed to activities where mixtures undergo separation by the use of a magnet.

The study of Romero (2021) entitled "Go and Separate: A Strategic Intervention Material (SIM) in Improving the Academic Performance of Grade 6 Science Pupils" showed that the pupils' difficulty in learning challenging topics such as characteristics of mixtures and magnets stems from pupils' lack of interest towards the science subject, and the discussion of these abstract topics results in a tedious and cognitive burden to the pupils. On the other hand, the study by Sinco (2020) titled "Strategic Intervention Materials: A Tool in Improving Students' Academic Performance" found that using appropriate remediation programs, such as strategic intervention materials in science, positively impacts learners' science scores. Hence, these results motivated the researcher to craft two contextualized SIMs, namely, SIM Module 3, "Make Me Sandless!" containing the concept of decantation, and SIM Module 4, "Stick with You," containing the concept of magnets, suitable for the participant-learners of this present study.

Designing and Developing Contextualized SIM

Module 1 SIM focused on differentiating a solute from a solvent, which involves the following activities.

Guide Card 1 showed the powder juice as a solute plus water as a solvent, producing juice as an example of a solution. Guide Card 2 showed a map that aided the learners in investigating the problem. These guide cards displayed illustrations that helped the learners study and learn the topic.

Activity Card 1, titled "Know Me," had directions to arrange the scrambled words and required the learners to shade the appropriate answer from the given choices for each scrambled word to identify whether it was a s olute or a solvent.

Activity Card 2, titled "Sort Me," had directions to accomplish the solution sort chart by providing appropriate pictures to complete the solution. A separate sheet contained the images to be cut out and pasted into the chart.

Activity Card 3, titled "Guess Me," with the direction of paired objects that students could mix into a solution, required the learners to write a solute or solvent on the provided space to identify the given picture for each number.

An assessment card was included in module 1, with directions to classify the words found on the chalkboard as either a solute or a solvent by writing the answers inside the two labeled glasses. The first glass was the solute, while the other was the solvent.

Enrichment Card 1 required the learners to identify the solution's solvent and solute. Five items require the learners to identify the solute and solvent.

Enrichment Card 2, titled "It is time to answer Sponge Boy's questions," required the learners to experiment with the procedures of preparing the materials: add four teaspoons of coffee powder to the glass of water, use the stirring rod or spoon to stir the mixture, and complete the solution sort chart by drawing the appropriate pictures of a solute.

The reference cards provided links for interactive games that helped the learners learn more about solutes and solvents. It also showed acknowledgment of the references used in developing module 1.

The answer keys were included in Module 1 to guide the learners in correcting their answers. Each page in the answer keys showed an exact picture of each activity in the module with its corresponding answers.

The Design and Development of Module 2 SIM

Module 2 focused on describing the appearance of suspension with guide cards that illustrated the characteristics of suspension. The guide cards illustrated the different activities involving the appearance of suspension that used mixtures, and they also displayed a map that helped the learners investigate the problem.

Activity card 1 involved an activity titled "Search Me," which consisted of a word list hidden in a box so that learners would search for it. Students can find the words in vertical, horizontal, and diagonal formats.

Activity Card 2 involved an activity titled "Sort Me," which involved an activity for learners to complete a suspension sort chart by providing the appropriate pictures. Activity Card 2 contained a separate sheet containing the images that learners can cut out and paste to help answer the suspension sort chart.

Activity Card 3 showed an activity titled "Examine Me." The direction is for learners to describe each suspension mixture by properly labeling its substance composition. Learners also gave at least one sentence describing each given suspension mixture.

The assessment card contained five items that determined the learning outcome of the learners in activities 1 to 3, describing the appearance of suspension. The direction is for learners to choose the letter of the best answer.

Enrichment Card 1 contains activities that enable learners to identify examples of suspension. The direction is for learners to choose the appropriate application of the given suspension by encircling letters among the choices.

Enrichment Card 2 focused on the "It is Time to Answer Nema's Question" activity. The direction is for learners to read questions and explain in at least two sentences. Learners write answers in the space provided for each question.

The reference cards provided links for interactive games that helped the learners learn more about suspension. It also showed acknowledgment of the references used in developing module 2.

The answer keys were reflected in the different activities in describing the appearance of suspension, such as "search me," "sort me," and "examine me." Each page in the answer keys showed an exact picture of each activity in the module with its corresponding answers.

The Design and Development of Module 3 SIM

Module 3 focused on separating mixtures through decantation, which involved the following activities. Guide Card 1 showed activities on how to separate mixtures through decantation by showing an example of a mixture that can be separated through decantation using oil and water. Guide Card 2 continued the activity of separating mixtures through decantation using the map in the investigation, which included three main activities:

Learners identified insoluble substances that can be separated through decantation when mixed with water.

Learners experimented with separating mixtures through decantation. Learners distinguished mixtures that can be separated through decantation.

Activity Card 1 focused on the activity titled "Insoluble Me." The direction requires learners to study a picture of a glass of water. A separate page contained pictures of substances that learners could cut out and could not use.

Activity Card 2 focused on the activity titled "It's Lab Time." The directions required learners to experiment with the activity using the materials: two 500 ml beakers, 35 ml of water, a stirring rod or spoon, two tablespoons of sand, a timer, masking tape, a marker, and a ballpoint pen.

Vocabulary words used in the experiment were given, such as transparent, translucent, and opaque, each with a stated meaning; then, the procedures were stated in steps 1, 2, 3, 4, 5, 6, 7, and 8. There were follow-up questions at every step.

Activity Card 3 focused on the activity titled "Tell Me More." The direction requires learners to fill in the space provided for every mixture. They wrote YES if the mixture can be separated through decantation methods and NO if it cannot. The terms given were vinegar in oil, spaghetti ice cream, oil in water, binignit, gasoline in water, mercury in water, fruit salad, and sand in water.

An assessment card on separating mixtures through decantation involved five-item questions and a multiple-choice assessment test. The directions required the learners to choose the letter of the best answer. They wrote the desired letter on the blank provided before each number.

Enrichment Card 1 directed learners to read the given situation and make at least one sentence explaining their answer. Learners

wrote in the provided space for each question in module 3.

Enrichment Card 2 focused on "It is Time to Answer Genie's Question." The directions required the learners to write a check mark (✔) on the blank provided that showed the correct decantation steps to separate the oil from the sand.

The reference cards provided links for interactive games that helped the learners learn more about separating mixtures through decanting. It also showed acknowledgment of the references used in developing module 3.

The answer keys were included in module 3 to guide the learners in correcting their answers. Each page in the answer keys showed an exact picture of each activity in the module with its corresponding answers.

The Design and Development of Module 4 SIM

The design and development of Module 4 Strategic Intervention Material focused on separating mixtures using a magnet. It contained topics listed in activities 1, 2, and 3. The enrichment card included two activities, followed by references and answer keys.

Guide Card 1 contained a topic on separating mixtures by using magnets. An illustration of a magnet was shown in the picture for learners to identify and describe the nature or characteristics of a magnet.

Guide Card 2 continued the topic of separating mixtures by using magnets. It showed examples of metal objects and non-metal objects. It presented an instance of separating the mixture using a magnet that pulled the iron strips from the yellow dye powder.

Guide Card 3 used a map to investigate the problem with the use of a magnet. It contained tasks on identifying substances that are attracted to magnetic force. Guide Card 3 also included an experiment on separating mixtures through a magnet. It also contained an experiment on distinguishing mixtures that can be separated with a magnet.

Activity Card 1 concerned the activity titled "Connect Me." The direction required learners to select objects that a magnet could attract by drawing a line from the selected pictures to the big picture of the magnet.

Activity Card 2 focused on the "It's Lab Time" activity. The direction required learners to experiment using materials such as one empty 500 ml plastic bottle of water, one teaspoon of sand, a funnel, 1 bar magnet, paper clips, two safety pins, and one pair of carpenter gloves, following the procedures that are stated in steps 1 to 7.

Activity Card 3 is concerned with the activity titled "Come Closer." The direction required learners to choose from the word box the mixtures that a magnet can separate. They wrote the chosen mixtures in the boxes provided and attached them to the magnet's picture.

The assessment card was concerned with the activity to measure the learning outcome of the learners after the different activities were done in separating mixtures by using a magnet. 5 items in a multiple-choice test assessed the learning outcome of learners.

Enrichment Card 1 exposed the learners to activities about separating mixtures using a magnet. The learners were exposed to activities on ferromagnetic metals, paramagnetic metals, and diamagnetic metals. The direction required learners to look for the space provided before the number of each mixture; they drew a U magnet (U) if a magnet could firmly separate it, while they wrote X if the mixture contained paramagnetic or diamagnetic metals.

Enrichment Card 2 focused on the "It is Time to Answer Magneton's Questions" activity.

The reference cards provided links for interactive games that helped the learners learn more about separating mixtures using a magnet. It also showed acknowledgment of the references used in developing module 4.

The answer keys were included in module 4 to guide the learners in correcting their answers. Each page in the answer keys showed an exact picture of each activity in the module with its corresponding answers.

Evaluation on Contextualized SIMs Regarding Quality Assurance, Content, Accuracy and Recency of Information, and Contextualization.

Table 2. The Level of Quality Assurance of the Material for Module 1 (Differentiating Solutes from Solvents)

Indicators	Validators V_1	Validators V_2	Weighted Mean	Verbal Description	Interpretation
Module 1: Differentiating Solutes from Solvents 1. The learner can understand the explanation of differentiating a solute from a solvent.	5	5	5.0	Strongly Agree	Very High Level
2. The learner can follow the procedure stated in the lesson that differentiates a solute from a solvent.	5	5	5.0	Strongly Agree	Very High Level
3. The lesson presented on differentiating a solute from a solvent is clear and straightforward to understand for the learners.	5	5	5.0	Strongly Agree	Very High Level
4. The lesson in differentiating a solute from a solvent has examples that are easy to understand and apply in every learning activity	5	4	4.5	Agree	High Level
5. The problems given to determine or evaluate the learning outcome are based on the topics taken in the learning activity.	5	4	4.5	Agree	High Level
Average Mean			**4.8**	**Strongly Agree**	**Very High Level**

Legend: 1.00-1.50-Strongly Disagree-Very Poor Level; 1.51-2.50-Disagree-Poor Level; 2.51-3.50-Neutral-Moderately Level; 3.51-4.50-Agree-High Level; 4.51-5.00-Strongly Agree-Very High Level

Data in Table 2 shows the validators' evaluation of the quality assurance level for module 1 (Differentiating Solutes from Solvents). Data reveal that indicators 1 to 3 present a weighted mean of 5.0, verbally described as strongly agree, and interpreted as very high quality. The result indicates that the learners can understand the difference between a solute and a solvent. The learners are able to understand these concepts. However, data further reveal that indicators 4 and 5 show a weighted mean of 4.5, verbally described as agree, interpreted as high quality. This means that validators noted that lessons differentiating solute from a solvent have examples not fully exhibited but still understood by the learners, and the learning outcomes of the learners are still met.

Overall, data in Table 1 reveal that the level of quality assurance for module 1 (WM=4.8), described as strongly agree, has a very high level of quality assurance. The results imply that the materials of module 1 are of good quality and relevant to the development of the learners. This finding is supported by the study of Hamora et al. (2022) in Palawan, Philippines, titled "Students' evaluation of faculty-prepared instructional modules: Inferences for instructional materials review and revision," which was participated in by 644 college students and concluded that high-level quality assurance evaluation of teacher IMs is highly related to students' level of satisfaction. Hamora et al. (2022) showed how time allotment during the design and development of IMs and providing sufficient examples in the IMs made them highly acceptable to the learners.

Table 3. The Level of Quality Assurance for Module 2 (Describing the Appearance of Suspension)

Indicators	Validators V_1	Validators V_2	WM	VD	I
Module 2: Describing the Appearance of Suspension 1. The lesson discussed in describing the appearance of suspension has procedures and examples that are simple and easy to understand.	5	4	4.5	A	HL
2. Distance learning and guidance in a lesson enable the learners to describe the appearance of a suspension.	5	5	5.0	SA	VHL
3. The lesson has simple distance learning activities that enable the learners to describe the appearance of the suspension.	5	5	5.0	SA	VHL
4. The direction in describing the appearance of the suspension is clear and easy to understand and to apply by the students.	5	4	4.5	A	HL
5. The direction in describing the appearance of the suspension is clear and easy to understand and to apply by the teacher.	5	4	4.5	A	HL
Average Mean			**4.70**	**SA**	**VHL**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Strongly Disagree(SD)-Very Poor Level (VPL); 1.51-2.50-Disagree(D)-Poor Level(PL); 2.51-3.50-Neutral(N)-Moderate Level(ML); 3.51-4.50-Agree(A)-High Level(HL); 4.51-5.00-Strongly Agree(SA)-Very High Level(VHL)

Data in Table 3 shows the validators' evaluation of the level of quality assurance for module 2 (Describing the Appearance of Suspension). Data reveal that indicators 2 and 3 (WM=5.0), rated as strongly agree, have very high quality. The result means that the respondents affirm that the guides in the SIMs are articulated in simple learning activities that enable the learners to describe the appearance of a suspension based on simple discussion, direction, and description of the suspension. Data in Table 2 further reveal that indicators 1, 4, and 5 (WM=4.50), rated as agree, are interpreted as having high quality, indicating it is easy for students to understand. In summary (WM=4.70), the contents in module 2 (Describing the Appearance of Suspension) are of very high quality in terms of being transparent, simple, and easy for users to understand. This finding is supported by the study of Acedo and Robles (2019), which concluded that IMs that are experts' quality-validated, clearly written, simply formatted, and easy-to-follow and understand procedures are valid, acceptable, and valuable supplementary teaching materials in classroom instruction.

Table 4. The Level of Quality Assurance for Module 3 (Separating Mixtures through Decantation)

Indicators	Validators		WM	VD	I
	V_1	V_2			
Module 3: Separating Mixtures Through Decantation 1. The lesson on separating mixtures through Decantation has a clear direction, enabling the learner to grasp knowledge and direction.	5	4	4.5	A	HL
2. The lesson has examples that enable the learners to separate mixtures through Decantation.	5	5	5.0	SA	VHL
3. The lesson procedure for separating mixtures through Decantation are clear and easy to understand among the learners.	5	5	5.0	SA	VHL
4. The lesson provides learning activities among the learners, which enable them to separate mixtures through Decantation	5	4	4.5	A	HL
5. The problems in evaluating the learning outcome are based on the lesson's content.	5	4	4.5	A	HL
Average Mean			**4.7**	**SA**	**VHL**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Strongly Disagree(SD)-Very Poor Level (VPL); 1.51-2.50-Disagree(D)-Poor Level(PL); 2.51-3.50-Neutral(N)-Moderate Level(ML); 3.51-4.50-Agree(A)-High Level(HL); 4.51-5.00-Strongly Agree(SA)-Very High Level(VHL)

Data in Table 4 shows the validators' evaluation of the level of quality assurance for module 3 (Separating mixtures through decantation). Data reveal that indicators 2 and 3 (WM=5.0), rated as strongly agree and interpreted as a very high level, indicate that the respondents strongly affirm that module 3 (Separating mixtures through Decantation) has a very high quality. Module 3 (Separating mixtures through decantation) has clear and easy-to-understand procedures and examples that facilitated the learners' performance of separating mixtures through decantation. Data further revealed that indicators 1, 4, and 5 (WM=4.5) were described as agree, and interpreted as of a high level. Module 3 (Separating mixtures through decantation) contained easy-to-perform learning activities, and the assessment given to evaluate the learning outcome is based on the lesson's content.

In summary (WM=4.7), the contents in module 3 (Separating mixtures through Decantation) are of very high-quality assurance in terms of being easy to use, and all contents are accurate, facilitating the development of the learners. This finding is supported by the study of Olipas (2022), which concluded that validated IMs are highly suitable and appropriate for enhancing learning experiences.

Table 5. The Level of Quality Assurance for Module 4 (Describing How to Separate Mixtures using Magnet)

Indicators	Validators		WM	VD	I
	V_1	V_2			
Module 4: Describing How to Separate Mixtures using Magnet 1. The module has a straightforward procedure that enables the learner to separate mixtures using a magnet.	5	5	5.0	SA	VHL
2. The lesson has examples that enable the learners to understand and separate mixtures using Magnet.	5	5	5.0	SA	VHL
3. The lesson has clear explanations, enabling the learners to understand how to separate mixtures using Magnet.	5	4	4.5	A	HL
4. The procedure and guide in separating mixtures using Magnet are more accessible for the learners to understand and apply in a learning activity	5	4	4.5	A	HL
5. The questions and problems given to determine or evaluate the learning outcome are based on the content discussed.	5	4	4.5	A	HL
Average Mean			**4.70**	**SA**	**VHL**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Strongly Disagree(SD)-Very Poor Level (VPL); 1.51-2.50-Disagree(D)-Poor Level(PL); 2.51-3.50-Neutral(N)-Moderate Level(ML); 3.51-4.50-Agree(A)-High Level(HL); 4.51-5.00-Strongly Agree(SA)-Very High Level(VHL)

The validators' evaluation of the quality assurance level for module 4 (Describing How to Separate Mixtures using Magnets) is shown in Table 5. Data reveal that indicators 1 and 2 (WM=5.0), rated as strongly agree, are interpreted as of a very high level. This means the respondents strongly affirm that module 4 (Describing How to Separate Mixtures using Magnets) is of very high quality. Module 4 (Describing How to Separate Mixtures Using a Magnet) has a straightforward procedure that enables the learner to separate mixtures using a magnet, and the lesson has examples that will allow the learners to understand and separate mixtures using a magnet. Data further revealed that indicators 3, 4, and 5 (WM=4.5), rated as agree, are interpreted as being of a high level. That is, the lesson has a clear explanation that enables the learners to understand the process of separating mixtures using a magnet, and the procedure and guide for separating mixtures using a magnet are more accessible to the learners.

In summary (WM=4.70), the contents in Module 4 (Describing How to Separate Mixtures using Magnets) have very high-quality assurance. This implies that the topics included were made correctly and accurately. Similarly, the study of Casumpang and Enteria (2019) in the Caraga Region, Philippines, titled "Effectiveness of Developed Comic Strips as Instructional Material in Teaching Specific Science Concepts," validated a teacher-developed IM in terms of content and accuracy and concluded that their developed IM was clear, easy to use, and facilitated learners' accomplishment of required tasks, resulting in higher students' scores. The study by Farin et al. (2022) titled "Academic Performance of Grade V Pupils Using Science Strategic Intervention Material in Zambales, Philippines" found that teachers' validated IMs combat the growing number of least-learned competencies. The study by Confesor and Belmi (2022) titled "Structure, activities, and teacher development in the Philippine science teachers' community of practice" concluded that teachers' ability to impart knowledge depends heavily on their instructional competence.

The data in Table 6 shows the evaluation of the content of the reading material. Data reveal the following overall weighted means and verbal descriptions: module 1 (M1=3.8, VD=VHL, I=VG); module 2 (M2=3.9, VD=VHL, I=VG); module 3 (M3=3.9, VD=VHL, I=VG); and module 4 (M4=4.0, VD=VHL, I=VG). This indicates that the four modules have very high-level content, which is interpreted as suitable for the learner's level of development. This implies that the content of the four modules is of good quality.

Table 6. Level of Skill Fitness of Students in Aero Gymnastics – Agility

Reading Materials Content	M1	VD	I	M2	VD	I	M3	VD	I	M4	VD	I
1. Content is suitable to the reader's level of development.	4	VHL	VG	4	VHL	VG	4	VHL	VG	4	VHL	VG
2.Materials contribute to achieving specific objectives of the subject area and grade/year level for which it is intended.	4	VHL	VG	4	VHL	VG	4	VHL	VG	4	VHL	VG
3.Materials provide for developing higher cognitive skills such as critical thinking, creativity, learning by doing, inquiry, problem-solving, etc.	3.5	HL	G	4	VHL	VG	4	VHL	VG	4	VHL	VG
4.Materials are free of ideological, cultural, religious, racial, and gender biases and prejudices.	4	VHL	VG	4	VHL	VG	4	VHL	VG	4	VHL	VG
5.Materials enhance the development of desirable values and traits.	4	VHL	VG	4	VHL	VG	4	VHL	VG	4	VHL	VG
6.Materials have the potential to arouse the interest of the target reader.	4	VHL	VG	4	VHL	VG	4	VHL	VG	4	VHL	VG
7.Adequate warning/cautionary notes are provided in topics and activities concerning safety and health.	3.5	HL	G	3.5	HL	G	3.5	HL	G	4	VHL	VG
Average Weighted Mean	**3.8**	**VHL**	**VG**	**3.9**	**VHL**	**VG**	**3.9**	**VHL**	**VG**	**4.0**	**VHL**	**VG**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Very Poor Level(VPL)-Very Poor(VP); 1.51-2.50-Poor Level (PL)-Poor(P); 2.51-3.50-High Level(HL)-Good(G); 3.51-4.50-Very High Level(VHL)-Very Good(VG)

In summary, M1 (WM=3.8), M2 (WM=3.9), M3 (WM=3.9), and M4 (WM=4.0) indicate that the contents of the modules are of very good content. This implies that the developed and implemented intervention materials are of very good content that assures learners' usability.

The study of Khodaei et al. (2022) found that the contents of strategic intervention material are instructional activities that would assess and identify learners' learning difficulties and provide ample opportunities to master learning content. Mastering learning content increases learners' intuitive skills and confidence. These findings find support in the study of Zain et al. (2022), who concluded that learning the contents of SIMs results in students' active learning, exploration, critical evaluation, and synthesis of information. The study of Rogayan and Dollete (2019) also concluded that science subject experts must validate science IMs and be more confident using them as supplementary learning materials. IMs must be validated using suitability for learners and adequacy criteria.

Table 7. The Evaluation of the Printing Content of the Contextualized Strategic Intervention Materials

Printing	**Module 1**			**Module 2**			**Module 3**			**Module 4**		
	WM	**VD**	**I**	**WM**	**VD**	**I**	**WM**	**VD**	**I**	**WM**	**VD**	**I**
1. The size of the letters is appropriate for the target reader.	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
2. Spaces between letters and words facilitate reading	3.5	HL	G	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
3. The font is easy to read.	3.5	HL	G	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
4. Printing is of good quality (i.e., without broken letters and with even density, correct alignment, and proper placement).	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
Total Weighted Mean	**3.75**	**VHL**	**VG**	**4.0**	**VHL**	**VG**	**4.0**	**VHL**	**VG**	**4.0**	**VHL**	**VG**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Very Poor Level(VPL)-Very Poor(VP); 1.51-2.50-Poor Level (PL)-Poor(P); 2.51-3.50-High Level(HL)-Good(G); 3.51-4.50-Very High Level(VHL)-Very Good(VG)

The data in Table 7 show the validators' evaluation of content evaluation in terms of printing. The data show that all modules were rated as very high levels for all indicators, with indicators 1 and 4 (WM=4.0) described as very high level, interpreted as very good, indicating that the size of letters appropriate to target readers and sound quality without broken letters, with even density, and with correct alignment. M1 (WM=3.75), described as of very high level, interpreted as very good, indicated very good in spacing between letters and words and font sizes. M2, M3, and M4 all obtained (WM=4.0), described as very high level, interpreted as very good in terms of printing.

In summary, M1 (WM=3.75), M2 (WM=4.0), M3 (WM=4.0), and M4 (WM=4.0), described as of very high level, interpreted as very good, indicated that the four modules were printed at very good quality. A similar study of Yongco and Del Valle (2022) in Laguna, Philippines, titled: "Development and Evaluation of Instructional Module for Special Program in Journalism" for grade 8 students, showed that good printing quality of IMs is a catalyst for those visual learners.

Similarly, the study of Tan (2019) titled: "An evaluation of Department of Education produced Grade 7 biology modules by biology experts and Science teachers" concluded that IMs in Science subjects validated using dimensions of printing content are much more acceptable with Science teachers. Also, the study of Basilio and Sigua (2022) titled: "Development and validation of multimedia-based instructional module in Science 7" concluded that validated IMs using printing content aspects are usable for learners.

Table 8. The Evaluation of Illustration Content of the Contextualized Strategic Intervention Materials

Illustration	Module 1			Module 2			Module 3			Module 4		
	WM	VD	I	WM	VD	I	WM	VD	I	WM	VD	I
1. Simple and easily recognizable.	3.5	HL	G	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
2. Clarity and supplement text.	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
3. Properly labeled or captioned.	3.5	HL	G	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
4. With realistic/appropriate colors.	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
5. Attractive and appealing.	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
6. Culturally Relevant	4.0	VHL	VG	4.0	VHL	VG	3.5	HL	G	4.0	VHL	VG
Total Weighted Mean	**3.8**	**VHL**	**VG**	**4.0**	**VHL**	**VG**	**3.9**	**VHL**	**VG**	**4.0**	**VHL**	**VG**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Very Poor Level(VPL)-Very Poor(VP); 1.51-2.50-Poor Level (PL)-Poor(P); 2.51-3.50-High Level(HL)-Good(G); 3.51-4.50-Very High Level(VHL)-Very Good(VG)

Table 8 shows the evaluation of the contents in terms of illustrations. Data reveal that Module 2 and Module 4 both had a total (WM=4.0), described as very high level, interpreted as very good in terms of clarity. Thus, the illustrations in Module 2 and Module 4 supplemented the text to be understood and interpreted well. Data further reveal that Module 1 total (WM=3.8) and Module 3 total (WM=3.9), both described as very high level, interpreted as very good in terms of clarity, indicate a strong understanding and communication of the topic.

The result of Module 1 for indicators 1 and 3 (WM=3.5), described as high level, interpreted as good, indicating that Modules 1 and 3 are not rated very high level and not very good in terms of using simple and easily recognizable labeling of illustrations. Thus, the contents of Module 1 were improved in terms of simplicity, recognizability, and labeling. The result of Module 3 for indicator 6 (WM=3.5), described as high level, is interpreted as good, indicating that Module 3 is not rated at a very high level and not very good in terms of being culturally relevant illustrations. Hence, the contents of Module 3 were enhanced, specifically improving the aspect on cultural relevance.

Several studies supported the above findings. The study of Tolentino et al. (2020) among

Indigenous People Education (IPEd) schools in Mabalacat City, Pampanga, Philippines, entitled: "Development and Evaluation of Localized Digital Learning Modules for Indigenous Peoples' Health Education in the Philippines" for IPEd students showed that IMs with the properly labeled caption, realistic and appropriate colors, attractive and appealing, and culturally relevant contents facilitate independent learning among students.

The study of Urbano (2019) showed that IMs with realistic and attractive illustrations make learning more meaningful. Finally, the study of Silverio and Catris (2021) titled "Model for contextualization: Bridging gaps in Science education" concluded that contextualized IMs utilizing localized pictures, language, and activities that suit the learners' interests can be easily understood by the learners.

Table 9. The Evaluation of the Design and Layout Content of the Contextualized Strategic Intervention Materials

Design and Layout	Module 1			Module 2			Module 3			Module 4		
	WM	VD	I	WM	VD	I	WM	VD	I	WM	VD	I
1. Attractive and pleasing to look at.	4.0	VHL	VG	3.5	HL	G	4.0	VHL	VG	4.0	VHL	VG
2. Simple (i.e., does not distract the attention of the reader).	3.5	HL	G	3.5	HL	G	4.0	VHL	VG	4.0	VHL	VG
3. Adequate illustration in relation to text.	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	3.5	HL	G
4. Harmonious blending of elements (e.g., illustration and text).	3.5	HL	G	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
Total Weighted Mean	**3.75**	**VHL**	**VG**	**3.75**	**VHL**	**VG**	**4.0**	**VHL**	**VG**	**3.88**	**VHL**	**VG**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Very Poor Level(VPL)-Very Poor(VP); 1.51-2.50-Poor Level (PL)-Poor(P); 2.51-3.50-High Level(HL)-Good(G); 3.51-4.50-Very High Level(VHL)-Very Good(VG)

Table 9 shows the evaluation of the design and layout. Data reveal that Module 3 on indicators 1 to 4 (WM=4.0), described as very high level, interpreted as very good, indicated that Module 3 had a very good design and layout. The design and layout of Module 3 were attractive and pleasing, simple, and did not distract the reader's attention. There was an adequate illustration of the text and a harmonious blending of the elements.

Module 1 on indicators 2 and 4 (WM=3.5), described as high level, interpreted as good, indicating that Module 2 is not rated very high level and not very good in terms of a simple and harmonious blend of illustrations used in the design and lay-out. Hence, the design and layout for Module 1 were improved to meet a simple and harmonious blending of elements. Module 2 on indicators 1 and 2 (WM=3.5), described as high level, interpreted as good, indicating that Module 2 is not rated very high level and not very good in terms of the attractiveness and simplicity of the design and lay-out. Thus, the design and layout for Module 2 were improved to be attractive, pleasing, and simple. Module 4 on indicator 3 (WM=3.5), described as high level, interpreted as good in terms of adequate illustration in relation to text. Consequently, the design and layout for Module 4 were improved to meet adequate illustration in relation to the text.

In summary, the findings on M1 (WM=3.75), M2 (WM=3.75), M3 (WM=4.0), and M4 (WM=3.88) imply that all four modules were very high level in design and layout. A similar study of Garcia (2020) at the University of Northern Philippines, Vigan City, entitled: "Development and Validation of a Worktext in Electromagnetism" for use by grade 12 students showed that the design and layout of IMs would be appropriate and facilitate the reading of learners. The study of Aranda et al. (2019) titled: "Integrating Strategic Intervention Materials (SIM) in Science to Low Achieving Learners" found that strategic intervention materials appeal to the learners. An appealing strategic intervention material helps learners increase interest in Science subjects. On the other hand, the study of Payot and Deloy (2022) titled: "Exploring the Issues and Challenges on the Implementation of Science Strategic Intervention Material (SIM): A Qualitative Inquiry" found that developing strategic intervention

materials entails using creativity and resourcefulness to facilitate collaboration among learners.

The study of Luzano (2020) titled: "Development and Validation of Strategic Intervention Materials (SIMs) of the Selected Topics in Trigonometry of Precalculus Discipline in Senior High School" found that validated strategic intervention material is suitable for the developmental level of learners. Finally, the study of Torrefranca (2017) titled: "Development and validation of instructional modules on rational expressions and variations" found that validating teaching materials through format, language, illustration, and content is based on learners' developmental level.

Table 10. The Evaluation of the Paper and Binding Content of the Contextualized Strategic Intervention Materials

Paper and Binding	Module 1			Module 2			Module 3			Module 4		
	WM	VD	I	WM	VD	I	WM	VD	I	WM	VD	I
1. The paper used contributes to easy reading.	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
2. Durable binding withstands frequent use.	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
Total Weighted Mean	**4.0**	**VHL**	**VG**	**4.0**	**VHL**	**VG**	**4.0**	**VHL**	**VG**	**4.0**	**VHL**	**VG**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Very Poor Level(VPL)-Very Poor(VP); 1.51-2.50-Poor Level (PL)-Poor(P); 2.51-3.50-High Level(HL)-Good(G); 3.51-4.50-Very High Level(VHL)-Very Good(VG)

Table 10 shows the evaluation on paper and binding. All four modules in indicators 1 and 2 (WM=4.0) were described as very high level and interpreted as very good. This indicates that the paper and bindings of all four modules very good in terms of their usefulness for easy reading and durable potential in withstanding frequent use. The study of Dizon and Villanueva (2022) showed that good paper quality helps learners read easily, while binding quality helps the IMs last longer.

Table 11 shows the evaluation of the size and weight of resources. All four modules (WM=4.0), described as very high level, interpreted as very good for indicators 1 and 2 in terms of easy to handle and relative lightness of the size and weight of the Resource Content of the Contextualized Strategic Intervention Materials of all four modules. This indicates that the size and weight of all modules are very good. Thus, the four modules are very acceptable in terms of being easy to handle and are relatively light.

Results in Table 11 imply that the size and weight of the intervention materials are made with accuracy and relevance for the development of the learners. A similar study of Madrazo and Dio (2020) in the Bicol Region, Philippines, entitled: "Contextualized Learning Modules in Bridging Students' Learning Gaps in Calculus with Analytic Geometry through Independent Learning" for BSEd Mathematics students showed that the size and weight of IMs contribute to good visual representation and easy grasp and understanding of topics.

Table 11. The Evaluation of the Size and Weight of Resource Content of the Contextualized Strategic Intervention Materials

Size and Weight of Resource	Module 1			Module 2			Module 3			Module 4		
	WM	VD	I	WM	VD	I	WM	VD	I	WM	VD	I
1. Easy to Handle	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
2. Relatively light	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG	4.0	VHL	VG
Total Weighted Mean	**4.0**	**VHL**	**VG**	**4.0**	**VHL**	**VG**	**4.0**	**VHL**	**VG**	**4.0**	**VHL**	**VG**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Very Poor Level(VPL)-Very Poor(VP); 1.51-2.50-Poor Level (PL)-Poor(P); 2.51-3.50-High Level(HL)-Good(G); 3.51-4.50-Very High Level(VHL)-Very Good(VG)

Table 12. The Evaluation of the Accuracy and Recency of Information

Accuracy and Recency of Information	Module 1			Module 2			Module 3			Module 4		
	WM	VD	I	WM	VD	I	WM	VD	I	WM	VD	I
1. Conceptual Errors	4	VHL	VG	3.5	HL	G	4	VHL	VG	4	VHL	VG
2. Factual Errors	4	VS	VG	4	VHL	VG	4	VHL	VG	4	VHL	VG
3. Grammatical Errors	3	HL	G	3	HL	G	3.5	HL	G	3	HL	G
4. Computational Errors	4	VHL	VG	4	VHL	VG	4	VHL	VG	4	VHL	VG
5. Obsolete Information	4	VHL	VG	4	VHL	VG	4	VHL	VG	4	VHL	VG
6. Typographical and other minor errors (e.g., inappropriate or unclear illustrations, missing labels, wrong captions, etc.)	3.5	VHL	VG	3.5	HL	G	3.5	HL	G	3.5	HL	G
Total Weighted Mean	**3.75**	VHL	**VG**	**3.67**	VHL	**VG**	**3.83**	VHL	**VG**	**3.75**	VHL	**VG**

Legend: Weighted Mean(WM); Verbal Description(VD); Interpretation (I); 1.00-1.50-Very Poor Level(VPL)-Very Poor(VP); 1.51-2.50-Poor Level (PL)-Poor(P); 2.51-3.50-High Level(HL)-Good(G); 3.51-4.50-Very High Level(VHL)-Very Good(VG)

The data on the evaluation of the developed intervention materials using the quality review tool in terms of accuracy and recency of information is shown in Table 12. The data reveal that M1 (WM=3.75), M2 (WM=3.67), M3 (WM=3.83), and M4 (WM=3.75), all described as very high level, interpreted as very good, indicating that all four modules were very good in accuracy, with only minor errors present. The four modules were developed with a high level of accuracy and recency of information regarding conceptual, factual, grammatical, obsolete, typographical, and other minor errors.

Thus, the use of the modules assures the learners' development. A similar study of Padua and Cascolan (2020) showed that IMs without errors and upgrades are easily understandable and enjoyable for learners. Flores et al. (2019) concluded that accuracy helps learners build learning fluency. At the same time, the study of Susantini et al. (2021) concluded that the recency of information in IMs assists learners' metacognitive learning and self-regulation. Finally, the study of Nurjanah et al. (2021) concluded that recent and updated information helps the teacher track student learning progress.

Table 13. The Evaluation on the Contextualization of the SIMs

Contextualization	M 1	VD	I	M 2	VD	I	M3	VD	I	M4	VD	I
1. The materials consider the learners' context so that they help them have more meaningful learning.	4	VHL	HC	4	VHL	HC	3.5	VHL	HC	3.5	VHL	HC
2. The materials contain examples that are based on the lived experiences of the learners.	4	VHL	HC	4	VHL	HC	3.5	VHL	HC	4	VHL	HC
3. The materials help the learners have new experiences and develop them into independent learners.	4	VHL	HC	4	VHL	HC	4	VHL	HC	4	VHL	HC
4. The materials help the learners learn effectively and find the topics easy to understand.	4	VHL	HC	4	VHL	HC	4	VHL	HC	4	VHL	HC
5. The materials help the learners become more interested in learning Science.	4	VHL	HC	4	VHL	HC	4	VHL	HC	4	VHL	HC
6. The materials help the learners enjoy and feel comfortable in learning Science.	4	VHL	HC	4	VHL	HC	4	VHL	HC	4	VHL	HC
Total Weighted Mean	**4**	**VHL**	**HC**	**4**	**VHL**	**HC**	**3.83**	**VHL**	**HC**	**3.92**	**VHL**	**HC**

Legend: M-Mean; VD-Verbal Description; I-Interpretation; 1.00-1.50-Very Poor Level(VPL)-Not contextualized at all (NC); 1.51-2.50-Poor Level(PL)-Poorly contextualized(PC); 2.51-3.50-High Level(HL)-Somewhat contextualized (SC); 3.51-4.50-Very High Level(VHL)-Highly contextualized (HC)

The data on the evaluation of the developed intervention materials using the quality review tool in terms of contextualization are shown in Table 14. The data reveal that M1 (WM=4.0),

M2 (WM=4.0), M3 (WM=3.83), and M4 (WM=3.92), all described as very high level and interpreted as highly contextualized. It indicates that the four modules are highly contextualized regarding learners' context, lived and new experiences, learning, interest, enjoyment, and comfort in Science subjects. The four modules as intervention materials are of good quality, assuring applicability to the learners. A similar study of Abad (2020) for multi-grade Indigenous students concluded that contextualized IMs directly address students' needs and learning styles. The study of Abuda (2019) concluded that contextualized learning ideas attract learners' attention as they can relate to them. At the same time, the study of Plueddemann (2018) found that contextualizing IMs touched the dominant cultural character of learners.

The study of Cubillas (2020) titled: "Development and Validation of Strategic Intervention Materials (SIMs)" found that teachers' ingenuity in devising and providing the necessary, attractive, exciting, and contextualized materials will be appropriate for pupils for use in classes. The use of sufficient, strategically designed, and contextualized instructional materials suited for the type of learners is greatly encouraged. The study of Asrizal (2018) titled: "Development of Integrated Science Teaching Material of our Digestive System Health by Integrating Scientific Literacy for Grade VIII Students" found that using contextualized SIMs in Science lessons increased scores of low performers. Likewise, the study of Kanika et al. (2021) titled: "VISTA: A teaching aid to enhance contextual teaching" concluded that contextualized instructional materials in teaching play an integral role in the teaching-learning process.

The study of Adonis (2020) titled: "Contextualized Strategic Intervention Materials in Grade 9 Mathematics" concluded that contextualized strategic intervention materials allow learners to make meaningful connections between what they have learned inside and outside the four corners of the classroom, empowering the new generations by applying cultural connections.

The Enhancement of the Contextualized SIMs based on the Findings of the Evaluators

Based on the evaluators' findings, some enhancements were undertaken to improve the developed SIMs. Some illustrations in modules 2 and 3 are enhanced to address the lowest illustration evaluation rating. The design and layout of module 4 were revised based on having been the lowest rated in terms of design and layout.

The paper and binding concern about module 1 was addressed by showing that the paper was of good quality. Regarding size and weight, module 4 got the lowest rating and thus was modified accordingly to have the same size and weight as the other three modules.

Modules 1,2,3, and 4 met a very good level of quality assurance. The enhancement of the contextualized SIMs looked into the least evaluated reading material content and printing content. The four modules were developed with high contextualization regarding learners' context, lived and new experiences, learning, interest, enjoyment, and comfort in Science subjects. However, with the lowest-rated module 2 in terms of contextualization, the pictures were modified with more locally available suspension mixtures.

Conclusion

This study concludes that the developed Strategic Intervention Materials (SIMs) effectively address identified learning gaps by targeting students' least learned competencies. The meticulous design and development process involved creating comprehensive guide, activity, assessment, enrichment, and reference cards for each of the four modules. Crucially, these modules were contextualized to align with the specific needs of remedial instruction, ensuring their relevance and applicability. Therefore, the developed SIMs are poised to enhance the learners' proficiency in the identified areas of weakness.

Acknowledgement

With my sincere desire and effort to gain valuable experience and knowledge of this subject, I embarked on this study, which I heartily dedicate to my beloved learners. Thank you very much for the inspiration. And most of all,

to the Almighty God, for giving me courage, strength, and wisdom to pursue my studies in spite of the difficulties and challenges met in my daily life.

References

Abad, D. J. V. (2020). Designing a contextualized and culture-based reading material for indigenous learners. PalArch's Journal of Archaeology of Egypt/Egyptology, 17(1), 153-163.

Abuda, B. F., Oraller-Balazo, G. F., Orque, J. C., Cabili, M. C. D., & Maestre, M. F. A. M. (2019). Struggling learners' mathematics achievement level using quick response embedded strategic intervention material. Abuda, BF, Balazo, GF, Orque, J., Cabili, MC, & Maestre, MFA (2019). Struggling Learners' Mathematics Achievement Level using Quick Response Embedded Strategic Intervention Material. International Journal in Information Technology in Governance, Education and Business, 1(1), 39-45.

Acedo, E., & Robles, A. C. M. O. (2019). Development and validation of educational video tutorials for 21st century secondary learners. Asian Journal of Multidisciplinary Studies, 2(2), 42-49.

Acosta, L.C. (2020). Development and assessment of self-paced module for Grade 7 Science cum worksheets. International Journal of Scientific and Research Publications (IJSRP), 10(7), 8-23. https://doi.org/10.29322/IJSRP.10.07.2020.p10303

Adonis, A. (2020). Contextualized Strategic Intervention Materials in Grade 9 Mathematics. PEOPLE: International Journal of Social Sciences, 5(3), 850-868. https://doi.org/10.20319/pijss.2020.53.850868

Ahmad, A. S., & Garba, S. (2021). Instructional Resources in Teaching Basic Science Subjects in Secondary Schools. Kaduna journal of educational studies, 1(20), 83-93.

Alalwneh, K. M. N., & Alomari, I. M. F. (2018). The Impact of Personalized System of Instruction (PSI) on the Achievement of the Students in Vocational Courses. International Journal of Education and Research, 6(8), 81-92.

Alboruto, V.M. (2017). Beating the numbers through strategic intervention materials (SIMs): Innovative Science teaching for large classes. AIP Conference Proceedings, 1848, 060014. https://doi.org/10.1063/1.4983982

Almerino Jr, P. M., Ocampo, L. A., Abellana, D. P. M., Almerino, J. G. F., Mamites, I. O., Pinili, L. C., ... & Peteros, E. D. (2020). Evaluating the Academic Performance of K-12 Students in the Philippines: A Standardized Evaluation Approach. Education Research International, 2020(1), 8877712.

Aranda, Y.A., Diaz, R.A., Sombilon, M., & Gicana, F.A. (2019). Integrating Strategic Intervention Materials (SIM) in Science to low achieving learners. Journal of Science Teachers and Educators, 2(1).

Asrizal, A. (2018). Development of Integrated Science Teaching Material of our Digestive System Health by Integrating Scientific Literacy For Grade VIII Students.

Barantes, A. K. A., & Tamoria, J. R. (2021). LARO (Learners Active Response to Operant) lessons in improving the basic Science process skills of elementary pupils. JPBI (Jurnal Pendidikan Biologi Indonesia), 7(1), 11-24.

Basilio, C. R., & Sigua, E. M. S. (2022). Development and validation of multimedia-based instructional module in Science 7. International Research Journal of Science, Technology, Education, & Management (IRJSTEM), 2(1).

Bernard, R. M., Borokhovski, E., Schmid, R. F., Waddington, D. I., & Pickup, D. I. (2019). Twenty-first century adaptive teaching and individualized learning operationalized as specific blends of student-centered instructional events: A systematic review and meta-analysis. Campbell Systematic Reviews, 15(1-2).

Betlej, A. (2022). Designing robots for elderly from the perspective of potential end-users: A sociological approach. International Journal of Environmental Research and Public Health, 19(6), 3630.

Bonitez, A.G. (2021). Effectiveness of Science Strategic Intervention Material in Elevating the Performance Level of Grade Seven Learners. International Journal of Advanced Research in Education and Society, 3(2), 18-31.

Busch, L., Bernicky, G., Saini, V., Munno, R., & Lennox, D. (2021). A personalized system of instruction for training front-line staff: A quality improvement project. Journal on Developmental Disabilities, 26(1), 1-16.

Casumpang, P. F. H., & Enteria, O. C. (2019). Effectiveness of developed comic strips as instructional material in teaching specific Science concepts. International Journal for Innovation Education and Research, 7(10), 876-882.

Cogliano, M., Bernacki, M. L.,Hilpert, J. C., & Strong, C. L. (2022). A self-regulated learning analytics prediction-and-intervention design: Detecting and supporting struggling biology students. Journal of Educational Psychology.

Confesor, R. F., & Belmi, R. M. (2022). Structure, activities and teacher development in the Philippine Science teachers' community of practice. International Journal of Learning, Teaching and Educational Research, 21(6), 71-89.

Connaway, L.S., & Radford, M.L. (2017). Research methods in library and information Science. California: Libraries Unlimited.

Covarrubias, R., Newton, X., & Glass, T. S. (2022). "You Can Be Creative Once You Are Tenured": Counterstories of Academic Writing From Mid-Career Women Faculty of Color. Multicultural Perspectives, 24(3), 120-128.

Cruz, L. I. C., & Rivera, K. C. (2022). Development And Validation Of Project-Based Module For Selected Topics In Biology. International Journal of Educational Research and Social Sciences (IJERSC), 3(3), 1124-1137.

Cubillas, T. (2020). Development and validation of Strategic Intervention Materials (SIMs). https://doi.org/10.13140/RG.2.2.10710.47682

Dapitan, D.A., & Caballes, D.G. (2019). Exploratory Effects of Strategic Intervention Materials in General Biology 2. Biometrics and Bioinformatics, 11(3), 37-41.

De Jesus, R.G. (2019). Improving the Least Mastered Competencies in Science 9 Using "Pump It Up!": Electronic Strategic Intervention Material. Presented at the DLSU Research Congress 2019.

Del Mundo, D. C., & Caballes, D. G. (2022). Measuring cognitive load level in a multimedia l earning environment towards the development of I-SIM. Sapienza: International Journal of Interdisciplinary Studies, 3(1), 268-283.

DepEd Memorandum No. 117, series of 2005.

DepEd Memo No. 225, series of 2009.

Dini, J. P. A. U. (2022). An application of multimodal text-based literacy Activities in enhancing early children's literacy. Jurnal Obsesi: Jurnal Pendidikan Anak Usia Dini, 6(5), 5127-5134.

Dio, R. V. (2022). Utilization of Digital Module for Asynchronous Online Independent Learning in Advanced Mathematics Education.

Dizon, K. M., & Villanueva, J. (2022). Development and Validation of a Basic Sentence Structure Worktext. American Journal of Education and Technology, 1(1), 26-36.

Dumigsi, P. M., & Cabrella, B. J. B. (2019). Effectiveness of strategic intervention material in Mathematics as remediation for grade 9 students in solving problems involving quadratic functions. Asian Journal of Education and Social Studies, 5(1), 1-10. https://doi.org/10.9734/ajess/2019/v5i130137

ECLAC-UNESCO. (2020). COVID-19 report: Education in the time of COVID-19. https://repositorio.cepal.org/bitstream/handle/11362/45905/1/S2000509_en.pdf

Eviota, M. P., & Boyles, L. Z. (2022). Least learned competencies in grade 9 biology: Basis for development of Strategic Intervention Material (SIM). Asian Journal of Research in Education and Social Sciences, 4(1), 53-70.

Farin, E. N., Gabriel, E. R., & Villar, A. S. (2022). Academic Performance of Grade V Pupils

Using Science Strategic Intervention Material in Zambales, Philippines. Asian Journal of Education and Social Studies, 27-35.

Fernandez, M. E., Ten Hoor, G. A., Van Lieshout, S., Rodriguez, S. A., Beidas, R. S., Parcel, G., ... & Kok, G. (2019). Implementation mapping: using intervention mapping to develop implementation strategies. Frontiers in public health, 7, 158.

Flores, M. M., Kaffar, B. J., & Hinton, V. (2019). A comparison of the effectiveness of using CRA-SIM vs. direct instruction to teach multiplication with regrouping. IJRLD-International Journal for Research in Learning Disabilities, 4(1), 27-40.

Gabucan, J.R., & Sanchez, J.M.P. (2021). Strategic Intervention Material (SIM)-based instruction in teaching global warming concepts in 9th Grade Science. Formatif: JurnalIlmiah Pendidikan MIPA, 11(1).

Gaheen, M. M., ElEraky, R. M., & Ewees, A. A. (2021). Automated students arabic essay scoring using trained neural network by e-jaya optimization to support personalized system of instruction. Education and Information Technologies, 26, 1165-1181.

Garcia, G. A. (2020). Development and Validation of a Worktext in Electromagnetism. Liceo Journal of Higher Education Research, 16(1).

Geesa, R. L., Robbins, K., & Shively, K. (2022). The collaborative model for teaching o-SEL: Preparing educators to design online environments for social-emotional learning. Journal of Online Learning Research, 8(1), 67-100.

Güneş, B., & Mirzeoğlu, A. D. (2022). Application of volleyball teaching through distance education utilizing a personalized system of instruction. Strategies, 35(4), 23-31.

Hamora, L., Rabaya, M., Pentang, J., Pizaña, A., & Gamozo, M. J. (2022). Students' evaluation of faculty-prepared instructional modules: Inferences for instructional materials review and revision. Journal of Education, Management and Development Studies, 2(2), 20-29.

Han, X., & Huwan, T. (2022). The Modular Design of an English Pronunciation Level Evaluation System Based on Machine Learning. Security and Communication Networks, 2022.

Insorio, A. O., & Macandog, D. M. (2022). Video lessons via YouTube channel as mathematics interventions in modular distance learning. Contemporary Mathematics and Science Education, 3(1), ep22001.

Kanika, K., Chakraverty, S., Chakraborty, P., Madan, M., Gupta, G., & Aggarwal, A. (2021). VISTA: A teaching aid to enhance contextual teaching. Computer Applications in Engineering Education, 29(6), 1526-1541.

Khodaei, S., Hasanvand, S., Gholami, M., Mokhayeri, Y., & Amini, M. (2022). The effect of the online flipped classroom on self-directed learning readiness and metacognitive awareness in nursing students during the COVID-19 pandemic. BMC nursing, 21(1), 22.

Kurt, S. (2018). Educational technology: Definitions of the ADDIE model. International Society for Educational Technology. https://educationaltechnology.net/definitions-addie-model.

Lazo, D. D., & De Guzman, M. F. D. (2021). Strategic intervention material: A Learning approach in teaching economics during the distance education. International Journal of Computer Engineering in Research Trends, 8(5), 76-84.

Liu, A., Zhao, C., Yu, Z., Wan, J., Su, A., Liu, X., & Zhang, D. (2022). Contrastive context-aware learning for 3d high-fidelity mask face presentation attack detection. IEEE Transactions on Information Forensics and Security, 17, 2497-2507.

Lotivio, W. S., & Bercasio, R. R. O. (2022). Game-based Learning Using Indigenized Instructional Material in Grade VI Science.

Luzano, J. F. (2020). Development and balidation of Strategic Intervention Materials (SIMs) of the selected topics in trigonometry of precalculus discipline in Senior High School. Journal of Mathematics and Statistics Studies, 1(2), 26-37.

Madrazo, A. L., & Dio, R. V. (2020). Contextualized Learning Modules in Bridging Students' Learning Gaps in Calculus with Analytic Geometry through Independent

Learning. Journal on Mathematics Education, 11(3), 457-476.

Maribbay, J. (2022). Project SOLE: Sharpening Of the least mastered skills in Learning English through SIM-Based learning activities. International Journal of Arts, Sciences and Education, 3(1), 26-33.

McLeod, S. (2019). Constructivism as a theory for teaching and learning. SimplyPsychology. https://www.simplypsychology.org/constructivism.html

McLeod, S. (2022). Vygotsky's sociocultural theory of cognitive development. SimplyPsychology. https://www.simplypsychology.org/vygotsky.html

Namestovski, Ž., & Kovari, A. (2022). Framework f or Preparation of Engaging Online Educational Materials — A Cognitive Approach. Applied Sciences, 12(3), 1745.

Nurjanah, R. L., Mujiyanto, J., Pratama, H., & Bharati, D. A. L. (2021). Why is Self-Regulated Learning Strategy Important for Literal Reading? The importance of SRL for Literal Reading. In International Conference on Science, Education, and Technology (Vol. 7, pp. 479-483).

Olipas, C. N. P. (2022). Students' Evaluation of the Instructional Learning Modules for Application Development and Emerging Technologies Course. Online Submission, 4, 1074-1089.

Padua, S. S., & Cascolan, H. M. S. (2020). Development and Validation of a Multimedia Based-Module in Science for TVL Track. ASEAN Journal of Basic and Higher Education, 1.

Pasion, R. (2019). The efficacy of Strategic Intervention Materials (SIMs) in teaching social studies among third year high school learners. SMCC Higher Education Research Journal, 6, 175-187. https://doi.org/10.18868/sherj6j.06.010119.11

Payot, C. A., & Deloy, E. D. A. (2022). Exploring the Issues and Challenges on the Implementation of Science Strategic Intervention Material (SIM): A Qualitative Inquiry. Exploring the Issues and Challenges on the Implementation of Science Strategic Intervention Material (SIM): A Qualitative Inquiry, 110(1), 22-22.

Plueddemann, J. E. (2018). Teaching across cultures: Contextualizing education for global mission. InterVarsity Press.

Raković, M., Bernacki, M. L., Greene, J. A., Plumley, R. D., Hogan, K. A., Gates, K. M., & Panter, A. T. (2022). Examining the critical role of evaluation and adaptation in self-regulated learning. Contemporary Educational Psychology, 68, 102027.

Rogayan Jr, D. V., & Dollete, L. F. (2019). Development and Validation of Physical Science Workbook for Senior High School. Science Education International, 30(4), 284-290.

Romero, J. P. (2021). Go and separate: a strategic intervention material (SIM) in improving the academic performance of grade 6 Science pupils. Sapienza: International Journal of Interdisciplinary Studies, 2(4), 91-100.

Samosa, R.C. (2021). COSIM (COMICS CUM SIM): An Innovative Material in Teaching Biology. European Journal of Research Development and Sustainability, 2(4).

Satinem, S., Juwati, J., & Noermanzah, N. (2020). Developing Teaching Material of Poetry Appreciation Based on Students'competency Analysis. English Review: Journal of English Education, 8(2), 237-246.

Schleicher, A. (2018). PISA 2018: Insights and interpretations. Organisation for Economic Co-operation and Development. https://www.oecd.org/pisa/PISA%202018%20Insights%20and%20Interpretations%20FINAL%20PDF.pdf

Silverio, A. D. P., & Catris, L. V. (2021). Model for contextualization: Bridging gaps in Science education.

Sinco, M. G. M. (2018). Strategic intervention materials: A tool in improving students' academic performance (Doctoral dissertation, Foundation University).

Suarez, M., & Casinillo, L. (2020). Effect of Strategic Intervention Materials (SIMS) on academic performance: evidence from learners of Science VI. Review of Socio-Economic Research and Development Studies, 4 (1), 20-32. https://reserds.vsu.edu.ph/wp-content/uploads/2022/01/Vol-4-Paper-2-2020-pp.-20-32-Suarez-Casinillo.pdf

Susantini, E., Puspitawati, R. P., & Suaidah, H. L. (2021). E-book of metacognitive learning strategies: design and implementation to activate student's self-regulation. Research and Practice in Technology Enhanced Learning, 16(1), 13.

Tan, M. L. G. (2019). An evaluation of department of education produced grade 7 biology modules by biology experts and Science teachers. International Journal of Innovation in Science and Mathematics Education, 27(5).

Tolentino, J. C. G., Miranda, J. P. P., Maniago, V. G. M., & Sibug, V. B. (2020). Development and evaluation of localized digital learning modules for indigenous peoples' health education in the Philippines. Universal Journal of Educational Research, 8(12), 6853-6862.

Torrefranca, E. C. (2017). Development and validation of instructional modules on rational expressions and variations. The Normal Lights, 11(1).

Trust, T., & Pektas, E. (2018). Using the ADDIE Model and universal design for learning principles to develop an open online course for teacher professional development. Journal of Digital Learning in Teacher Education, 34(4), 219-233. https://doi.org/10.1080/21532974.2018.1494521

Urbano, J. M. (2019). Development and Evaluation of Module on Earth and Space. ASEAN Multidisciplinary Research Journal, 2.

Verano, F.C., & Comighud, S.M.T. (2020). Level of Science achievement: Basis for the production of Strategic Intervention Materials (SIMs). UBT International Conference. https://knowledgecenter.ubt-uni.net/conference/2020/all_events/260

Villonez, G.L. (2018). Use of SIM (Strategic Intervention Material) as strategy and the academic achievement of Grade 7 learners on selected topic in Earth Science. PUPIL: International Journal of Teaching, Education and Learning, 2(3). https://grdspublishing.org/index.php/PUPIL/article/view/1686

Warner, D. A. (2021). A Review of Behavior Analysis in Education.

Yongco, J., & Del Valle, J. (2022). Development and Evaluation of Instructional Module for Special Program in Journalism. International Journal of Educational Management and Development Studies, 3(4), 97-117.

Zain, F. M., Sailin, S. N., & Mahmor, N. A. (2022). Promoting Higher Order Thinking Skills among Pre-Service Teachers through Group-Based Flipped Learning. International Journal of Instruction, 15(3), 519-542.